

## How to get the bite on insects

### As the calendar rolls into March, the appearance of insects means new business for the astute lawn/landscape company.

■ If you are the owner or manager of a lawn care or landscape company, you know how important and often frustrating it can be to deal effectively with some insects—but it can be done.

**Deer ticks**—which carry and transmit the lyme disease spirochete, frequent lawns, yards, parks, playgrounds and wooded areas, especially in northeastern states—are a genuine health risk. Bites from nymphs are believed to account for up to 90 percent of recent lyme disease cases, as reported in a Tarrytown, N.Y. symposium, which 12

authoritative scientists and more than 120 public health officials attended.

Deer ticks, which are active in May and June, cling to vegetation along paths in wooded areas and attach themselves to mice, chipmunks, raccoons, birds and even domestic pets. The ticks imbed their mouth parts into the skin.

A single application of carbaryl and chlorpyrifos on infected areas in early summer can control the ticks and reduce lyme disease risk up to 90 percent, says Dr. Durland Fish of New York Medical College. However, since ticks are carried by animals, they can and often do return within weeks.

Other recommended treatment for deer ticks include spraying suspect grass, shrubs and flowers with insecticides such as Deet (diethyltoluamide), diazinon and malathion.

The **billbug** presents a formidable foe to lawn and landscape contractors, especially

in north central states. Infestations begin in mid-June. Billbugs cause large lawn areas to turn thin and yellow, and don't green-up after July rains. But since the same symptoms can also be caused by drought, chemical burn or turf diseases, lawns should be monitored carefully for billbug activity.

Billbug adults can be monitored in mid-March through July with simple pitfall traps, notes Dr. Frederick P. Baxendale of the University of Nebraska at Lincoln. A container such as a coffee can is filled with alcohol and set in the suspect lawn with the rim level even with the soil surface. This easily traps any bugs. Change the container twice a week.

Insecticides registered for controlling billbugs are Oftanol, diazinon, Turcam, Dursban, Sevin and Mocap. They should be applied when adult activity is first detected

*continued on page 60*

## Changing your soil pH for maximum turf growth

### Obtaining the correct soil pH can be tricky. You may have to amend the soil, depending on turf species and soil conditions.

■ Soil acidity or alkalinity can have an effect on turfgrass health. Acidity and alkalinity are measured by pH (potential hydrogen) values: any pH value below the neutral 7.0 is acidic; anything over 7.0 is alkaline.

Turfgrasses grow best at pH values of 6.0 to 8.0. pH values below about 5.5 begin to have adverse effects on both soils and plants, and values below 5.0 are

indicative of real trouble.

Ryegrasses and bluegrasses do not tolerate marked acidity. Wheatgrass, buffalograss and gramagrass tolerate even alkaline soil conditions. On the other hand, bentgrass and fescues tolerate slight soil acidity. Sheep fescue and centipedegrass usually prefer acid soil conditions with a pH of 4.3 to 5.8. On neutral or alkaline soils, centipede frequently becomes chlorotic from lack of iron.

**Raising pH**—Low pH results in symptoms of mineral imbalance. The grass lacks the bright green color of good vigorously growing turf, is fairly unresponsive to fertilizer and may have a high proportion of brown leaves.

As a general rule, if the pH values are below 6.0, liming is needed. There is no danger in mild acidity, and outside of humid regions of the U.S., liming is not needed since soils are more alkaline.

Liming should be done periodically, at amounts adequate to forestall serious acidity (see Table 1). The most practical and easily obtained material to correct soil acidity is finely ground limestone. (This is not to be confused with burnt lime—

TABLE 2.

### SOIL REACTION RANGE FOR GOOD TURF GROWTH

COOL-SEASON GRASSES	pH RANGE
1. Wheatgrass, fairway	6.1-8.6
2. Kentucky bluegrass	5.8-7.5
3. Rough bluegrass	5.8-7.2
4. Canada bluegrass	5.7-7.2
5. Annual and perennial rye	5.8-7.4
6. Colonial and creeping bent	5.6-7.0
7. Red and chewings fescue	5.6-6.8
8. Tall fescue	5.5-7.0
9. Bluegrass, annual	5.5-7.0
10. Velvet bentgrass	5.2-6.5
11. Red top	5.0-6.5
12. Sheeps fescue	4.5-5.8
WARM-SEASON GRASSES	pH RANGE
1. Bahiagrass	6.5-7.5
2. St. Augustinegrass	6.3-7.8
3. Gramagrass	6.1-8.6
4. Buffalograss	6.1-8.0
5. Bermudagrass	5.7-7.0
6. Zoysiagrass	5.5-7.0
7. Carpetgrass	5.2-6.7
8. Centipedegrass	4.3-5.8

continued from page 58

and when the insect is in its larval stage, advises Dr. Baxendale. When treating for larvae, the turf should be watered before and after application. Aeration helps move the insecticide into the rootzone where the larvae are feeding.

"In many cases," Baxendale emphasizes, "timing of applications is more important than the particular insecticide used. Billbugs are tough to kill, and timing is critical."

Most **clover mites** live indoors. They don't bite people or eat food or household items, and are easily removed from indoor areas such as floors and rugs with an ordinary vacuum cleaner. But if they are a continuous problem in homes, one solution is to remove all grass and weeds next to the foundation of infested buildings. Leave a strip of bare soil at least 18 inches wide. Replant it with zinnias, marigolds, chrysanthemums, roses or salvia, because these plants don't attract clover mites.

**European pine sawflies** that attack and defoliate European pine trees, Christmas tree plantings and those of Scotch, Austrian and mugho pines, are black-headed and have grayish green larvae. They like to feed in clusters at the ends of pine branches in the worm stage, and can cut most of the needles from branches very quickly. A tree is often severely damaged before the worms are even detected, but they can be controlled by spraying the trees with acephate, malathion or diazinon.

The **European pine shoot moth** larvae

feeds at the base of new shoots of pine trees and shrubs. Damage appears as brown, curled shoots or "candles," but by the time this happens the worms have ceased feeding and have progressed to the pupae state. Moths emerge shortly afterwards and lay eggs for the next generation.

To control the hatching worms, treat infested pines with a spray containing dimethoate (Cygon, De-Fend) in mid-July.

**Cankerworms**, commonly referred to as inchworms, are dark green or black and are famous for defoliating elm trees. They usually eat all the leaves except for the veins, and, as adults, move about from tree limb to limb, on a silken thread or drop to the ground.

Sprays containing Sevin, malathion, acephate or *Bacillus thuringiensis* (Thuricide, Dipel, Biotrol) will control cankerworms, especially if they are less than half grown.

**Bronze birch borers**, which are actually small beetles, attack birch trees. They emerge as adults from holes left in the bark and usually infest a tree's upper limbs first. Damage can be detected by already dead branches or by the foliage which becomes pale green. To control these pests, apply a spray containing dimethoate (Cygon) liberally and thoroughly when the eggs are hatching. Repeat the spray three weeks later to control any hatching bugs.

—*Bess Ritter May, the author of this article, is a freelance writer operating out of Philadelphia, Pa.*

quicklime—nor hydrated lime, which is used in the building and construction industry.) Ground limestone should be very finely ground to be fully satisfactory.

If you need to apply limestone, be sure to allow enough time for it to work. Even in warm, moist soils, some weeks are

required for enough of the lime to dissolve.

Only enough lime should be applied to correct the acidic condition. Alkaline soil conditions caused by an excessive lime application limit the availability of certain nutrients as much as an acidic condition.

continued on page 62

## Insects, Their Damage and Their Control

INSECT	DAMAGE	CONTROL
European pine sawfly	Christmas, Scotch, Austrian, mugho pines	carbaryl (Savarin), acephate, malathion, diazinon
European pine shoot moth larvae	new shoots of pine trees and shrubs	dimethoate (Cygon, De-Fend)
Cankerworms (inchworms)	elm trees	Sevin, malathion, acephate or <i>Bacillus thuringiensis</i> (Thuricide, Dipel, Biotrol)
bronze birch borer	birch trees	dimethoate (Cygon)
deer ticks	carry lyme disease bacteria	carbaryl and chlorpyrifos in liquid or granular formulation; Deet (diethyltoluamide), diazinon, malathion
billbugs	large areas of yellow, thin and dead turf which often needs reseeding	Oftanol, diazinon, Turcam, Dursban, Sevin, Mocap
clover mite	very little, unsightly appearance	Indoors: vacuum cleaner for floors and rugs; pyrethrin, in pressurized spray cans, for windowsills. Outdoors: malathion or dicofol

TABLE 1.

### POUNDS OF FINELY-GROUND LIMESTONE REQUIRED TO CORRECT SOIL ACIDITY

PH	CONDITION	SOIL REACTION POUNDS OF LIMESTONE PER 1000 SQ. FT. OF LAWN AREA			
		LIGHT SANDY SOILS	MEDIUM SANDY LOAM	LOAMS/SILT LOAMS	CLAY LOAMS
4.0	Excessively acid	90	120	165	200
4.5	Very strongly acid	80	105	150	180
5.0	Strongly acid	70	90	120	150
5.5	Moderately acid	45	60	90	120
6.0	Slightly acid	25	30	45	60

continued from page 60

Shoot growth can also be retarded by high rates of lime applied to established turfs growing on strongly acid soil.

It is best to apply lime when grass leaves are dry, so the material will sift down to the soil. Watering immediately after spreading not only washes the dust off the leaves, but also carries the material onto moist soil where its action can begin.

**Lowering pH**—Soils that are waterlogged, rarely leached, irrigated with water containing calcium and magnesium,

or limed excessively can develop moderately alkaline pHs of 7.5 to 8.4.

A decline in turfgrass vigor usually occurs on alkaline soils. High pH may result in symptoms of lime-induced chlorosis.

Alkaline pHs (above 7.5) can be corrected by applying an acidifying material: elemental sulfur, gypsum ( $\text{CaSO}_4$ ), certain fertilizers such as ammonium sulfate and iron sulfate, or aluminum sulfate. The last, however, can be toxic to turfgrasses if not properly used.

Elemental sulfur can be applied in a mix with sand or topdressing material. The rate of a single application should not exceed 5 lbs./1000 sq. ft. Do not apply sulfur during mid-summer stress periods.

—Sources: "Turf Management Handbook" by Howard B. Sprague; "Turfgrass: Science and Culture" by James B. Beard; "Practical Turfgrass Management" by John H. Madison; and "Lawns" by

## Making turf diagnosis easier

■ The Plant and Pest Diagnostic Clinic (PPDC) at Ohio State University recently published this list of the top 10 factors you should include when writing or calling a college or university about a turf problem:

**1. List all symptoms.** Describe the general appearance of the turf. Does it look waterlogged, dried or scorched? Have any patterns or color changes occurred? A clear color photograph is the best visual aid.

**2. Pattern of development.** Does the problem appear in full sun or shade? Do the affected areas occur near irrigation lines, high traffic areas, sidewalks or buildings? Does it occur in low, moist places?

**3. Amount of turf affected.** How much of the lawn, green or field is affected? Do lawns nearby show similar symptoms?

**4. Crop.** Please list grass varieties planted, so consultants can determine which grass is more affected by the pathogens.

**5. Seeding date.** Was the lawn seeded or sodded recently, or is it a mature lawn?

**6. Time of infection.** When did symptoms first appear? What were the weather conditions prior to symptoms? Did the condition worsen coincidentally with an environmental or cultural change?

**7. Treatments.** When, at what rate, and what chemicals or fertilizers were applied? Was the grass irrigated before or after treatment? Send any samples of turf before fungicide applications were made. Fungicides prevent or impair culturing results.

**8. Irrigation.** Specify frequency, amount and time of day that irrigation is applied, if any.

**9. Cultural practices.** Was the turf aerated or topdressed? When? Did the problem occur afterward? How long afterward?

**10. Environment.** What amendments have been added to the soil? Include the results of recent soil tests, if applicable.

## Key to long-lived landscapes: the right plant for the right spot

■ Whether soil is too wet, too dry, too shady or too steep, there are beautiful, hardy plants that will thrive in these conditions.

"The trick to a low-maintenance, long-lived landscape is selecting plants best suited to grow in the climate and soil conditions," says Dr. J. Robert Nuss of Penn State University.

Overly wet soils occur in low-lying areas and are produced by springs, a high groundwater table or nearby ponds or streams. "Wet areas can support a wide range of exotic plants, many of which grow nowhere else," Dr. Nuss

observes.

For clayey soils, he recommends coltsfoot, Siberian iris, perennial sweet pea, red maple, American hornbeam, pin oak or arborvitae.

"If you want to grow annuals in clay soil, you will need to work in a generous amount of organic material," he says. "Unless you're willing to spend time adding a lot of organic matter to clay soil, it's best to stick with plants whose roots easily penetrate clay."

Other plants to use for specific growing conditions are listed in the adjacent chart.

## PLACING PLANTS APPROPRIATELY

### WET, SHADY AREAS

impatiens  
sweet alyssum  
scarlet sage  
blue sage  
verbena  
wild iris  
many violets  
many wildflowers  
alder  
dogwood  
pussy willow  
weeping willow  
magnolia  
mountain laurel

### DRY, SHADY AREAS

columbine  
lily of the valley  
bleeding heart  
balloonflower  
daylily  
boxwood  
false cypress  
holly  
hemlock  
pine  
yew  
barberry  
cotoneaster

### SUNNY, DRY AREAS

marigold  
zinnia  
four o'clock  
geranium  
cosmos  
yarrow  
butterflyweed  
daylily  
lupine  
oriental poppy  
many orn. grasses  
prickly pear cactus  
crownvetch  
sedum

Source: Dr. J. Robert Nuss