# Mole cricket control

## *The final frontier*

*Severe damage is evident in these untreated areas.*

BY TOM BENEFIELD, CGCS

Well, maybe controlling mole crickets is not quite like the Star Trek Enterprise mission, but then again it is a never-ending story.

Every year millions of dollars are spent on keeping the mischievous mole cricket in check on golf courses here in our beloved state...well at least I love it.

Matter of fact I am the epitome of the 1968 redneck bumper sticker with the American flag on it and the words "love it or leave it." Well anyhow where was I now, (I think maybe I've been watching too many John Wayne movies lately), oh yeah Mister Mole Cricket.

This tiny creature which God hath created, (and I suspect for good reason) has become one of the most cursed biological enigmas in the golf community. I mean not only does it do tremendous damage to our sacred greens, tees and fairways but it is one bodaciously ugly rascal. And you and I have got to look at this dude all summer long.

About the only people working in the golf industry who actually like these critters are the chemical salesmen. And for good reason, I might add. But then again it's not like these salesmen are running around the state distributing mole crickets. Rather the opposite — they provide us with the tools to hammer the ugly fools with a menagerie of weapons and keep an acceptable level of playing conditions for our members and guests.

So it is with great fanfare that we have as our editorial focus for the summer issue another look at the life, truth and fantasies of mole cricket control. Yes it is true, that you the members asked to have another look at this ugliest of subjects, and yes it is true that we the committee have agreed to your demands.

And in that same line of thinking, we have reached out to some of the great thinkers and tinkerers in the golf community to get their perspective on this age old problem.

As a matter of fact, we have even asked the manufacturers to send us their best mole cricket recipes and best management practices in order to inform you the masters of the greens, the marvels of the tees and the snippers of the roughs of all the available options.

So sit back, grab a Coke and light up a smoke... well I don't know if lighting up a smoke is such a good idea. I mean the FGCSA Board of Directors (whom you elected) unanimously passed a resolution banning smoking at all future board meetings. This was quite a bold move on their part since no one present could even remember the last time someone lit up in the board room. But then again you can never tell when a band of hooligans might get on the board, anyway just to be safe, don't light up while you are reading this article, and if you have one lit now then put it out.

Seriously the members have responded by sending in some excellent programs and advice. When you see one of them at the next local meeting give them a big pat on the back for a job well done.

### A different story

I have a different story to tell. Typically we think of Florida as "Mole Cricket Heaven." My association with mole crickets at two separate country clubs in Palm Beach County over the past 15 years has been intense. Both Boca Greens and the Falls Country Club are geographically located within the bulls-eye of agricultural land, whereby mole cricket activity is tremendous.

Upon my employment at Boca Rio Golf Club three years ago, I discussed with the previous superintendent the apparent success of mole cricket control. I asked what

*He is still the ugliest of vermin to attack our sacred greens and fairways.*

was his secret formula?

He acknowledged that he was not spraying anything unique or special. With that reply one would assume that he simply did not want to reveal his secret. I really knew he was being honest with me, but it still seemed difficult to believe.

The course went through a major construction with a complete re-grassing. The entire course was fumigated with methyl bromide — including the fairways and rough. This is obviously one effective way to control mole cricket activity. Therefore, my first growing season yielded virtually no mole cricket activity.

The amazing thing occurred during the second growing season. Again, virtually no mole cricket activity occurred.

As this inactivity continued, I kept recalling the comments of the previous superintendent of not spraying anything special. I pondered the success of this program where nothing special is being applied to control the mole crickets yet above-average results continue to appear. This made me realize that there must be other reasons for the reduced mole cricket activity.

Even though most entomologists claim that mole crickets do not communicate or colonize, I find this difficult to accept because typically we find mole cricket infestation intense within concentrated, pocketed areas.

In the past I have seen mole crickets literally devour a 1,000-square-feet area within a fairway, rough, tee or green slope and yet, just a few hundred feet away, absolutely no activity occurs. I have witnessed infestation in areas of intense insecticidal application, yet those areas just a short distance away, with virtually no activity, have received absolutely no chemicals!

As colonies become more established in just a few areas such as the higher, sandy mounds of green and tee slopes and various fairway bunker areas, yes chemical control is required. With our typical program of control for nematodes with Nemacur, control for grubs with Oftanol, and also general sod web worm control with Pageant, the chemical residual has somewhat retarded the mole cricket activity.

However, I must admit that in this current month of June as I write this article, I am witnessing the first rather severe infestation that will require a more intense control program as compared to that of

the past three years.

I really am not surprised or alarmed at the amount of mole cricket activity that is finally occurring because I have been fortunate to date and it was inevitable that a more intense program would have to be implemented.

Boca Rio is unique as compared to the typical developer-type project because there are absolutely no houses surrounding the property. Instead, our deep forest-type wood surroundings are not as conducive to mole cricket populations.

Couple this with the lack of nearby farmland and wide expanses of divided highways (Palmetto Park Road to the north and the Florida Turnpike to the east) which provide a somewhat beneficial buffer zone to prevent nearby fly-ins.

The third contributing factor is the uniqueness of the Boca Rio soil. The property was actually excavated as a rock pit in the 1960s. There is less than a foot of adequate topsoil throughout the entire property, hence very little soil for mole crickets to adequately tunnel through and feed on the bermudagrass root system.

*Damaged areas can look like miniature battlefields tilled by hundreds of tiny mortars.*

Couple this with a poorer type of drainage where field capacity or super saturated soil profiles even lessen the root system, thereby further preventing any tunneling opportunities for the mole crickets.

Some of the most severe activity now occurs in the bunker floors. We generally

***Then I began listening to fellow superintendents talking about mapping heavy areas with the idea of getting a jump on them next year (a strategy that I was already using for preemergent weed control for the same reasons mentioned above).***

rake all one hundred bunkers daily in the season from October through April which smoothes over any tunneling activity that may occur and renders it invisible.

As the playing season tapered down and bunker raking was reduced to just once or twice a week, tunneling has become intense. I see a need to chemically treat the sand immediately because this is a prime location for mole crickets to harbor.

At my last two places of employment, each course had an island green with bunkers. I recall a mediocre chemical control on the turf yet tunneling was active in the bunkers. It was not until the actual floors were chemically treated did a successful program occur on the islands. Yes, it is amazing how the mole crickets are intelligent enough to perceive the areas treated on the green and collar surfaces yet return to the bunkers for safe harboring during the day.

In review, I feel that perimeter surroundings can influence the populations. Agricultural land versus urban surroundings will reveal different infestations. One of only a very few benefits that I can think of for extensive wall to wall treatment is that even the bunker floors are treated in order to be effective. And, if you still do not have any luck, remember you can always methyl bromide the fairways! But, remember to get your new sprigs ready.

**Mike Bailey**
**Boca Rio GC, Palm Beach Chapter**

## When in doubt, change courses

Mocap at 75 lbs. of product per acre sliced into the turf did not prove to be as effective for mole cricket control during the 1993 season in North Florida at the Oakbridge Club. Re-treatment of areas with baits and Orthene was still in order.

The effectiveness of Mocap as compared with the previous year (even after increasing the subsurface rate by 25 lbs. of products per acre) still seemed to wane. Why? I have no plausible explanation. Three strikes and you're out!

On to South Florida and the Broken Sound West course. Change of region, try a different school of thought.

Nematodes/biological control for crickets. Nematodes applied during the third week of March, 30 acres of fairways. Goal was to dispose of egg-laying adult females thereby reducing population potential.

At this time, some beds are beginning to appear but tunneling activity and demise of turf normally exhibited is not occurring.

The jury is still out and we have a long way to go. Again!

**Eddie Snipes**
**Broken Sound Club,**
**Palm Beach Chapter**

## Consultant can help

Approximately five years ago we contracted the services of A. Leon Stacey, Ph.D. from St. Simons Island, Ga. to assist us in our efforts to control the mole cricket. We felt that we could reduce our pesticide expenditure and better target our applications to help satisfy environmental concerns. As a result of this work we have developed the following program.

**March**

Overwintered adults are becoming very active. In the greens and collars we inject Dursban (Pageant DF) in individual tunnel areas with a shallow root feeder.

In the more active areas of the roughs and fairways, we apply Mocap 10G at 100#/acre with a granular slit applicator, (Canaan TG-40).

This procedure does an excellent job of controlling the spring adults. It also gives us the added benefit of nematode suppression which is very important in the spring to establish roots on the older varieties of bermuda that are coming out of dormancy.

**June**

The nymph hatch is in full swing and we respond with an application over the entire property with granular insecticides with the slit applicator. Over the past few years we have used Mocap 10G. This year we plan to use Turcam 2.5G and Crusade 5G in addition to with Mocap 10G. The Mocap will be used in the areas with a history of nematode problems. On the greens and collars we apply Triumph 4E and Orthene.

**July/August**

Any mole crickets that we missed are active as juveniles. We have found that 1% Dursban bait is very effective and easy to apply. We also apply Orthene mixed with Black Strap Molasses (1 gallon/100 gallons spray volume). Based on information from recent research trials, Coax (a feeding stimulant) will replace molasses in this year's applications, which may allow us to reduce Orthene rates as much as 40%.

**September/October**

Any mole cricket that we have missed in previous applications are adults now and very difficult to control. We will spot treat areas with Orthene or granular insecticide with the slit applicator to heal any stressed areas before the overseeding operations in late October.

**Paul Salmon, CGCS**
**Ponte Vedra Inn & Club, North Florida Chapter**

## Planning is cheaper

As a small public golf course, our approach to mole cricket control had always been on of reaction. Limited budget, limited manpower, and heavy summer plays seemed to dictate this policy. It seemed that I was always waiting and hoping that each year we would have less of a problem. By the time the first nymphs began to hatch,

then it seemed I just moved them around the course. I was generally using the cheapest product on the market, but began to notice that even at higher rates, I was wasting time and money.

Then I began listening to fellow superintendents talking about mapping heavy areas with the idea of getting a jump on them next year (a strategy that I was already using for preemergent weed control for the same reasons mentioned above).

This led me to my present program which consists of a granular product on my tees and greens after my spring aerification and verticut (usually mid May), the same product would be used on other targeted areas. I have had good response with Crusade the last couple of years.

Then right after this application I pump a wetting agent through the irrigation system as I do every month to help get the product into the soil. The balance of the summer I must admit I am back on the hit-or-miss approach.

I do believe that my changing of the chemical helps. I will use other granulars, switch from Orthene to Pageant, and use baits later to get the adults that survived all that.

I have done this cheaper with better success than the old program of spending all my budget by trying to go wall to wall with the least expensive product too late. I am very interested in the idea of biological control but at this time this approach is a little out of my league here.

I will have to let my bigger brothers try this approach first. This may prove to be the most cost effective and environmentally sound approach yet.

**Karl Schmidt**
**Lucern Lakes GC, Palm Beach Chapter**

## Year-around problem

In South Florida mole cricket control is a 12-month-a-year problem. Control strategies include proper timing of insecticide applications in the spring for control of nymphs, to spot-treating problem areas in summer and fall, and hand-treating active crickets in winter on putting surfaces. The following information will describe the most effective methods I have utilized.

**Hand treatment on greens**

An educated staff and soap flushes are two good tools to assist in timing a spring pesticide application. I have had good experience with Crusade in muck soil conditions over the last couple of years. Target areas typically have been tee tops and slopes, bunker slopes, approaches, collars and green slopes.

This is also a good time to treat areas that suffered severe damage in rough and fairways in late summer of the previous year.

**Spring/summer/fall adult control**

A successful mix for me has been: 3 1/3 lb Orthene, 1 qt Coax, per acre This tank mix buffered to a pH of 6-6.5 The perfor-

mance of this tank mix increased significantly when we buffered the mix to bring down the pH.

**High-pressure injection**

Dursban, Orthene, Turcam, all provided excellent results when injected with a 550-gallon, 650-psi, PTO-driven injector. Rates of 550 gallons per acre made this a slow application process but the control achieved provided an excellent option for problem areas. (Don't forget to buffer pH)

**Proact Nematode for control**

I worked at one of the research sites for this project in the late 1980s. Although the research on our course showed the project was a failure, the turf condition in all areas was dramatically improved. These areas previously needed to be sodded annually at the end of every season and now were providing consistently healthy playing conditions.

**Mapping damaged areas**

A useful tool for our operation is to post a detailed course map that can be used to identify areas of high cricket activity. Marking problem areas throughout the peak activity season will provide useful tracking that can be reviewed to plan strategies for spring nymph control the following year.

**Robert G. Klitz, CGCS**
**Deer Creek CC,**
**South Florida Chapter**

## Begin with mapping

Our mole cricket control program begins with each course mapping out infestations, which usually begins in mid February. This is when the first mating flights occur. Next, weekly soap flushes are performed to monitor the nymph development.

Once a viable population is observed, late afternoon/early evening topical sprays are employed. We like to time these if possible with the full moon or any significant rainfall which increases mole cricket activity. This process is repeated through June.

At this point, any heavy pocket infestations are treated with granular insecticides and watered per label instructions to achieve control. Again, soap flushes are used before and after to determine a rough percentage of control. This process is ongo-


*A trapping station was developed by IFAS to expose mole crickets to nematodes during early trials of the biological control that has since proven successful.*

ing until an acceptable level of control is achieved.

**Lee Van Valkenburg, CGCS**
**Card Sound GC,**
**South Florida Chapter**

## Work very hard early

At Lake Region we are very fortunate that we do not have a severe mole cricket problem.

We have a piece of property that doesn't have any homes or any development except the club itself. This helps to keep the crickets to a minimum by not having to worry about any fly-ins.

For mole cricket control we use just a few different avenues for treatment.

Over the past years we have made maps of all the areas that get activity early. Usually in May we start to see the hot spots begin to show activity. We will immediately treat these hot spots with Mocap. If we get these spots early, it seems to dictate the rest of our year with crickets.

After that application we keep a close eye out for them and will use Orthene when they reappear. We will treat our greens with Triumph in the summer to help with crickets and nematodes also.

Last year we used some baits, and had good results, but I prefer to use Mocap and Orthene as my main sources of control.

As I have said though, I do not have a major mole cricket problem. If I had a devastated area the size of a carryall bed, that for us would be a huge area. We are very fortunate not to have a problem.

We work very hard early and just don't let them get too far before we go after them.

**Alan Puckett**
**Lake Region Y&CC, Ridge Chapter**

## Program never ends

My mole cricket program really never ends at Colony West.

We start with soap flushes in late April to early May to get an idea of the size and species of mole crickets and to determine when the majority are hatching. We then map the areas of activity to keep a historical record of the location of activity throughout the years.

Two weeks after the majority hatches (about first or second week of June) we apply either Oftanol, Turcam 2 1/2G, or Crusade to the fairways and roughs.

Also at this time we apply Triumph or — if nematode counts are high — Nemacur 10 G to the greens and tees.

After we make our applications, we return to the mapped areas and check for survivors. This gives a more accurate picture of the effectiveness of the treatment than body counts alone.

We continue to monitor for activity from July to October. If we see an increase in activity, we spot-treat with either baits or Orthene. The best results occur when making this application in the evening, after the noon rains have passed.

From November to March, if all went according to plan, the mole crickets that survived the summer are not in sufficient numbers to cause any damage that would require treatment. We only make treatments during this time of year when damage occurs on the greens.

**Dale Kuehner, CGCS**
**Colony West CC, South Florida Chapter**

## Hatching earlier this year

Mole crickets this year appear to being hatching earlier than they have in the past.

Normally we have tried to achieve our best control in early July with Mocap or Oftanol. This is the time of the year when we have experienced heavy feeding and we feel most eggs have hatched.

However, this year there seems to be more activity than usual in early June and we have scheduled an Oftanol with fertilizer application for this month. Oftanol has not been used at Isleworth in several years so we anticipate a high level of control.

We will continue to treat hot spots with Orthene through August at which time we will switch to baits. We experimented this past winter with some newer products like the third-generation pyrethins which seemed promising.

Again, we still feel that timing is the most important key. Choosing the right product for the development stage the mole cricket is in will give the best results.

**Buck Buckner**
**Isleworth GC, Central Florida/ Ridge Chapters**

## More biological controls

Control of Mole Crickets for summer, fall and winter of 1993 and spring of 1994 has been very successful. Our plan of attack for summer, fall, and winter of 1994 will be similar to 1993.

The slight modification we plan this year includes more biological control (parasitic nematodes, ProAct), and the addition of Turcam to our arsenal of weapons. I feel that the success of 1993 had a lot to do with the use of parasitic nematodes. We will continue to monitor areas treated Biologically, and will hopefully see great results in 1994.

**Bob Bittner, CGCS**
**Club at Pelican Bay, Everglades Chapter**

## Knock out the nymphs

At Meadowbrook, we strive to control mole cricket populations by hitting them hard and early in their nymph stages.

We inject Mocap (75 lbs/acre) on fairways in mid June and apply Crusade (80 lbs/acre) on green slopes and irrigated rough areas. Control of mole crickets on our greens in achieved by using Orthene (4 lbs/acre) applied with Down-n-Thru (30 oz/acre). We also keep solutions of Orthene in spray bottles on greensmowers and spray any mounding activity we see.

To help us control the bigger crickets in late summer, we apply Triumph (1.5 oz/1000 sq. ft.) on our greens, tees and approaches. We continue to spray Orthene on any hot spots that turn up during the year.

Since we try to hit mole crickets when they are young, it is imperative to know where they are on the course, therefore we map extensively in the summer and fall. When we have a warm period in the winter, we take special note of any cricket activity. We have found a little activity in the winter signifies extensive cricket damage in the summer and fall.

**Craig Boller**
**Meadowbrook GC,**
**Seven Rivers Chapter**

## Totally changed philosophy

Although mole crickets represent the number-one pest problem for superintendents during the summer months, I have

totally changed my philosophy for treatment in recent years.

I used to contract out a wall to wall combination application of Nemacur and Oftanol and had much success in the control of mole crickets. There are many obvious advantages to contract applications: from not having to store the restricted-use chemicals on site, not having crew members apply restricted-use chemicals for mole crickets, basically a one-time control application and the list could go on.

But as everyone should be well aware of, we are rapidly moving into an environmentally sensitive world where golf course superintendents are being perceived as bad guys who just go around dumping toxic chemicals on the ground. I know that this image is wrong and for this reason we have made the following changes at Seminole.

We have decided to accept the fact that some mole crickets are tolerable. Our main goal is to prevent major turf damage from mole crickets by making spot treatments when necessary.

Like most facets of golf course maintenance, this requires constant observation of the golf course so that no area becomes too damaged before treatment. I compare this spot treatment for mole crickets to vs. wall to wall treatment of mole crickets to hand-watering greens vs. using sprinklers to water the greens.

In both cases (wall to wall and sprinkler irrigation), I feel that too much chemical and too much water is being applied.

The big negative to spot treatment is that this control program is harder. It takes more observation time and labor effort to work properly. The trade-off is that we are using fewer chemicals than ever before mainly because we are not trying to control every mole cricket.

As far as chemicals used for the control of mole crickets, we use several chemicals in rotation to maximize control such as: Orthene, Crusade, Dursban and Oftanol. These chemicals are safer to use and are effective whether they are sprayed on or used in bait form.

Timing and proper application are the critical factors in a successful program. Everybody knows the chemicals that are labeled for mole cricket control and the rates applied.

***These nematode products will help reduce our mole cricket population when it gets too high and allow us to continue our spot treatment program, thereby reducing total pesticide usage.***

**Hal Hicks**
**Seminole CC, Palm Beach Chapter**

## Take the IPM approach

Collier's Reserve uses an Integrated Plant Management (IPM) approach to mole cricket control.

The golf course is scouted in a consistent manner (every week). Areas of mole cricket activity are recorded and soap flushes taken. Damaged areas are mapped because the female mole cricket seems to return close to where she was hatched, as a nymph, to lay her eggs.

Crickets taken by means of soap flushes are measured by length and the average size is determined. This data will help us select which compound we will use for their control.

In mapped areas, during the fly-in period, a bait formulation will be used. We chose a bait formulation because at the time of fly-in, mole crickets will be mature, mobile and hungry. With any liquid product, the tank water pH will be adjusted which ensures maximum pesticide efficiency, thereby saving money and time on costly second applications.

At present, we are lucky to have only a small cricket population needing only spot treatment. In some areas where the mole crickets are not too numerous, a soap-and-water flush is used instead of pesticide application. Late season mole cricket fly-in on the greens will be flushed out rather than using a pesticide treatment.

When necessary, we use Crusade 5G for spot treatment and are experiencing excellent results.

Recently, we began looking at all biological products as an alternative method in mole cricket population control. Two specific biological products we are looking at are Vector and ProAct. These nematode products will help reduce our mole cricket population when it gets too high and allow us to continue our spot treatment program, thereby reducing total pesticide usage.

Our program will change each season to accommodate the variation in mole cricket density; however; we will always map and soap flush to determine what is going on in the field.

**Michael Litton**
**IPM Specialist,**
**Collier's Reserve CC**

## DowElanco, BMP

1) Target treatments... Map and record areas of greatest mole cricket activity throughout the year.

2) Control the younger generations

• Scout and soap flush in late spring and early summer.

• Wait until eggs have hatched... Treat 2 weeks after first hatch.

3) Treat with a good residual like Pageant* 50DF insecticide or Dursban* 50WSP insecticide (4-5 pounds per acre) or at least 2 pounds active ingredient per acre of Dursban granular.

a) It's best to apply in late evening to moist soil.

b) Irrigate 1/4 to 1/2 inches after application to move the chemical into the control zone.

4) Make spot treatments throughout the year to control hot spots/new hatchings.

5) Bait formulations of Dursban are effective against adult life stages.

**John Demaree**
**DowElanco**

## BioControl, Inc.

Proact is the biological mole cricket control consisting of the patented beneficial nematode, Steinernema scapteriscus (Ss).

This nematode was found by IFAS nematologist Dr. Grover Smart back in

***This year, unlike last, the crickets started to come out much earlier. The first soil flush was conducted the first week in May. We counted approximately 30 crickets in a 2 x 4 sq. ft. area.***

1985. The nematode was tested for seven years by the University of Florida in both laboratory and field trials, and was made commercially-available by BioControl, Inc. in 1991.

Since then, Proact has been applied on well over 4,000 acres of golf course turf, with at least 80-90% success rate.

Proact is most effective against adult Tawny, Southern and Short-winged mole crickets. When the nematodes find a mole cricket host, they enter the body through the mouth or spiracles and make their way to the digestive tract.

Once in the digestive tract, the nematodes release a bacterium that kills the mole cricket within 24-48 hours. The male and female nematodes then mate inside the body of the dead cricket, with up to 80,000 offspring Ss emerging from the mole cricket cadaver within three to five days.

Ss can survive 8-16 weeks in the soil without a mole cricket host, which represents the minimum residual of Proact (obviously, the offspring nematodes are also expected to survive 8-16 weeks).

Proact is best used as a biopesticide against adult mole crickets during the spring and fall seasons.

With the spring application, the goal is to kill the adult mole crickets before they lay their eggs. As a result, Proact should be applied between February and April for optimal results.

The fall application is meant to dramatically reduce the population of adult and later-stage juvenile mole crickets before they start the overwintering process (i.e. burrowing deep for the winter). For best results, golf courses should perform the fall application between August and November.

The key to success when applying Proact is to get the nematodes into contact with the mole crickets beneath the soil surface. In other words, water is imperative to attain the desired results.

When applying Proact with a spray rig, BioControl recommends the golf course superintendent irrigate prior to the application to cool the grass and moisten the soil, as well as afterward to water the nematodes into the soil.

The general rule of thumb for sandy soils is 1/4 inch of water before and 1/2 inch after (although some golf courses would flood half of Florida if they used this much water).

A carrier volume of 50 gallons per acre has proven successful for spray applications. As an alternative to the somewhat traditional method of spraying the product, many golf courses are turning to fertigation, especially for larger applications. Fertigation is ideal because it enables the superintendent to water the product in as he/she is applying it.

## Mole Cricket Brigade

Each summer we await the arrival of the mighty Mole Cricket.

Recently, we went out as we do each year and conducted soil flushes with soap and water. We start this procedure around the first week of May and continue each week until the crickets start to emerge. Last year the crickets started to come out in the middle of June.

This year, unlike last, the crickets started to come out much earlier. The first soil flush was conducted the first week in May. We counted approximately 30 crickets in a 2 x 4 sq. ft. area.

I thought this is crazy — it is too early for these guys to start coming out. That was the start of our Mole Cricket Brigade.

We started spraying the course in three- to four-hole clusters using different insecticides. Each area is documented for the product used and evaluated for effectiveness. This continues until we have covered both courses.

At that point we continued to spot-spray hot spots. Our objective is to knock down as many crickets as we can early while they're still small. This has proven most productive and efficient over the years.

This year we have been asked by Miles Chemical — like several other courses in the area — to conduct a test evaluation on a particular insecticide. This is being done with the possibility of adding mole crickets to the label.

We are conducting this test on several plots on our driving range. I hope with the limited insecticides to chose from for cricket control, this one proves to be beneficial for all of us.

**John Gallagher**
**Boca Woods CC, Palm Beach Chapter**

## Can't use the calendar

A warm winter, like the one that just passed sure helps to evaluate the success or failure of your mole cricket control methods. At our course, the warm winter kept our non-overseeded greens in great shape but it did little of anything to suppress our mole cricket activity.

The best method for control that I have found begins with getting as many nymphs as possible immediately after hatching. This early kill will greatly reduce the amount of adult activity you will receive past the initial hatching.

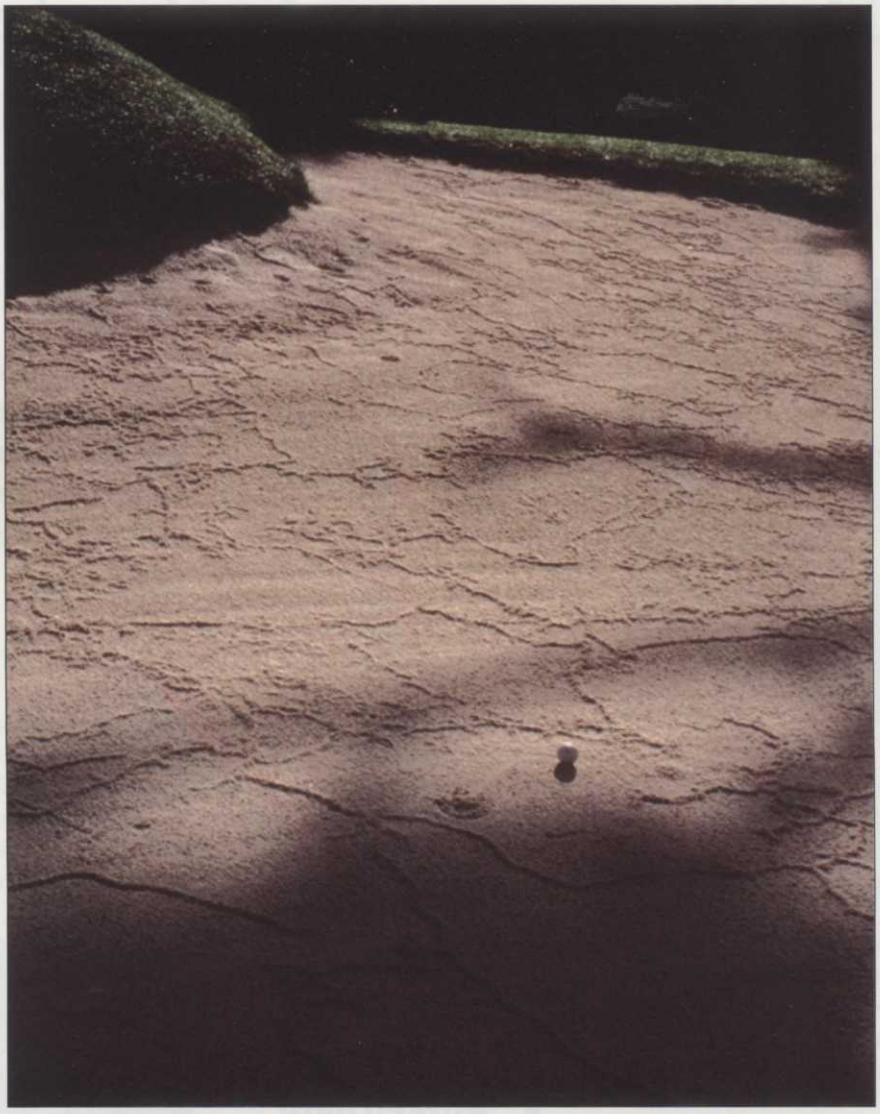
Every course is different and timing is critical! You can't rely on the timing of the treatment used by the golf course down the road or by using a calendar.

I have heard of treatment dates any where from late winter to early summer for this first hatching. Then of course there's the potential for a multiple hatching, an often occurrence in South Florida!

I have found the most successful method for mole cricket control starts with periodically checking the soil temperature, beginning in late winter. When soil temperatures begin to rise, we use soap flushes at a minimum of once a week until we begin bringing up nymphs.

We use the maps that we keep of trouble areas (adult activity sites) to determine where we do the soap flushes. Once the

***After this initial slaying, we follow up in trouble areas with applications of good old Orthene tank-mixed with a wetting agent and sometimes a feeding stimulant. We apply this at the label rates as late in the day as possible, on a night that we do not plan to irrigate. We spray only in those areas with current adult activity.***



*After treating the turf area, we find an explosion in the population of crickets in the bunkers, says Mike Bailey.*

nymphs hatch, we treat all the areas with any nymphs.

Unfortunately, depending on the severity of the problem, this can mean treating the entire golf course. The up side to this is, if you do a thorough job with this initial nymph spraying, your adult activity will be less later on. This will then eliminate some of the need to spray at a later date.

As far as what chemical to use, I think there is a multitude of chemicals that will work well, especially at this nymph stage. I have had great success using Pageant for the first blanket application as well as Mocap.

After this initial slaying, we follow up in trouble areas with applications of good old Orthene tank-mixed with a wetting agent and sometimes a feeding stimulant. We apply this at the label rates as late in the day as possible, on a night that we do not plan to irrigate. We spray only in those areas with current adult activity.

I have also had great results with syringing (one head rotation) the area to be sprayed with wetting agent pumped through the fertigation system prior to spraying with Orthene.

On top of all this, we inspect the tees, greens and aprons daily and treat any adult activity with a solution of Triumph at 1 oz/gallon. We spray the solution directly in to the burrow hole.

We also spray the fairways in this same manner, but we use a chemical that has a label for fairway use. We spray this using a 15-gallon electric sprayer transported around the golf course in the back of a utility vehicle. This method of injecting the spray solution directly into the active burrow has yielded great results.

My last bit of advice would be don't let the activity get out of hand. Eliminate as many nymphs as possible after hatching and then stay on top of the adult activity later in the year.

**Darren Davis**
**Olde Florida Club,**
**Everglades Chapter**

## Grubs affect cricket program

Besides mole crickets, grubs have become a growing concern at Atlantis. After studying the options I changed my program from past years.

First we decided to go with an Oftanol application after dethatching all fairways the first two weeks of May. I have not used Oftanol for three years. We had decent

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results in the past with Oftanol and fewer grubs. So hopefully we killed two birds with one stone.

At the time of application we were soap flushing and noticed some mole cricket nymphs. As of June 1 we have very, very little activity. My plans call for another application in late June on nymph with either Crusade or Telstar, if labeled at the time.

In October of 1993 I experimented with the Proact nematodes and had excellent results with reduced populations in these areas. We also sprayed historical bad areas in March with Proact. These were all adult activity areas.

This too showed excellent results by lowering populations during egg laying time.

Things look more promising than in past years!

**Mark Henderson**
**Atlantis GC, Palm Beach Chapter**

## Rhone Poulenc

As golf course superintendents across the South and Southeast know, controlling mole crickets is a never-ending battle.

It's an expensive battle, too. According to some estimates, the bill for controlling mole crickets and repairing the damage they cause runs as high as $60 million per year in the states of Georgia, Florida and Alabama alone.

Mole crickets range from the coastal areas of the Carolinas well into Texas.

Responding to the mole cricket threat and to rising concerns over the environment, researchers are currently developing new techniques to control the pest. These include injecting pesticides into the soil under high pressure and even inoculating soil with insect-killing nematodes. The most promising control method, however, appears to be slit application.

Developed in Florida four years ago, slit application of granular products like Chipco Mocap brand ethoprop pesticide has proved a popular and effective way of controlling mole crickets.

Slit application uses a modified slit overseeder to place the insecticide beneath the surface of the turf, reducing the risk of exposing applicators, golfers, pets and wildlife. The process also reduces dust and odor problems.

Coulters or disks spaced 1.5 to 1.75 inches apart cut narrow slits in the sod. Calibrated doses of Chipco Mocap are simultaneously deposited into the slits. Mole crickets encounter the bands of material as they burrow through the root zone.

The slits heal quickly. In fact, the treatment aerates turf, giving it most of the benefits derived from verticutting. Slit application is not recommended for use on greens or tees because the slits might disrupt play. However, the equipment can operate directly over sprinkler heads without causing damage.

As effective as slit application is, you can further maximize the treatment's value by being thoroughly prepared before you treat. Primarily this means regular scouting — both visually and with soap flushes to keep track of mole crickets as they develop.

The optimum time to treat is just after nymphs hatch because it is at this stage that they are most vulnerable to the pesticide. Hatch dates vary according to locale, so treating by the calendar is a bit risky.

Remember, however, that custom applicators usually require that reservations be made in advance. Although locking in a date beforehand may throw your timing off slightly, with regular scouting you will be able to more accurately estimate when peak hatch will occur and be able to plan accordingly.

More and more golf course superintendents throughout the South and Southeast are discovering the benefits of slit applying Chipco Mocap to control mole crickets. However, for maximum return on investment, superintendents should take the time to properly scout for the pest before reserving the services of a custom applicator.

Chipco and Mocap are registered trademarks of Rhone-Poulenc. Always read and follow label directions.

**Ken Lewis, Ph.D.**
**Rhone-Poulenc Ag Company**

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