

# Insect control in warm-season turf

**Close observance of pest populations is essential for maximum effectiveness of your various control efforts.**

by Patricia P. Cobb,  
Ph.D., Auburn University

■ Turfgrass professionals in the South are growing a variety of grasses and managing them better than ever before. Part of the price of this success is often increased "opportunities" for controlling a variety of insect pests.

Successful turfgrass managers, who are always concerned about the environment, continue to weigh all pest control options when developing new control strategies. This concern, coupled with increased pest pressure and control costs, has stimulated the same creative ingenuity that has been responsible for the best turf quality in the South's history.

Because pest pressure is often so great and so varied, integrating cultural and biological tactics as part of the control plan is nothing new. What *is* new, is an increased interest in determining factors that influence control efforts, and in using this information to develop safe, effective, well-balanced tactics as a part of total turf management programs.

Field testing on parasitic flies and insect-parasitic nematodes continues. First results of massive releases of nematodes for mole cricket control look promising for long-range suppression. Formulations of virulent strains of *Bacillus thuringiensis* (Bt)—such as Biobit and Javelin—enhance control programs for surface-feeding caterpillar pests.

**New subsurface technology**—Subsurface, "precision" placement of insecticides has focused on controlling mole crickets and grubs. Spray insecticides can be placed into the turf by high pressure liquid injection—with or without slicing, depending upon the system.

Subsurface applications of lower rates of chlorpyrifos (Dursban) and isazophos (Triumph) for mole cricket control and isazophos (Triumph) for grub control have been promising in many cases. Recent studies indicate that saturated and poorly

drained soil, and extremely hot and humid weather, influence the effectiveness of liquid injection applications.

Improvements continue in placing granular insecticides under the surface to control mole crickets and grubs. Shallow slits are cut in the turf, granules are deposited and covered—much like an overseeder but with less turf injury. Subsurface placement often results in the same level of control with half the rates of surface applications. Less surface residues decrease the potential for runoff and human exposure. Less potential for ULV breakdown and placement close to the pests provides control with less product.

**Weather considerations**—Winter weather, together with spring rains—or lack of rain—affects insect populations.

For example, the winter of 1991-92 was mild throughout most of the South. Fire ants were active in mounds during warm

winter days. Tawny mole cricket emerges from the previous season's hatch that are usually present in March in the mid-Gulf states were rare in 1991.

Winter mole cricket activity during the 1990-91 "mild" winter indicates that these pests probably matured during this time. Tropical sod webworms, longtime pests in central and south Florida, again infested coastal areas from the Florida panhandle to Texas. Monitoring turf for insect pests is always important. In the South, the mobility of many pests and the variation of weather patterns from year to year make monitoring a must.

Keeping a close watch on pest populations is essential to get the most out of cultural, biological and/or insecticidal efforts.

—The author is an associate professor of entomology at Auburn University.

## Tips for maximum efficacy:

- Mole crickets**
  - Map areas of spring activity
  - Monitor hatch time, apply as recommended to young nymphs.
  - Pre-water dry soil to move pests to surface, unless label states otherwise.
  - Treat late in the day.
- Grubs**
  - Map area to locate infestations.
  - Treat newly-hatched grubs, usually mid- to late summer.
  - Water before treatment unless label states otherwise.
- Fire ants**
  - Apply broadcast (area) treatments after spring mating flights (May-early June) before mid-summer, and/or fall when drought conditions do not exist. In high use areas, three to five days after broadcast bait applications, mound treat with a contact insecticide to quickly eliminate stinging worker ants.
- Chinch bugs**
  - Monitor early-season activity during warmer daytime hours.
  - Treat first generation nymphs in April-May.
- Spittlebugs**
  - Monitor turf areas for nymphs in spittle masses deep in the turfin May-June. Infested areas feel "squishy" underfoot.
  - Mow and water lawn before treatment.
  - Monitor landscape plantings for adults; movement between shrubs and turf is common, especially between Japanese or other "small leaf" hollies, and centipede grass.)
  - Dethatch turf if needed at proper time for grass type.
- Sod webworms**
  - Monitor spring moth flights of common sod webworms (April in most areas) and treat two to three weeks after peak flight (usually May).
  - Mow grass before treatment.
  - Watch for buildup of tropical sod webworms in coastal areas and Florida. Chewed grass blades are notched and ragged. Use lots of water when treating for tropical sod webworm (10 gals./1000 sq. ft.)

Source: Dr. Cobb

## 'Best Time' Uses of Some Common Turf Insecticides\*

INSECTICIDE/REGISTERED SITES	SPRING: March-May	SUMMER: June-August	FALL: September-December
B.t. (i.e., Biobit, Dipel, Javelin) GT		Sod webworm (young larvae): see label	
Crusade 5G, GC;S		Mole crickets (nymphs): 4lb. ai/A	Grubs: 4 lb. ai/A
Diazinon, L	(adults)	Spittlebugs: 4lb. ai/A Billbugs (larvae): 4lb. ai/A	
		Fire ants (mounds): see label	
		Grubs: 4lb. ai/A	young grubs
		Chinch bugs, sod webworms: 4lb. ai/A	
Dursban, GT		Cutworms: 1lb. ai/A	
		Chinch bugs, sod webworms: 1lb. ai/A	
		Fire ants: see label	
			Fall armyworm: 1lb. ai/A
			Mole crickets: 75-150lb. bait/A
Dylox, Proxol, GT		Cutworms: 6-8lb. ai/A	
			Fall armyworm: 6lb. ai/A
		Grub	8lb. ai/A
		Sod webworms: 6lb. ai/A	
Mocap 10G, GC;S		Billbug (larvae): 5lb. ai/A	Grubs: 5lb. ai/A
		Mole crickets (nymphs): 7.5-10lb. ai/A	
Oftanol 2, 5G, GT		(Adults-oft.2) billbugs (larvae-5G): 2lb. ai/A	
		Chinch bugs: 2lb. ai/A	
		Fire ants: see label	
		Mole crickets (nymphs): 2lb. ai/A	
			Grubs: 2lb. ai/A



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INSECTICIDE	SPRING: March-May	SUMMER: June-August	FALL: September-December
Orthene Turf, Tree & Ornament. Spray, L; REC	<p>(Overwintered) ←</p> <p>← (adults)</p>	<p>Fire ants: see label</p> <p>← Mole crickets (nymphs): 2.6-3.5lb. ai/A</p> <p>← Sod webworms: 6lb. ai/A</p>	<p>← Fall armyworm: 1-21/2lb. ai/A</p>
Carbaryl (i.e., Sevimol, Sevin SL), L; REC	<p>← (adults)</p>	<p>← Billbugs see label</p> <p>← Cutworms: 2-4lb. ai/A</p> <p>← Chinch bugs: 6-8lb. ai/A</p> <p>← Fire Ants (mounds): see label</p>	<p>← Fall armyworm: 2-4lb. ai/A</p>
Tempo2, WP, L		<p>← Chinch bugs: 14lb. ai/A; sod webworms: .09lb. ai/A</p>	<p>← Fall armyworm: .09lb. ai/A</p>
Triumph 4E, L; GC**, S**	<p>← (Overwintered)</p> <p>← (adults)</p>	<p>(young nymphs) Mole crickets: 2lb. ai/A</p> <p>← Billbug (larvae): 2lb. ai/A</p>	<p>← Grubs: 1-2lb. ai/A</p>
Turcam 2.5G, 76WP, GT		<p>← Billbugs (larvae): 76WP: 3lb. ai/A</p> <p>← Chinch bugs: 1-2lb. ai/A</p> <p>← Fire ants: see label</p>	<p>← Mole crickets (nymph): 3lb. ai/A</p> <p>← Grubs: 3lb. ai/A</p>
Fire Ant Baits Affirm (Ascend) Amdro Award (Logic), GT	<p>←</p>	<p>← See label</p>	

(————— = best choice application timing; - - - - - = 2nd choice timing.)

Registered sites: L = Home Lawns; GC = Golf Courses; S = Sod; GT = General Turf; REC = Recreational Turf

\*No endorsement or exclusion of specific products is intended.

\*\*Special registrations (24c) for golf greens, tees, aprons, sod in some states.

Source: Dr. Cobb



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# Ornamental insect control

**Pest invasions are symptoms of plant stress. Reduce stress, and ornamental insect problems will decrease.**

by David J. Shetlar, Ph. D.,  
Ohio State University

■ The extremes in temperatures and precipitation we have seen over the last several years push ornamental plants to their limits.

In 1991, many plants died or were killed by borers simply because they couldn't withstand the drought after having their roots rotted off in the wet soils of 1989 and 1990.

In 1992, you can expect to see additional trees and shrubs die from previous years' stresses. Many insects, especially borers, take advantage of these stressed plants. Remember that these pests are a *symptom* of plant stress, *not the cause* of the stress. Eliminate the plant stress and the pest problem will be greatly reduced or eliminated.

Cool, wet years see an increase in Japanese beetle populations and "cool-season" pests such as the spruce spider mite. On the other hand, hot and dry seasons seem to give the advantage to soft scales, borers, lace bugs and "warm-season" mites.

Remember: cool seasons cause pest activity to be delayed and spread out over a longer time; warm seasons cause pests to be active sooner in the season, and often they are present for a shorter period.

Bronze birch borers emerged in Ohio in mid-June in 1990 (a cool year) and in late May in 1991 (a warm year). If you had followed a "spray calendar" of June 5-10, you would have been okay in 1990—but too late in 1991.

Two ways of dealing with changes in insect and mite activity is to use pest monitoring tools and degree-days. Many ornamental pests can be monitored using pheromone traps, light traps and visual inspection. The activity of others can be predicted using the degree-days.

Pheromone traps are readily available for many of the clearwing moth borers.

**Scale control**—Most of the scales are dif-

ficult to control because we have always relied on a calendar to predict when the crawlers will be active. If pine needle scales, euonymus scales or soft scales are a problem, locate an infestation nearby your operation. Observe the infestation two to three times a week to determine when the crawlers are emerging. You usually have two to three weeks after the crawlers are first noticed to apply a control product and still get good results.

Almost all of the soft scales—pine tortoise, magnolia, European fruit lecanium, terrapin, cottony maple—enter the fall as an immature female. Recent evaluations have indicated that these females are very susceptible to insecticidal soaps and horticultural oils or these materials mixed with standard scale insecticides.

**Predators are beneficial**—Spider mites and aphids seem to be perennial pest problems in urban landscapes. These pests easily rebound from pesticide applications. In fact, the two-spotted spider mite is often a more severe problem *after* being sprayed.



Lilac borer adult.

The major reason for these "pest resurgences" is that the pesticides also kill the beneficial predators and parasites (the biological controls). By using the "softer" pesticides and targeted applications, these biological controls can be conserved and many of the resurgent pests will no longer be a problem.

Many entomologists now say that Integrated Pest Management (IPM) should be renamed Integrated Plant Management, with more emphasis on plant health and less on the pests. As an example, most pine trees do not get bark beetles unless they are under water stress. When their vascular system is not strong, bark beetle females are able to chew through the bark and lay eggs without being gummed up in the pitch. Therefore, the first method for control of bark beetles should be restoring the vascular system, not the spraying or injection of a pesticide. This may mean watering or mulching.

Of course, if the infestation has already occurred, a rescue treatment may be required before reverting to plant health care tactics.

—Dr. Shetlar is an assistant professor of entomology at Ohio State University.

## Pest Resurgence Prevention

### Pesticides/Insect Targets

<b>Bacillus thuringiensis</b> (microbial toxins, "Bt") 'Kurstaki' strains 'Tenebrio' strains	leaf beetles/foilage feeding caterpillars
<b>Oils</b> (mineral/botanical) Dormant (4-6%) Horticultural (1-2%)	insect and mite eggs; some scales; soft scales; scale crawlers; some aphids; mites
<b>Citrus</b> (d-limonene) usually with soap	soft-bodied insects and mites
<b>Fatty acid salts</b> soaps with insecticidal properties	soft-bodied insects (aphids, scales, caterpillars, lace bugs, mealy bugs, etc.) and mites
<b>Sodium aluminofluoride</b> a mineral which destroys insect gut linings (=kryocide, cryolite)	gypsy moth caterpillar, flea weevil, fuller rose weevil
<b>Pyrethrins</b> botanical insecticide (usually with piperonyl butoxide synergist)	aphids; caterpillars; white flies; thrips; etc.
<b>Azadiractin-neem extract</b> botanical insecticide with feeding inhibitor and growth regulator effects (= Margosan -O)	whiteflies, thrips, mealybugs, leafminers and caterpillars

Charts courtesy of Dr. Shetlar

## Pheromones for Ornamental Insect Control

### Common name/Scientific name

**Bagworm** (*Thyridopteryx ephemeraeformis*)

### Clearing moth borers:

**Banded ash borer** (*Podosesia aureocincta*)  
**Lesser peach tree borer** (*Synanthedon pictipes*)  
**Lilac/ash borer** (*Podosesia syringae*)  
**Oak borer** (*Paranthrene simulans*)  
**Peach tree borer** (*Synanthedon exitiosa*)  
**Rhododendron borer** (*Synanthedon rhododendri*)

**Elm bark beetle** (*Scolytus multistriatus*)  
**European pine shoot moth** (*Rhyacionia buoliana*)  
**Gypsy moth** (*Lymantria dispar*)  
**Nantucket pine tip moth** (*Rhyacionia frustrana*)  
**San Jose scale** (*Quadraspidiotus perniciosus*)

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# LAWN CARE INDUSTRY

## Barefoot's stature as 'national' company grows with acquisitions

**Management team headed by Pat Norton sees continued expansion of Worthington, Ohio-based company through development of franchises, 'branchises' and buy-outs.**

■ Convinced the lawn care business no longer offers any entrepreneurial excitement? Shhh...don't let Patrick Norton know it.

He still thinks—silly him—that there's opportunity to grow a lawn care company. A really big company. A national company.

"I think that good operators—and we don't think we're the only good operators—will continue to prosper and grow," says Norton.

"There are a lot of markets still out there in the development stages. I think that portends well for the industry."

*Say what?*

What does Norton know? After all, Barefoot Grass Lawn Service, which he's helping to grow, has, since 1979, *only* spread from central Ohio into and across the Mideast and Midwest. Barefoot is now also represented on both coasts as well as in Florida, Colorado and Texas. Company revenues increased from about \$2 million in 1979 to about \$52 million in fiscal year 1991.

Reasons why the public is, seemingly, so eager to accept Barefoot services

include: its clean yellow and green vans (Barefoot's main competition uses larger, tanker-type trucks), its well-trained technicians, its customized, predominantly dry application program.

Just as significantly, Barefoot is adept in targeting its considerable direct mail and in-house telemarketing efforts to homes in neighborhoods that are able and willing to pay a premium price for the delivery of granular fertilizer and control products.

It's this attention to detail that's characterized the Barefoot management team which has been headed by Norton since



Barefoot's Pat Norton says there's still lots of room for growth for professional lawn care.

the mid-1980s.

Briefly: Pat Norton joined Barefoot in 1979 as its director of finance and administration. In 1981 he, and other top com-

### Barefoot Grass® Lawn Service Markets



#### ELSEWHERE

**How to make friends in D.C.,**  
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**Knight keynotes, 1992 GIE Expo,**  
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**Industry urged to, pressure congress**  
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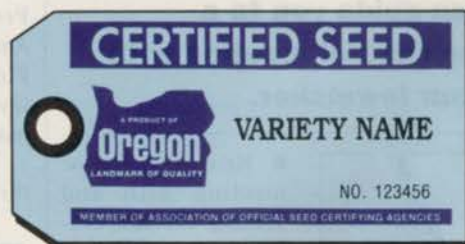
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pany managers, bought Barefoot from Toro. Norton became company president in 1986. In 1989 the Chicago-based investment firm Golder, Thoma & Cressey bought a majority share of the privately-held company. This past October Barefoot went public.

Barefoot Grass is now the third largest lawn care company in the United States, and still growing at an annual double-digit rate.

Norton says it's attracting new customers for each location. "We are still growing in Columbus, Ohio," says Norton. "If that's not the most competitive lawn care market in the United States, it's certainly one of the most competitive."

But mostly it's growing because of the proliferation of its market-targeted franchise and "branchise" operations—and, most recently, its acquisition efforts. (A "branchise" is a Barefoot franchise which is owned by a separate corporation but nonetheless managed by Barefoot through a management agreement.)

Barefoot is definitely in a buying mood. Says Norton, "we would have growth with-

#### System-wide customers & average annual revenues per customer

1986—133,000.....	\$169
1987—173,000.....	\$177
1988—206,000.....	\$182
1989—229,000.....	\$199
1990—258,000.....	\$206

out acquisition, but to maintain the level of growth we want, we have to look at acquisitions."

On January 3, Barefoot bought lawn care operations in Cleveland, Wooster, Akron and Canton—former properties of Lawnmark which generated 1991.

To make that deal work, Barefoot Grass also bought its Canton franchise. Otherwise the company would have found itself competing against one of its own franchise operations.

"The ideal acquisition for us is going to be in a market where we already have a presence so that when we add revenues, we can do it profitably," says Norton, "where we already have existing facilities, where we're making money, where we can add revenues without adding too much overhead."

In separate transactions in 1991, Barefoot purchased its "branchise" in Newark, N.J., (for about \$1 million), and will likely purchase "branchises" in Fort Lauderdale, Long Island, Harrisburg, Pa., and Boston by the end of 1992. This past year also saw the opening of "branchise" operations in Portland and Norfolk, Va., and the opening of franchises in Topeka, Kans., and Cedar Rapids, Iowa.

For the past several years about 88 percent of the company's net service revenues have come from standard lawn care services, and 12 percent from add-on services such as tree & shrub care, lawn aeration, liming and seeding.

—Ron Hall

## 10 easy steps in gaining a friend and supporter in the legislature

**These suggestions from two experienced lobbyists can guide you to a successful meeting with your lawmaker.**



■ Here's a recipe for meeting with and seeking the cooperation of your elected representative.

It's a step-by-step recipe built from the comments of Ed Graves and Norm Goldenberg. The two men advised lawn professionals who had gathered in Washington D.C. prior to meetings with their U.S. Senators and Representatives. More than 100 lawn professionals participated in these "Day on the Hill" events Feb. 23-24.

Graves is a senior consultant with Capitoline International Group, an issues management firm headquartered in Washington D.C. He's been lobbying on Capitol Hill the past eight years. Capitoline is employed the green industry

to present its case in the Capital.

Goldenberg, former owner of Alert Lear Pest Control, Miami, is chairman of the Government Affairs Committee for the Professional Lawn Care Association of America (PLCAA). He's been involved with Florida and national legislative issues involving pest control/lawn care for the past 10 years.

Their suggestions will help you through that all-important initial meeting

### **Goldenberg urges LCOs to establish mutually beneficial relationships with legislators.**

with your legislator—more likely, legislative aide or staff member. And don't be disappointed if a legislator can't meet you in person, says Goldenberg.

Gaining the ear and, hopefully, the support of a staff member can be productive. Lawmaker schedules are incredibly busy. They rely heavily on staff members for

information. Says Graves, "If you are able to convince the staff about your position, you're halfway home."

If you've no immediate plans to meet with your legislators or their staff members soon, file these suggestions and refer to them prior to such a meeting.

**1. Have a legitimate reason for seeking a meeting.** Are you responding to pending or proposed legislation? Do you want your representative to oppose a particular proposal? Or support another course of action?

**2. Identify yourself as a constituent.** "The fact that he's your representative and you're from out of town gives you every reason to ask for a meeting," says Graves.

**3. Be concise.** You'll have, at best, 15 to 30 minutes to present your views. Start with a brief description of the nature of your business and industry. Progress to the two or three points you want to make.

**4. Be prepared.** Have the facts at your fingertips. If your concern is a legislative proposal, know its, name, number and sponsor. More importantly, know its provi-

**Ask your legislator to take action, says lobbyist Ed Graves.**

*continued on page 44*



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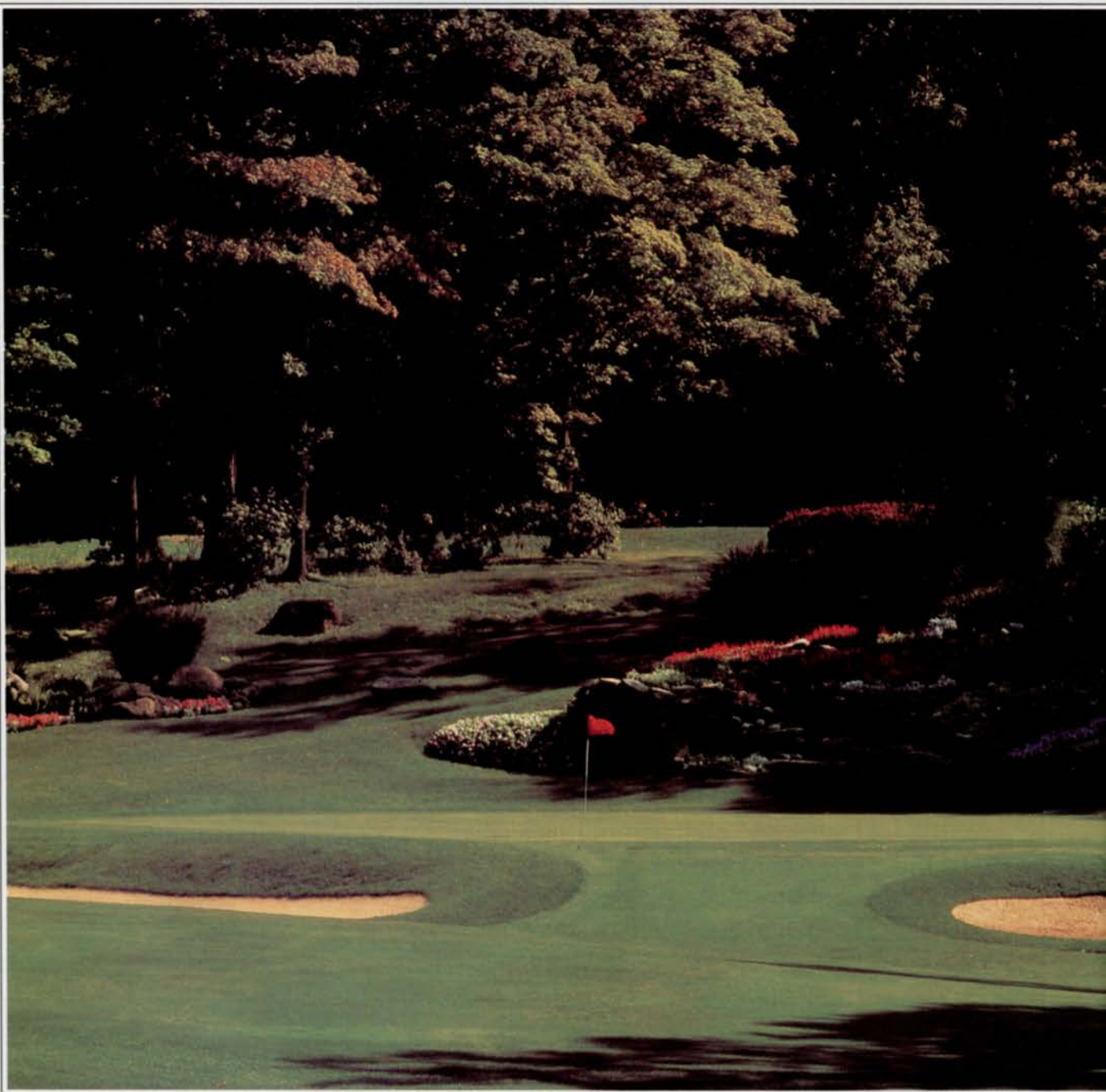
- 0105  Landscape contractors (Installation & maintenance)
- 0110  Lawn care service companies
- 0112  Custom chemical applicators
- 0135  Extension agents/consultants for horticulture
- Other contractor or service (specify) \_\_\_\_\_
- Other supplier (specify) \_\_\_\_\_

### C. SUPPLIERS

- 0205  Sod growers
- Other supplier (specify) \_\_\_\_\_

## 2. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR TITLE? (Check only one)

- 10  EXECUTIVE/ADMINISTRATOR—President, owner, partner, director, general manager, chairman of the board, purchasing agent, director of physical plant.
- 20  MANAGER/SUPERINTENDENT—Arborist, architect, landscape/ground manager, superintendent, foreman, supervisor.
- 30  GOVERNMENT OFFICIAL—Government commissioner, agent, other government official.
- 40  SPECIALIST—Forester, consultant, agronomist, pilot, instructor, researcher, horticulturalist, certified specialist.
- 50  OTHER TITLED AND NON-TITLED PERSONNEL (specify) \_\_\_\_\_



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30  GOVERNMENT OFFICIAL—Government commissioner, agent, other manager, superintendent, former, supervisor.  
20  MANAGER/SUPERINTENDENT—Arborist, arborist, landscaper/grounds manager, general manager, director of physical plant, (see page 10).