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Connecticut Agricultural Experiment Station
www.caes.state.ct.us

University of Connecticut Integrated Pest Management
www.hort.uconn.edu/ipm/ipmprog.htm

Cornell Turfgrass Information Center
www.cals.cornell.edu/dept/flori/turfpage

General Turf Links
www.turf.uiuc.edu/turflinks/tl-1.html

Lawn and Landscape Magazine
www.lawnandlandscape.com/

Guelph Turgrass Institute
www.uoguelph.ca/GTI/links/related.htm

Michigan State University Turfgrass Information Center
www.lib.msu.edu/tgif

University of Maryland Turf Online
iaa.umd.edu/umturf/umturf.html

University of Massachusetts Turf Program
www.umassturf.org

University of Rhode Island Turf Management Program
www.uri.edu/cels/pls/turf.html

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University of Connecticut Soil Nutrient Analysis Laboratory
6 Sherman Place, Unit 5102
Storrs, CT 06269-5102
www.canr.uconn.edu/plsci/stlab.htm

The **Home and Garden Education** Center at the University of Connecticut can also supply information regarding soil testing and other topics related to turf management (877) 486-6271.

Ordering Information

To order the *Turfgrass Nutrient and Integrated Pest Management Manual*, send the completed order form and payment to:

Communications & Information Technology
1376 Storrs Road, Unit 4035
University of Connecticut
Storrs, CT 06269-4035

$20.00 each X____copies = $_____(U.S. dollars)
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TURFGRASS

NUTRIENT AND INTEGRATED PEST MANAGEMENT MANUAL

EDITOR:
TIMOTHY M. ABBEY

Supported By:

EPA United States Environmental Protection Agency

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University of Connecticut
COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

TURFGRASS NUTRIENT AND INTEGRATED PEST MANAGEMENT MANUAL

This manual is designed to provide homeowners with the knowledge and understanding of ways to confront turfgrass problems and to find solutions in the maintenance of their lawns. For the lawn care professional, it is a technical manual to assist with all aspects of turf care. The overall goal of this manual is the reduction of non-point source pollution through the use of integrated pest management (IPM) practices. The 12 chapters of educational material include the following items.

Fertilization and Plant Nutrition

When clippings are returned to the turf, fertilization rates may be decreased by as much as 50% without loss in quality. Contrary to popular belief, grass clippings do **not** contribute to thatch and should be returned whenever possible.

- In Connecticut, 2 lb of N for each 1000 ft^2 of turf per year is usually sufficient for good growth if you leave the clippings on the turf.
- Nitrogen fertilization rates greater than 2 lb/1000 ft^2 per year, with clippings left on the turf, increase the number of times a lawn must be mowed and increase the potential for nitrate to escape the lawn and contaminate surface and/or ground water.

Combination Fertilizers and Pesticides

A number of commercial fertilizers mix fertilizers with pesticides (insecticides or herbicides). With these combination products, broadcast applications are made over the entire turf area. While this may be desirable because nutrients are usually required in the same amounts across the entire turf area, application of pesticides to nonproblem areas is without justification and only increases the threat to water quality if the pesticide runs off or leaches.

Because IPM uses pesticides only when and where they are needed, pesticides should be applied only as targeted treatments rather than in a general broadcast manner. Often, it is best to purchase fertilizer and a specific pesticide separately.

Avoid fertilizer application to driveways and sidewalks, and near road surfaces, drainage culverts, ponds, streams and lakes. Fertilizer spread on impervious surfaces is prone to runoff and is carried to receiving waters where it can contribute to nutrient contamination problems.

Turfgrass Selection

A good seed mix which provides an excellent lawn for most Connecticut conditions should consist of 30% to 45% fine leaf-fescue and 30% to 40% Kentucky bluegrass, with no greater than 20% perennial ryegrass.

Irrigation

Watering practices such as the amount, frequency, duration, timing, pattern and intensity impact aspects of overall turfgrass growth. Typically, the average Connecticut lawn requires 1 to 1 1/2 inches of water per week during the growing season. Natural precipitation and consideration of soil type also influence the total amount of irrigation needed.

If the turf has a purplish or dark blue color, not the typical green color, and if there is slow recovery from some form of traffic such as footprints or tire tracks, irrigation needs to be applied.

Mowing

Most lawns in Connecticut consist of more than one turfgrass species, each having an ideal height of cut for optimum performance. Typically, these species are intermixed throughout the lawn, and it is not practical to select a height of cut to cater to only one with disregard for the rest. Therefore, mowing height recommendations for home lawns is 1 1/2 to 2 inches in spring and fall and 2 1/2 to 3 inches during warm summer months. The closer the turfgrass is mowed, the greater the cultural requirements and expertise to maintain it. Closely mowed turfgrass is more susceptible to drought, disease, weed invasion and other problems. Mow often enough not to remove more than 1/3 of the total leaf blade during each time. Mow frequently when conditions are favorable for turfgrass growth.

What is Integrated Pest Management?

IPM for turfgrass is a decision-making approach that uses a variety of methods to manage diseases, insects, weeds and other problems. The use of IPM for the maintenance of lawns can minimize risks to human health, society and the environment. Some IPM strategies include action thresholds, scouting or monitoring, correct identification of pests and pest damage, use of resistant turfgrass cultivars, proper cultural practices, biological and chemical controls, record-keeping, equipment calibration and program evaluation.

Weeds

The best weed control method in turf is prevention – creating an environment that favors the desirable turfgrass more than the weeds. Any cultural practice that increases the density and vigor of the desirable turfgrasses discourages competition and infestation of weeds. Improper mowing height is one of the most common causes of weed infestations. Mowing too short and too frequently for some turfgrasses results in a weakened stand and increases weed encroachment as the stand thins. Also, low mowing allows increased light to reach weed seedlings.

Diseases

Poor cultural practices predispose the turf to outbreaks of one or more turf diseases. Excess soil moisture favors root pathogens such as summer patch, while overfertilization with nitrogen promotes rapid growth of weaker leaf blades that are more susceptible to foliar pathogens.

Insects

Learn the proper identification of pest insects and beneficial insects. For example, to help with control, identify grub species by using a hand lens to examine the *raster* pattern formed by the spiny hairs on the underside of the tip of the abdomen. The raster pattern varies by species. Japanese beetle grubs have a V-shaped pattern. The European chafer has 2 rows of hairs that form a Y-shape.