

secrets



to a great



lawn

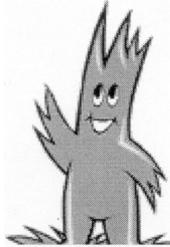


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By Richard Burton

Secrets To A Great Lawn



by

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1-800-LAWNCARE

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Many thanks, also, to Miss Clement for teaching me the joy of watching things grow.



Second Edition

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The Three Legged Stool

There is no easy way to get and keep a beautiful lawn . . . but there is a sure way. Just like a three legged stool, proper lawn maintenance is supported by three equally important factors. Each of them works with the others to support a lawn that is both attractive and functional.

First, **the homeowner** needs to be involved making sure that the lawn is properly watered and mown.

Second, **nature** has to provide the needed growing conditions. Problems will arise whenever temperature, precipitation and/or humidity are not in the optimal range for a healthy and growing turf.

Finally, **the lawn care company** needs to monitor the lawn in order to ensure the proper application of fertilizers. They will also provide identification and control of weeds, as well as the early diagnoses of problems caused by insect pests and disease.

Your lawn is unique and one-of-a-kind. It has its own set of needs and requirements. That is why you need to have an integrated lawn care plan formulated for your lawn.

This integrated lawn care plan will take into account all the things that affect

*Your lawn is unique,
so treat it that way.*

the health of your lawn. It won't just treat symptoms but will look at the larger picture and will handle the source of problems as they arise.

Lawn care companies cannot perform miracles. They are only one leg of the stool. All three of the legs must work together. When they do, a well established lawn is a near certainty.

The aim of this book is to give you more information about the things that go into the process of formulating an integrated lawn care plan for your lawn.



Top Quality Service

You have chosen a neighborhood lawn care company that is committed to providing top quality service. There are problems that are unique to a neighborhood. It is important that applications are timely and fit your weather patterns. Your lawn care company understands because they live and work in your area and know what is important to you. They answer only to you, the customer, not some corporate office hundreds of miles away. Whatever it takes will be done to make sure you're satisfied with the results of each application.

In addition to fertilizing, your lawn care professional can tackle the more difficult aspects of lawn care. They are able to identify and control problems you have with your lawn – problems such as weeds, insects and diseases. You will be freed from the chore of getting all the proper equipment and choosing the right product for each particular problem.

You have gained a partner and an advisor in maintaining a thick and healthy lawn. In addition to providing specific services, you will also be able to get advice on proper mowing and irrigation of your lawn. If you have concerns or questions, call your lawn care professional first.



Timely Treatments

The road to a better lawn starts with your first treatment. Your lawn care professional begins in early spring applying special fertilizers and weed controls. Your lawn will green-up quickly as the weather warms. Over-wintering weeds will soon disappear and annoying crabgrass will be prevented from taking hold. Your ongoing treatment program will continue throughout the growing season with an application every six or seven weeks; each tailored to your specific lawn's need and the time of year. You get exactly what your lawn needs at precisely the right time.

You need to meet your lawn's needs all year long

Personalized Service

-  If your lawn needs to be re-treated for weeds after an application, it will be done in a few days.
-  If you ever have a concern about applications, service or quality, your lawn care professional is just a telephone call away. They want your lawn to be the best lawn possible and to make sure any questions you have are answered promptly. Again, your satisfaction is our most important goal.



Leave It Up To a Professional?

You could just do it yourself. But more and more people are realizing the value of a healthy turf, and see the benefit of hiring a professional to take care of their lawn. There are many benefits to turning over the care of your lawn to professionals. You will not only be able to reap the **environmental benefits** of having a well-maintained lawn, but you will also be able to enjoy **more leisure time** with family and friends when you rely on a lawn care professional. Additionally, your well-maintained property can add anywhere from five to fifteen percent to your **home's value**.

Lawn care companies are more familiar with current developments in fertilizer and pest technology

You'll never have to put off fertilizing again.

than most homeowners. A responsible firm holds in-house train-

ing sessions and encourages its employees to attend classes and educational seminars conducted by universities or professional lawn care associations.

Environmentally Conscious

You want a beautiful green lawn but you're concerned about the chemicals. Relax, you can get the lawn you want and the cautious use of pesticides and herbicides that you demand. Weed killer and pesticides are used only when and where your trained lawn care professional sees the need. It's called spot treatment.



We Do It . . .

A scheduled program is followed

All materials and chemicals
are supplied by us

An expert identifies problems
with your turf

We're experienced
and guarantee results

You get advice from
a professional

You Do It . . .

You do it when you get to it

You have to shop, deliver,
store and dispose of chemicals

You have to look for solutions
while the problem grows worse

Did you follow the fine print
on the labels? Was it mixed right?

You read lawn books,
receive advice from the neighbors



How Can You Be Sure?

You owe it to yourself to be sure that you will be happy with your choice of a lawn care professional. As you make your decision, consider the following things:

Flexibility

- ☑ Does the company offer different programs for different turf species or the level of services desired?
- ☑ What products are used?
- ☑ What are the terms for payment of services?

Response

- ☑ How long before a lawn problem will be inspected?
- ☑ How soon can remedial steps be taken?
- ☑ What about recurring problems?

Expertise Level

- ☑ Is the lawn care company certified by the state?
- ☑ Is the lawn care company a member of your state Lawn Care Association, Professional Lawn Care Association of America, or other associations?
- ☑ Is the lawn care company insured?
- ☑ Do the employees regularly attend training by extension stations or community colleges?
- ☑ Do the employees or owners have certificates or diplomas from technical schools or universities?

Reputation

- ☑ How long has the lawn care company been doing business locally?
- ☑ What do other customers say about their service?
- ☑ Have you seen the company working in your neighborhood before?
- ☑ If so, how do equipment and personnel appear?
– *provided by the University of Nebraska-Lincoln*



Choosing A Landscape Contractor

A landscape contractor can offer you a variety of services including design and installation of plants and trees. It may seem difficult to choose someone to do landscape design around your home. Here are some points that can help guide you in your decision.

1. Determine what services you require from a landscape contractor. Many services are available through a landscape contractor. These include not only the installation of plants but also patios, decks and irrigation systems.

2. How long have they been in business?

Get references and check them for level of excellence. See what kind of training the employees have had. Check for national and state association membership.

3. Are they insured and licensed or certified?

4. Know what you are going to want. Before meeting with the landscape contractor, determine the extent of landscaping that you wish to have done.

5. All work should be guaranteed. What happens if some of the plants die? How long is the guarantee?

6. Find out where the contractor is currently working and visit the site. You will get a good idea of how *your* job will be done.

7. Get a contract or a written plan before agreeing to the work. Know exactly what will be done and be sure that it progresses as it should.

8. Find out what kind of ongoing maintenance will be required. Aftercare is crucial with new plantings. Know what it will take to keep your new landscape looking good.



What's On The Menu?

Lawn care companies provide a service to their customers. The degree of service varies from lawn to lawn. Performance and results depend on what the level of service is. Ultimately the homeowner is the one who decides what that level will be.

When you determine what's on the menu for your lawn consider the following factors:

- 1) Your goals for your lawn** – Are you seeking a “picture perfect” lawn or just a fairly healthy one? This is the single biggest factor in deciding what type of services will be required for your lawn.
- 2) The type of grass you have** – Certain types of grasses establish themselves more readily than others. They may do quite well with proper fertilizing and watering. Some types are more susceptible to pests and disease than others. These types may already have a problem or will need to have more care in order to prevent infestations.
- 3) Soil type** – Rich, black soil will produce a better turf than sandy soil. The soil can be enhanced with the addition of needed nutrients. Sometimes soil enrichment with topsoil or peat moss will be in order.
- 4) Condition of the lawn** – When looking at the goals for your lawn, what will it take to achieve those goals? Will reseeding or sodding be necessary? What pests or diseases are present in your lawn? Does your lawn show evidences of soil compaction?
- 5) Regional factors** – Some things must be lived with. This is the case with warm-season turfs that naturally turn brown in the winter. Other things may be changed. Such is the case with the possibility of improving the lawn with the introduction of a shade resistant grass.



Keeping You Informed

At each application, your lawn care professional will provide the following information to you:

- ☑ Company name, address and phone number
- ☑ General description of the pest(s) to be controlled
- ☑ A list of pesticide(s) to be used
- ☑ The time(s) and date(s) of application
- ☑ Any precautionary warnings about potential health hazards to humans, animals and the environment

If you ask for it, your lawn care professional will provide product labels, safety data sheets, Environmental Protection Agency fact sheets and a document that describes the rate of application of the active ingredients in the product(s).

Before or at the time of the first application, your lawn care professional can provide you with the following risk and benefit information in writing:

- ☑ Definition of pesticide
- ☑ How pesticides work
- ☑ Why pesticides are used
- ☑ Toxicity of the pesticide being used
- ☑ A description of the environment in which the pesticide will be applied
- ☑ General exposure information
- ☑ Amount or rate of pesticide applied
- ☑ How the label directs the pesticide be applied
- ☑ Common sense tips on protecting human and animal health
- ☑ What happens to pesticides in the environment
- ☑ How to prepare a site before the pesticide is applied
- ☑ Instructions for physician contact in the event of an unusual reaction

– from the Michigan Department of Agriculture



Selecting Lawn Grasses

A beautiful lawn is not maintained year after year without effort. Before planting a lawn consider whether or not it's worth the time and expense required to keep it beautiful.

A lawn can be as low maintenance as mowing whatever grows and letting nature do the rest. At the other end of the spectrum is the well established lawn

Sometimes choosing a turf can seem complicated

that gets regular fertilization and watering. The work in-

involved for these two types of lawns is very different.

The maintenance level of the lawn is determined by the grass selected, the desired lawn quality and the site. Be aware that some landscape features are incompatible. For instance, you can have a very shady landscape or a high quality lawn but not both. Grass has difficulty growing in the shade.

Cool Season Grasses¹

Northern lawns need a proper mix of grasses. Most are combinations of Kentucky bluegrass, creeping red fescue, and perennial ryegrass. This mixture provides the maximum amount of pest resistance and environmental adaptability. Each of these three grasses has distinct traits. A mix can provide a good quality lawn with below average to average care and will provide a lawn suitable for sun or partial shade.

Kentucky bluegrass is the most common lawn grass. Blends of Kentucky bluegrass cultivars can provide a very high quality lawn but such lawns usually require above average maintenance levels. The spreading growth habit helps fill in bare spots but the



grass goes dormant during hot, dry, summer weather.

Creeping red fescue has thread-like leaves and is the most shade tolerant lawn grass. This does not mean the grass grows only in shade or that it will tolerate total shade. It grows well in full sun and in fact requires some sun during the day.

Perennial ryegrass varieties are blended with other types of grass. Only named cultivars of perennial ryegrass should be used in lawns.

Turf type tall fescue is becoming more popular and is available in most stores. In a mixed lawn, the grass blades of a clump of tall fescue always seem to stay taller than the rest of the lawn. However, pure stands of tall fescue are valued for high wear tolerance. This makes tall fescue ideal for use in high traffic areas as well as in playgrounds and roadsides.

Annual ryegrass is often sold as the major component of low priced grass seed. It will die out during the winter, forming a lawn that only lasts a single season.

Rough bluegrass is often found in shady grass mixes although many people consider it a weed. It has a light green color and does not blend well with other lawn type grasses. It does however do well in moist, shaded sites.

Zoysia is a warm season grass that turns brown early in the fall and stays brown until late into the spring. It can be used in a northern climate but is more successful when used in transition zones and warmer climates.

Bentgrass becomes established in a lawn and is also considered by many to be a lawn weed. The grass can tolerate very low mowings as on golf greens. At normal lawn heights it is shaggy and often dies out during the winter or during hot, dry weather. There is no selective control for bentgrass.

¹*adapted from Michigan State University Extension*



Key to Turf Evaluations

Maintenance Required – Overall ease of care.

Climate Conditions – Favorable regional climatic characteristics.

Temperature Tolerance – Type or range of temperatures that a species can withstand.

Drought Resistance – The ability to recover after going dormant due to a period of drought.

Shade Adaptation – The degree of ability to grow in shaded conditions.

Wear Resistance – The ability to exhibit initial wear recovery from foot traffic and/or recreation.

Cool Season Turf Evaluations

Kentucky Bluegrass



Maintenance: Variable

Climate: Cool, humid, semi-arid, temperate regions

Temperatures: Thrives in cool weather, stressed in extremely hot weather

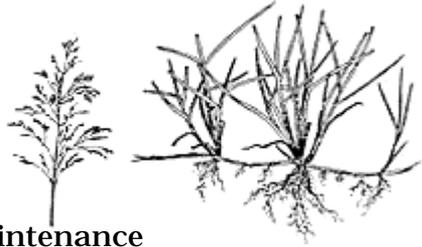
Drought Resistance: Medium

Shade Adaptation: Fair to poor

Wear Resistance: Medium



Ryegrass



Maintenance: Easy maintenance

Climate: Mild winters, cool moist summers.

Temperatures: Good, best when cool

Drought Resistance: Good

Shade Adaptation: Moderate, filtered shade OK

Wear Resistance: Fair, moderate in spring and fall

Notes: Good in mixes; rapid establishment.

Fine Fescue Turf

Climate: Cool summers, high altitude

Temperatures: Wide temperature range

Drought Resistance: Very good

Shade Adaptation: Moderate, needs partial sun

Wear Resistance: Moderate

Notes: Good in blend



Tall Fescue

Maintenance: Very good transition zone grass.

Climate: Cool to warm climates

Temperatures: Good heat tolerance

Drought Resistance: Good, deep roots

Shade Adaptation: Best full sun, moderate to partial shade

Wear Resistance: Good, moderate foot traffic



Warm Season Grasses

Warm Season Grasses To Choose

Warm season grasses are ideal for southern climates. They are tough and can grow best in heat of 80 to 95 degrees. Sandy soils don't bother them either. Yet, warm season grasses fail to stay green all year. This is offset by the fact that they come back better and thicker each year.

Each of the following types of grasses are available in an increasing number of varieties. These have been developed in order to improve their use as lawn turf with such qualities as speed of establishment and disease resistance.

Bermudagrass is one of the best lawn grasses among the warm season types. It is heat and drought resistant and does well at maintaining a green color in these conditions. It needs to get full sun. It spreads very quickly but has both runners and rhizomes which means that it is hard to keep from spreading into beds and onto driveways.

Carpetgrass grows better on wet soils than most grasses. It can be seeded or sprigged. It should be chosen only if quick establishment and ease of care is more important than quality of turf. It is easily scalped. Recovery from winter and drought is slower than with most warm season grasses.

Centipedegrass is an aggressive and dense grass with great weed resistance. It requires less care and can take some shade. It is slow growing but can be seeded or sprigged. Surface runners make edging easy.

St. Augustine is a very popular grass. It is thick and coarse. It spreads quickly with runners but is easily edged. Not much seed is produced so it is better planted by sodding or plugging. Of the warm season grasses, it is the most shade tolerant. It does not like the cold. It is susceptible to chinch bugs.



Zoysiagrasses are good in full sun or partial shade. Rather slow in getting established; they should be sodded, plugged or sprigged. They are less drought tolerant than bermudagrass. Zoysiagrasses need more care than other warm season grasses. But, when they are properly maintained, zoysia grasses are some of the best lawns.

The Downside Of Some Cool Season Grasses

Cool season grasses really need temperatures of 60 to 70 degrees to grow well. During the hot months of summer they may go dormant or suffer injury. This weakened condition causes thinning and encroachment of weeds.

Creeping Red Fescue is good in shaded areas but needs extra water in the hot times of summer. Due to its lack of drought and heat tolerance it is really of limited use in the south.

Kentucky Bluegrass is an excellent transition region turf and grows well in the mountains and upper piedmont regions. Shade and extra water may make them grow in some other situations but adaptation will be difficult.

Rye grasses are used to green up a warm season turf during the winter months. However, be aware that some of the grass may remain in the spring. It then becomes a weed as it competes for sunlight, moisture and nutrients. This may result in harm to warm season grasses.

Tall fescue will grow in zone seven and further north but it will need more water than warm season grasses in order to keep green in the summer. Control of weeds and insects becomes increasingly important during the summer months.



Key to Turf Evaluations

Maintenance Required – Overall ease of care.

Climate Conditions – Favorable regional climatic characteristics.

Temperature Tolerance – Type or range of temperatures that a species can withstand.

Drought Resistance – The ability to recover after going dormant due to a period of drought.

Shade Adaptation – The degree of ability to grow in shaded conditions.

Wear Resistance – The ability to exhibit initial wear recovery from foot traffic and/or recreation.

Warm Season Turf Evaluations

Bermudagrass



Maintenance: Varied, extensive, deep root system

Climate: Hot, dry, tropical

Temperatures: Excellent heat tolerance

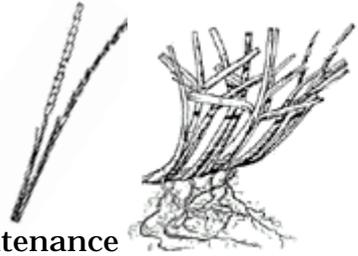
Drought Resistance: High

Shade Adaptation: Full sun

Wear Resistance: Heavy traffic



Centipedegrass



Maintenance: very low maintenance

Climate: Hot humid

Temperatures: Very tolerant to high temperatures

Drought Resistance: Moderate

Shade Adaptation: Good, but full sun better

Wear Resistance: Poor

St. Augustine



Maintenance: Low to moderate

Climate: Coastal regions, hot, tropical

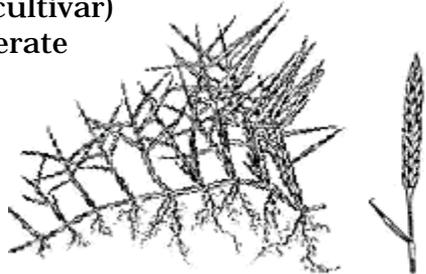
Temperatures: Thrives in heat, poor in low temperatures

Drought Resistance: Excellent to fair

Shade Adaptation: Excellent to poor (depending on cultivar)

Wear Resistance: Moderate

Zoysiagrass



Maintenance: Easy

Climate: Hot, humid tropical

Temperatures: Exceptionally heat tolerant

Drought Resistance: Moderate to good

Shade Adaptation: Good, slow growth in partial shade.

Wear Resistance: Superior, best of any grass, heavy traffic



Can You Make It Better?

Unless you have recently sodded your entire lawn there are probably areas that you wish were greener and more lush. Your lawn care professional can make those problem areas match the rest of your lawn.

An ailing area of turf in your lawn is only a symptom of an underlying problem. Your lawn care professional will first deal with the cause of the problem, whether it is insects, weeds or disease. Remedying the cause will ensure that the area will stay healthy once it has been repaired.

Seeding Damaged Areas

The method of seeding which gets the best results begins with a double aeration of the affected area. This allows the grass seed to literally be planted in the ground. The sprouting seeds benefit from the decompacted soil and enhanced conditions of the soil. The aeration holes are then filled in and the soil enhanced by spreading topsoil over the seeded area. The result is a green and growing turf where a problem area once existed.

Your lawn may be healthy but you wish it were thicker. This can be accomplished through the process of over-seeding. The best method for over-seeding is identical to the process of seeding damaged areas with the exception of doing only a single aeration. The benefits of seeding become evident when the seeds sprout and you see how much thicker and lush your turf is.

Plugs And Sprigs

Many warm season turfs grow by spreading their stems, or stolons, establishing new shoots as they go. This makes them ideal for plugging or sprigging a lawn. This involves planting sprigs about a foot apart in a grid pattern.



The advantage over sodding is that it is much less expensive. The disadvantage is that the lawn will look patchy until it fills in after about a year. A good use for this technique is in repairing trouble spots in a lawn.

Sodding

Sodding a lawn gives instant gratification. It is also the only practical method for establishing some warm season turfs. Another advantage to sodding is in getting turf to grow on slopes.

The soil bed needs to be prepared in the same way as it is when seeding is done. This will ensure that the sod is not just laying on the ground but that the roots are able to take hold as they should. Remember that the sod will raise the level of the soil about an inch. This will be most evident around sidewalks and driveways. The sod is laid out like a jigsaw puzzle, with the edges touching each other.

Sod should be watered daily until established, usually two to three weeks. Avoid overwatering.

What About . . .

Q I want to enhance my lawn by overseeding. I've heard that it's good to use more than one type of grass. Is there a difference between a "blend" and a "mixture"?

A A **turfgrass blend** is a combination of different cultivars of the same grass species. It increases the disease resistance of the turfgrass stand. A **turfgrass mixture** is a combination of different types of grasses. It tends to increase the disease resistance of the turfgrass stand as well as improving its adaptation to the location or site.

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A Complete Makeover

Hydroseeding is becoming more and more popular as an effective means of establishing a new lawn. It is a process that utilizes a mixed media of cellulose fiber, seed, fertilizer and water. After being thoroughly mixed into a soupy consistency, this media is sprayed on the lawn by machine. Sprouts will appear in as little as three days and a fully established lawn will be achieved in three weeks or less.

Hydroseeding Advantages

-  Protection of seeds from heat and birds during germination process.
-  Soil temperature is maintained.
-  More even application of seeds than is possible with broadcast seeding.
-  Especially effective in keeping seeds from being washed away on slopes.
-  Provides added organic components to enrich the soil after the lawn is established.
-  No need to remove straw as is the case with broadcast seeding.
-  Retention of moisture as seeds sprout.
-  Allows for a better root formation as opposed to sodding.



Site Preparation

Before hydroseeding, the site must be prepared to rid it of all grasses and weeds. More than one application of weed killer will do away with seeds as they germinate. Multiple applications eliminate future problems by ending the life cycle of the weeds. The time of year and degree of weed infestation in your lawn will dictate the needed course of action.

Seed Selection

The seed mixture used to hydroseed will depend on the requirements of your lawn. The amount of sun and shade is one factor. Special seed mixtures may be needed for special requirements such as slopes.

After Care

Be sure to water your hydroseeded lawn consistently for the first two weeks. This is very important. The amount of watering necessary will depend on the weather in your area. Generally, during the first week, water every day in the morning and again in the evening. Then water every other day until there is enough grass for a first mowing. The goal is to keep it moist at all times. Your grass seedlings will die if they are allowed to dry out. Be sure to consult with your lawn care professional to determine the exact water needs of your hydroseeded lawn.

Fertilizer is included in the hydroseeding mixture. This ensures that the grass will have every thing it needs for healthy growth. Additional fertilizings should be done every other month during the growing season.



Some Cutting Remarks

Some people just hate to get the lawn mower out. The general rule to follow is not to cut more than one third of the leaf surface off at once. By mowing the lawn once a week you will usually comply with this guideline. However, at times of peak growth you may need to cut every four or five days.

How High, How Short?

There is no one mowing height for all grasses. But each has its own optimal range. If they are routinely cut lower than that, they will not be as healthy and may begin to thin out and die. If your lawn is a mixture of grasses (most are), you will need to average out the height. It is better to cut some of it too tall than to scalp portions of your lawn.

The chances are that you cut your lawn too short. Here are some recommended heights:

Bahia	2-3 inches
Common Bermuda Grass	1-2 inches
Hybrid Bermuda Grass	1 inches
Centipede Grass	1½ - 2 inches
Fine Fescues	1½ - 3½ inches
Tall Fescue	3½ - 4 inches
Kentucky Bluegrass	2 - 3½ inches
Perennial Ryegrass	2 - 3½ inches
St. Augustine	1½ - 2½ inches
Zoysia	1 - 2 inches

Frankly, experts do not agree on a best height.

Begin with the above heights, then observe how your lawn is doing and adjust according to your lawn's specific needs. Your lawn care professional can help you determine what height your lawn needs to be.

Note: The mowing height should be increased by one-half inch for shady areas and immediately following a weakening of the lawn due to insect or disease injury or from high traffic.



Still Not Convinced?

Longer grass will mean:

- ✂ more photosynthesis which provides more food
- ✂ more shade for cooler soil and less moisture loss
- ✂ less weeds
- ✂ deeper, stronger roots
- ✂ the grass grows more slowly



Elmo used extreme caution when tracking down his mower each year.

Remember...

Mow High – A deep root system develops, there is more leaf area for photosynthesis, the blades shade the soil and gives the grass a better chance against weeds which sprout from seeds. Especially important going into winter and when there is a possibility of frost in early spring.

Mow Often – Cutting too much blade at one time can cause root shock. In hot, dry weather this will cause the grass to brown and go dormant.

Leave the Clippings — Nutrients from the clippings return to the soil and, in effect, fertilize the lawn. Lawns which do not have clippings returned to the soil require 25-40% more fertilizer.



To Bag Or Not To Bag

A common question is: should you mulch or pick up clippings. It has been commonly believed that grass clippings will end up creating thatch. This isn't true, in actuality clippings will decompose within six weeks. Don't procrastinate when it comes to mowing; if you

*Recycling isn't just good,
it's easier*

are careful to cut no more than 1/3 of the grass blade off at each

mowing, it is best to allow the grass clippings to remain on the lawn. This makes good sense due to the current restrictions on yard waste disposal as well as the benefits your lawn receives. The decomposed clippings will actually add fertilizer to the soil. Mulching mowers available on the market do an especially good job of returning clippings to the soil.

GRASS CLIPPINGS: HIDDEN NUTRIENTS

Grass often should be mowed more than once a week. When mowing, you shouldn't need to cut off more than one-third of the leaf blade at one time.

Reduce fertilizer use by leaving grass clippings on lawns to decompose.

Return nutrients to your soil by mowing lawns frequently and to the correct height.

Other uses for clippings:

1. Mix with leaves, add to garden beds after composted.
2. Rake dried clippings, use as mulch around trees or shrubs.

Don't allow clippings to accumulate into piles.

Graphics/illustration: Tom Laird, College of Agricultural Sciences, © Penn State

MOWER SAFETY

✓ A Lawn Mower Safety Reminder List...

- Fill the fuel tank outdoors.
- Secure discharge chute deflectors and automatic baggers properly.
- Let hot engines cool for at least five minutes before refueling.
- Wear proper shoes, clothing, and eye and ear protection.
- Never reach into discharge chutes to unclog them.
- Do not mow wet grass.
- Always start mowers on level ground.
- Keep bystanders at least 100 feet away.
- Be patient when mowing, if you get fatigued, rest.



Graphics/Illustration: Tom Laird, College of Agricultural Sciences. © Penn State 2000

It Can Be Hazardous

It is easy to let your mind wander when you are mowing . . . but don't let it lead to carelessness! Before using your mower be sure you are familiar with your owner's manual. It will provide safety tips that will be specific for your mower.

Never A Dull Moment

You should always have a sharp blade on your mower. It should be sharpened whenever required, depending on use. Check the tips of the blades of grass after you mow, if they are frayed then the blade of your lawn mower needs to be sharpened. Frayed tips indicate that the grass plant has been injured by tearing it . . . this means a big increase in the possibility of insect or disease problems.

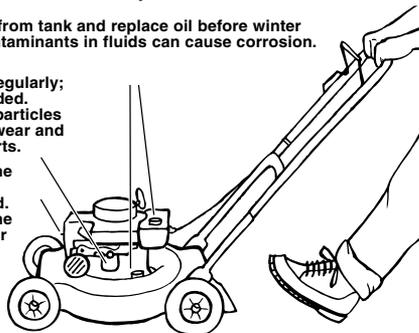
GIVE YOUR MOWER NINE LIVES

A good gasoline lawn mower should last at least ten years, if properly maintained. Consult your owner's manual.

Drain gas from tank and replace oil before winter storage. Contaminants in fluids can cause corrosion.

Clean the air filter regularly; replace as needed. Even microscopic particles in your engine will wear and pit internal parts.

Check and clean the spark plug; replace if damaged. This should be done at the beginning or end of each year.



Graphics/Illustration: Tom Laird, College of Agricultural Sciences. © Penn State



What About . . .

Q *What are the advantages of Tall Fescue?*

A Tall fescues are more drought resistant than many other lawn grasses such as bluegrass or perennial ryegrass; roots penetrate the soil deeper. Tall fescues are more disease resistant and wear tolerant, making them ideal for heavy foot traffic areas and athletic fields. Like bluegrass, they are considered a cool season grass, remaining green for eight to nine months out of the year.

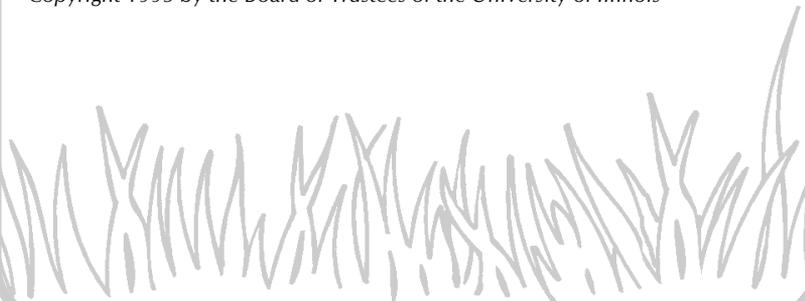
Q *Can cutting height improve a turf's root system?*

A Research does indicate that taller grass usually indicates a deeper root system. Closely mown grasses tend to be thicker and dense, but their root system tends to be shallow making plants more susceptible to hot, dry weather.

Q *When should I put my mower in storage?*

A Lawns should be mown when the grass needs to be cut, no matter what time of the year.

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Another Word About Fertilizing

Top Ten Reasons Why It's Important

- 1) Fertilizing supplies nutrients needed during the high demands of the growing season.
- 2) A vigorous and healthy lawn resists weeds.
- 3) Proper nutrition protects your grass from pest infestations and helps it recover should one occur.
- 4) A thriving lawn is more resilient to traffic.
- 5) Proper pH is maintained in your soil.
- 6) Nitrogen is supplied for leaf and shoot growth and a deep green color.
- 7) Phosphorous is provided for establishing seedlings and root growth.
- 8) Potassium is given for greater tolerance to hot and cold weather and against wear.
- 9) An application of fertilizer in the fall prepares your lawn for winter and speeds its recovery in the spring.
- 10) Fertilizing establishes new lawns and maintains established lawns.

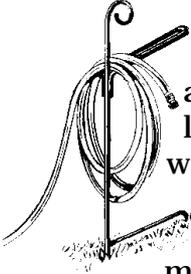
Customizing The Application

Not all applications of fertilizer should be the same. The temperature and amount of rainfall help to determine when is the best time to apply fertilizer. There is also a greater need to fertilize when the grass is at the peak of its growing season. The faster the grass grows, the more nutrients it needs. A soil test will show exactly how much nitrogen, phosphorous and potassium should be applied.



Whens And Whys Of Watering

Natural rainfall is not enough for two reasons: it doesn't ensure an adequate amount and it isn't distributed evenly enough. This is particularly true when the lawn has just been fertilized.



As can be seen below, there are a lot of factors that go into determining the amount of water that your lawn needs. A lawn is better off with a good watering that will soak in to the proper depth for your specific soil type. Consult with your lawn care professional as you determine how much and how often to water your lawn.

Watering too frequently can cause more annual weeds, shallow grass roots and more chance of disease due to constant moisture. Too much watering will replace oxygen in the soil; the grass will die.

Factors to Consider

Shade - More water is required under trees since they take a lot of moisture out of the soil.

Soil Type & Condition - One inch of water will penetrate 12 inches into sandy soil. The same amount will soak in six to 10 inches in loam and only four to five inches in clay. You will need to adjust your water accordingly. Compacted soil will be more likely to allow water to run off and requires core aeration to remedy.

Slopes - A slope allows water to run off rather than soak in. It also means that there is more evaporation due to exposure to the sun if facing south or west.

Weather - How often and how much has it been raining? Again, a rain gauge is helpful.

Bottom Line

When your lawn is getting enough water? Check for wilting around noon. If you can walk across the lawn and leave footprints in the grass, it needs water.



What About . . .

Q What is the best time for me to water my lawn?

A The best times to water your lawn are in the early morning and late afternoon when there is generally less wind and heat. The least desirable times are in the heat of the afternoon, when the water evaporates too quickly, and very late in the evening, which can cause the lawn to stay wet all night, encouraging disease development.

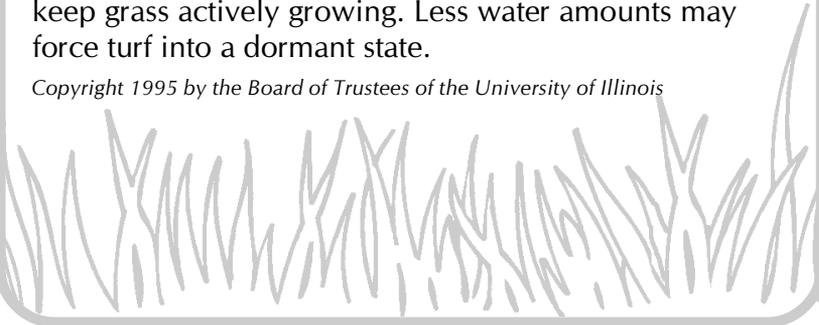
Q My yard is drought stressed. What is the least amount of water that my turf can stand?

A During extended droughts you may desire to water as little as possible because of watering restrictions. In order to keep just the crowns alive, turf requires a half inch every week. In order to keep just the root system alive, amounts of one-third to one-half inch every three weeks is required. Water normally if at all possible.

Q Under normal conditions how much should I water my grass?

A It depends on the temperature. Cool season grasses require the proper amount of water each week to remain actively growing when temperatures are between 45° and 85°. If temperatures are between 85° and 90°, turf may require an extra half inch. Temperatures 90° and higher signal a need for an extra inch of moisture to keep grass actively growing. Less water amounts may force turf into a dormant state.

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Core Aeration

Why Is It Necessary

It is estimated that over 66% of residential lawns are growing on compacted soils. Many times, there is no evidence of insect or disease activity, yet the lawn seems to be off-color, thinning, and shows signs of stress in high temperatures. If this is the case, then chances are that the lawn hasn't been aerated in the past few years . . . if ever.

Compaction is a physical process where the soil gets more and more compressed so that there is a reduction of the amount of oxygen contained in the soil

Core aeration is the best kept secret to a great lawn

and movement of nutrients to the roots of the grass plant. The

roots need oxygen, and, as they grow they give off carbon dioxide. Eventually the lawn thins until, ultimately, the soil can no longer support any turf growth.

What It Is

Aeration is the removal of small cores of soil to allow air, moisture and fertilizer down to the root zone. A core aerifier will pull one to two inch plugs of soil from the ground. These plugs are deposited on the soil's surface where they will break down. Soil surrounding the plugged holes and the soil deposited on top will collapse and fill in the holes.

It doesn't work to use aerifying equipment that simply punches a hole in the soil. While a hole may be created, the "punched" soil merely compacts the soil surrounding the hole.



How It Works

The controlled removal of the small soil cores has many benefits. It allows fertilizer, water and air to quickly reach the root zone of your grass. Both drought and heavy rain stress your grass. During drought conditions aeration helps water reach thirsty roots. When rain is heavy, it allows air to penetrate and help dry up excess moisture. Core aeration creates healthy roots and thicker, more beautiful lawns.

How Its Done

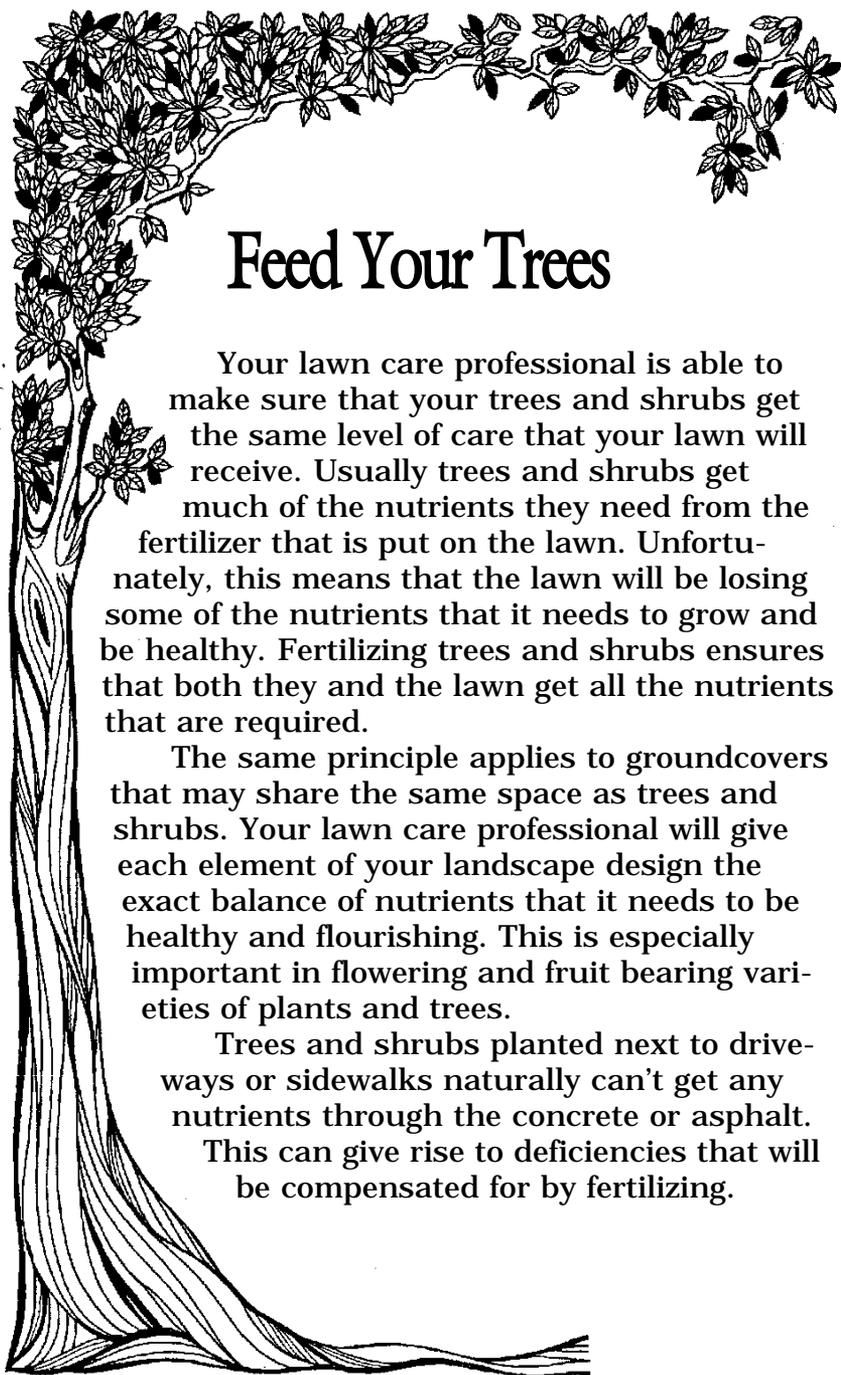
Specially designed aeration equipment consists of a series of hollow coring tines mounted on wheels. When these hollow tines are rolled over your lawn, they puncture the soil and systematically remove small soil “plugs”. If soil is badly compacted then a second pass, perpendicular to the first, will be required.

What About . . .

Q When is Core Aeration necessary?

A Aeration is the process of increasing the soil’s air content. An ideal soil will contain 50% air spaces, of which 25% percent will be air. Turf soil should be aerated at least once a year on heavy compacted or clay soils. This is especially true of high traffic areas or if there is a persistent problem with moss.

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Feed Your Trees

Your lawn care professional is able to make sure that your trees and shrubs get the same level of care that your lawn will receive. Usually trees and shrubs get much of the nutrients they need from the fertilizer that is put on the lawn. Unfortunately, this means that the lawn will be losing some of the nutrients that it needs to grow and be healthy. Fertilizing trees and shrubs ensures that both they and the lawn get all the nutrients that are required.

The same principle applies to groundcovers that may share the same space as trees and shrubs. Your lawn care professional will give each element of your landscape design the exact balance of nutrients that it needs to be healthy and flourishing. This is especially important in flowering and fruit bearing varieties of plants and trees.

Trees and shrubs planted next to driveways or sidewalks naturally can't get any nutrients through the concrete or asphalt. This can give rise to deficiencies that will be compensated for by fertilizing.



How's Their Appetite?

There are two ways to tell if your tree needs fertilizer. The easy way is to simply look at it. A light green or yellow-green color indicates that it is short on nutrients. Another indication is if it has a lot of dead wood, sparse foliage, or if the new growth is shorter than it should be. Dark green leaves and excessive growth of new shoots means you can delay fertilizing for another year.

When necessary, Deep Root Feeding allows the fertilizer to be delivered right into the tree's root system. A slow-release fertilizer is used since it will not burn the roots. It can be distributed evenly around the tree in holes drilled about one foot deep and two feet apart. The holes are drilled to a point that is six to eight feet beyond the width of the canopy.

Deciduous trees and shrubs have a special need for nitrogen. They should be fertilized in either the early spring or late fall. This will keep the height of their growing season in mid-summer and will protect the plants from sustaining damage to new growth as the winter approaches.

Plant beds that have organic mulches also require an extra measure of nitrogen fertilizer. The decomposing materials in the mulch compete with the plants for their nitrogen supply.



Dealing With Shade

Common problems for shadetree turf:

-  Not enough light which slows growth
-  Shade related diseases
-  Competition with trees for water and nutrients
-  Compacted soil

Round peg in a round hole

A shady location determines what kinds of grass will survive. So it is important to choose your grasses carefully. Usually the ideal is a mixture of species and

varieties.

This means that a single disease or climate condition will not affect an entire

*Whoever said,
"Made in the shade"
wasn't talking about turf.*

area of grass. An important factor involved in the choice is the amount of moisture required by a specific cultivar.

Other factors

Oddly enough, grass in the shade requires less fertilizer, about half of what is required for grass in full sunlight. This is due to the fact that it is growing less intensely than grass in full sunlight.

Trees get fertilized separately from the lawn. They receive the fertilizer below the roots of the turf, deep in the soil.

Traffic on shady areas should be avoided. Put in a path if you have a sitting area under a tree. A higher mower setting will help to reduce damage.



Growth regulators often help shaded grass by slowing the growth and allowing the grass to have more nutrients going to root growth.

What can you do?

-  Prune trees to allow more sun and air movement
-  Remove fallen leaves
-  Core aerate
-  Provide proper irrigation and fertilizer

Sometimes you just have to give up on grass because there is too little light, too many roots or too much traffic. In that case it is possible to replace the grass with a groundcover, mulch or walkway material.

What About . . .

Q What plants would you suggest I use as groundcover in shady areas?

A Aegopodium leodograria (Bishopsweed) Ajuga reptans (Bugleweed) Arabis caucasia (Rock cress) Asarum (wild ginger, evergreen wild ginger) Bergenia (Saxifrage) Convallaria (Lily-of-the-Valley) Epimedium Euonymus fortunei (Wintercreeper Euonymus) Galax Galium Hedera (English Ivy) Hypericum (St. John's Wort) Juniperus (Junipers) Liriope Pachysandra (Japanese Spurge) Sedum Vinca (Periwinkle, myrtle) Waldesteinia (Barren Strawberry)

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Pruning 101

SELECTIVE PRUNING vs TOPPING TREES

Select limbs to be removed. Thinning-out pruning helps trees maintain a natural shape.

Even proper pruning can stress trees. Tree-wound dressing is not recommended or needed on any pruning cut or wound.

Avoid "topping" your trees. It usually causes growth of "suckers" and water sprouts

Proper

Improper

Graphic illustration: Tom Land, College of Agricultural Sciences, © Penn State

TREE PRUNINGS: KNOW YOUR CUTS

No more than 30 percent of a mature tree's foliage should be removed in any one year.

Thinning Cut – Used to shorten a large limb back to a side branch large enough to resume growth of the pruned limb. Thinning cuts are the correct choice to maintain trees.

Stub Cut – An indiscriminate cut where no bud or side limb exists. Highly destructive to the tree and should be used only when removing the tree.

Heading Cut – The result of limbing a limb back to a bud or a very small branch that can't support the growth of the pruned limb. Should be used only when removing the tree.

These pruning cuts are commonly used by certified arborists.

Graphic illustration: Tom Land, College of Agricultural Sciences, © Penn State

CORRECT PRUNING IS A SHEAR DELIGHT

A haphazardly pruned plant can be as unsightly as a bad haircut. Review these simple pruning tips before picking up your shears:

<p>NEVER... Cut all shoots or stems to the same height.</p>	<p>NEVER... Shear hedges so they're narrow at the bottom.</p>	<p>NEVER... Leave short stubs</p>	<p>NEVER... Trim a shoot or stem without leaving a bud on the end.</p>
<p>NEVER... Prune any spring flowering plants before they bloom.</p>			

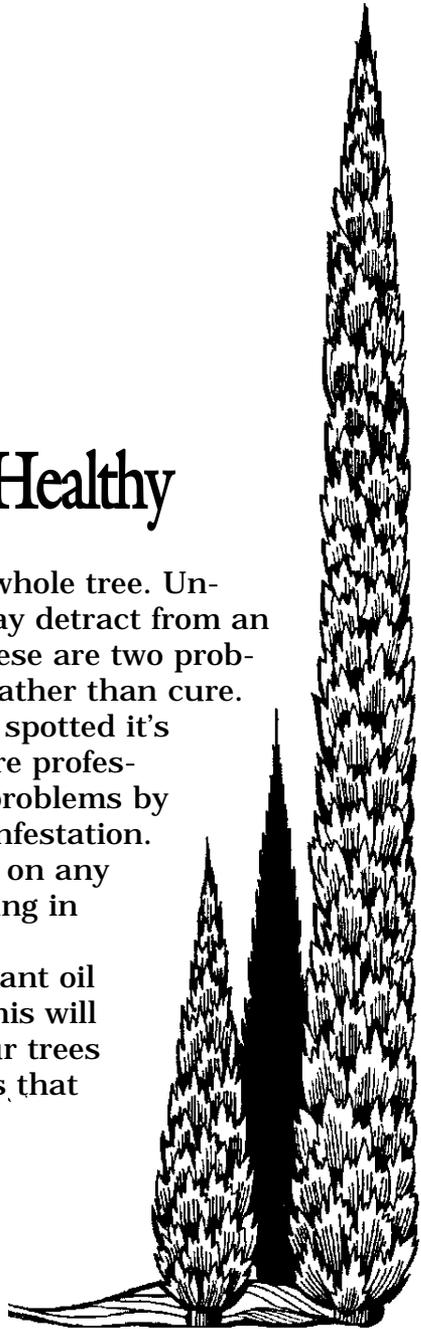
Graphic illustration: Tom Land, College of Agricultural Sciences, © Penn State



Keep Your Trees Healthy

Insects can defoliate a whole tree. Unsightly fungus or mildew may detract from an otherwise beautiful tree. These are two problems that need prevention rather than cure. Once the problem has been spotted it's often too late. Your lawn care professional can eliminate these problems by spraying your trees before infestation. They will also be up-to-date on any infestations that are occurring in your area.

In colder climates dormant oil can be applied in the fall. This will help to avoid damage to your trees by helping to control insects that try to over-winter in them.





Managing Insect Pests

There are various ways to deal with pests. Integrated Pest Management (IPM) is not totally new. Using more than one method to control pests has always been around. However, IPM utilizes the latest scientific discoveries and looks at all the different elements involved in getting rid of pests. IPM is a holistic approach that requires a thorough knowledge of plants and grasses, various kinds of pests, as well as all the different types of tactics that are effective in pest control. No two IPM programs are identical and the IPM for any given lawn will constantly change depending on the season and condition of the lawn. The optimal IPM will take into account how effective, safe and economical any given method is before using it in the program.

Armed with knowledge of the life cycle and biology of turfgrass insect pests, your lawncare professional is able to foresee problems before they reach damaging stages. Close examination of grass blades and thatch as well as the telltale signs of animals or birds feeding on the lawn will be signs of a need for pest control. Not all insects are bad for your lawn. Some will actually feed on harmful pests; some help in recycling organic material. Each pest has an “action threshold” where the number of pests per square foot is such that pesticide use is needed. This threshold differs even between species of a certain type of insect. This is why proper identification of insects is crucial.

IPM has three strategies: 1) cultural; 2) biological; and, 3) chemical. A balance of these methods ensures that prevention is as high a priority as correction.

Cultural Control

Cultural Control is the combination of fertilizer use, watering, mowing practices, thatch management and selection of insect resistant turf grasses. All of these factors create the culture in which your lawn



exists. These factors must be taken together to develop the right environment for your lawn. For instance, a problem with thatch will slow the effectiveness of pesticides by absorbing them before they reach the pest.

Biological Control

1) Natural enemies – these need to be allowed to exist in the turf to suppress outbreaks of undesirable pests. These include big eye bugs and a fungal pathogen, both of which impact chinch bug populations.

2) Manipulation of cultural controls – for instance, decreasing water gets white grubs (which require moist soil) to move elsewhere. Another example is increasing watering in order to decrease the survival rate of chinch bugs which require hot, dry conditions.

Chemical Control

Pesticides actually kill pests, but these are not the only chemicals that will control pests. Others include attractants, growth regulators and repellents. The number of products is increasing all the time. Pesticides are not necessarily the first line of defense. Pests can develop a resistance to a pesticide if it is used repeatedly. This is especially true of pesticides that have long residuals.

*Don't declare atomic war
in order to control pests.*

It is best to rotate the types of chemicals as well as utilizing other methods in your IPM program. *Preventive measures* involve the use of pesticides before the problem occurs, which means that the pesticide may or may not be necessary. In the preventive process beneficial predators and parasites may be harmed. *Curative measures* involve the selective use of pesticides which will contain pest populations at a level where there will be a minimal amount of damage.

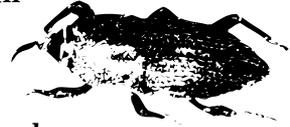


What Is It Doc?

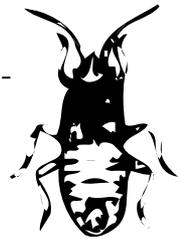
When it comes to turf, there are nearly 100 types of insects that are considered pests. Identification involves not only different species but also knowledge of the various stages in a bug's life cycle. They often change shape, color and texture as they grow. The following are some of the more common turf pests.

Ants – There are a great number of types of ants. The worst are the ones that get into your house. However, red fire ants have taken the pleasure out of the outdoors for many people. In addition to the potential of ant bites, the mound of an ant colony blemishes a well established lawn.

Billbugs – A type of beetle notable for its snout which it uses to burrow. Various species attack specific grass types. Colors range from black to dull yellow. The damage is similar to that of white grubs but you will not be able to roll the turf up. The appearance of adults on sidewalks and driveways signal a potential outbreak as they come out of hibernation.



Chinch Bugs – If you see patches of yellow or reddish grass in areas that get a lot of sun you may have chinch bugs. Chinch bugs bite into a grass blade and suck out the juices. Further damage is caused by the toxic saliva that is injected into the plant. This is when the wilting and yellowing occurs. Females lay 200 to 400 eggs so it is important that the problem be dealt with at an early stage. The bugs can hibernate through the winter and emerge in the spring. Warm, dry conditions favor the chinch bugs. Spiders and big-eyed bugs are natural enemies of chinch bugs. Properly cared for turf will withstand



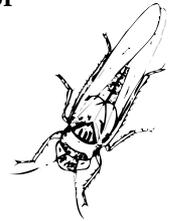


small infestations. Damage is most easily seen in late June and August.

Fleas and Ticks – You will never control ticks and fleas just by bathing your pet. In fact your pet acts like a flea and tick vacuum cleaner when crossing your lawn. Pesticide will effectively end the cycle of fleas. Ticks can also be minimized by keeping fence rows and brush cleaned up.

Greenbugs – Look closely and you will see these green aphids feeding on the blades of grass in clusters. These small aphids are green and feed in groups on grass blades. Damage can be detected as patches of yellow to brown. These patches can be one or more feet in diameter and often occur at the base of trees. They move from the center out in the patches so check at the outside edges of the patch for evidence of an infestation. Their activity will lessen in the rainy season.

Leafhoppers – Turf may appear to be bleached or whitened. This is caused by the leafhoppers sucking the juices out of the blades. When they are done it may look like the result of drought or disease. Leafhoppers travel in swarms and damage is often only evident after they have moved on.



Mole Crickets – Mole crickets are easily identified by their lobster-like front legs which are remarkably powerful. Damage is caused as they burrow near the surface and lift the soil and feed on the roots. This dual action dries the grass out, eventually causing it to die.



Mole crickets are more of a southeastern problem, but do extend as far north as Illinois.

Nematodes – Don't go looking for these... they are microscopic. Damage comes when certain, harmful types of nematodes pierce the roots of turf much like a mosquito, feeding off the contents. Fungi and bacteria are then able to enter these "wounds". Symptoms can be the



same as those caused by many other factors. Only a laboratory analysis done on a properly taken sample will accurately tell if nematodes are the culprit.

Sod Webworms, Army Worms, Cutworms – If you have noticed thin spots or random brown patterns which later become patches in your turf, it may be one of these types of caterpillars. These insects cause damage in the larval stage by digging tunnels lined with silk then chewing off grass to feed on, thinning the turf



cutworm



armyworm

in the process. The larvae grow to about an inch long. The adult moths are most visible at dusk, they lay their eggs in flight as they swoop

across the lawn. The presence of birds, skunks or moles looking for food on your lawn is another indication of infestation. The healthier your lawn is the better protected it will be and the faster it will recover should it get infected.



sod webworm

White Grubs – Grubs are the larval stage of literally hundreds of types of beetles. They are gray-white and are usually curled up and range in length from one to one and a half inches. These pests feed on the roots of the grass, severing them so that the blades will be easily pulled up. The turf will be loose and you will be able to roll it up. Affected areas may be several feet wide. Birds, moles and skunks increase the damage as they hunt for this easy meal – many times causing more damage than the grubs themselves. A lawn with recurring grub infestations may need annual application of pesticide before the egg hatch period begins.





Some Pest Control Trivia

- ❑ The Irish Famine of 1846 started with a Potato Blight resulting in a stirring of the melting pot in the United States.
- ❑ The oldest pesticide . . . sulfur, which was used in 1000 BC.
- ❑ In 1660, France passed a law to eradicate barberry plants in an attempt to control wheat rust.

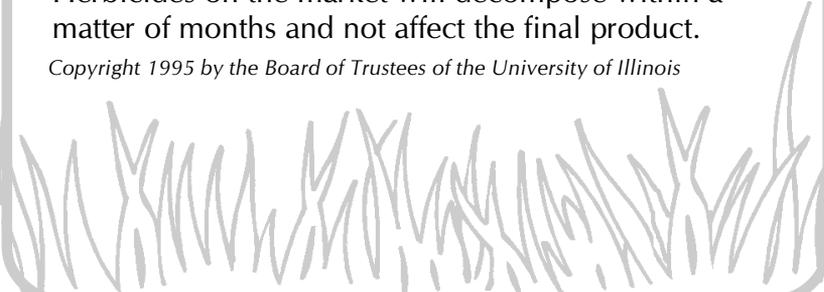
What About . . .

Q *What about grass clippings after the lawn has been sprayed?*

A If you use grass clippings as a mulch, avoid using clippings from the first three cuttings following the application of a pre-emergent or broadleaf weed killer. Otherwise, damage to desirable vegetable, fruit or flower plants may occur. If the lawn is cut to no more than one-third of its proper height the clippings will enhance the soil and keep the herbicides and pesticides on the lawn where they can do their work.

An alternative is to compost grass clippings which have had weed killers or herbicides applied to them. Herbicides on the market will decompose within a matter of months and not affect the final product.

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Managing Diseases

Environmental conditions, turf condition and disease organisms called pathogenic fungi combine to bring about diseased turf. These fungi can attack leaves, stems or roots.

Symptoms can be confused with the effects of over fertilizing, insects, or too much or too little water. Early detection of a specific disease is dependent on a diagnosis that is informed by a thorough knowledge of the symptoms and signs of a disease as well as the environmental conditions which give rise to it.

Environmental Conditions

- 1) Improve drainage of wet areas
- 2) Core aerify to improve drainage and the growth of roots
- 3) Prune trees and shrubs to allow less than 50% shade

It is absolutely necessary to both mow and water but unfortunately both of these are contributors to disease. Cutting grass blades makes “wounds” through which pathogens can enter. Low mowing height can

*The ounce of prevention
is proper lawn care.*

increase the chance for most diseases. Be sure to mow at the upper

height for your type of turfgrass. It can be one of the most effective measures you can take in preventing disease. Water is necessary for spores to form and fungus to develop. Not watering at night will lessen the intensity of diseases. Care should be taken to water only when and as much as needed.

Proper fertilization allows turf to better resist and recover from diseases. However, improper amounts of nitrogen can encourage diseases. Too much: brown



patch, leaf spot, pythium blight. Too little: Red thread, rust and dollar spot.

Thatch retains water so it is the perfect place for pathogens to grow. When thick, it also is filled with roots and increases the chances of heat stress, bringing higher vulnerability for disease. Removal of thatch buildup is recommended.

Compacted soil doesn't allow water or air to penetrate the soil. The resistance of the grass is lowered and makes it susceptible to disease. Core aeration is recommended.

Chemical Control

Preventative application of fungicides is only recommended where the environmental conditions are such that disease development seems imminent. It is better to apply fungicides when disease has become evident and before it spreads.

Three types of fungicides are available. Contact fungicides remain on the surface of plants and kill spores that come into contact with it. Systemic fungicides move from leaves to roots and have a longer residual period than contact types. Penetrants enter the plants like systemic types and act to prevent the growth of pathogens.

Diseases are able to form resistance to fungicides after repeated use. This can be minimized though the alternating use of various types of fungicides.



Common Diseases And Remedies

We could list over 40 different diseases. But we will stick to the most common. As you read the following symptoms and remedies, notice the importance of water, fertilizer, proper mowing and other environmental conditions that are needed to fight off turf diseases.

Fairy Ring –

Symptoms: A large dry spot circled by a green ring of grass, often with mushrooms. Caused by a fungi which competes with the grass for organic material.

Remedy: Dethatch and aerate, fertilize, check pH, keep watered, reseed if necessary.

Powdery Mildew –

Symptoms: Grass looks as though it is sprinkled with flour. Kentucky bluegrass and shade areas are the most susceptible. Grass will wither and die.

Remedy: Decrease shade by pruning, water only in morning, apply fungicide.

Leaf Spot –

Symptoms: Patches of brown on grass blades with tan centers. Most common on Kentucky bluegrass.

Remedy: Apply fungicide, water only in morning, reduce shade by pruning, aerate and check drainage.

Rust –

Symptoms: Reddish brown or orange-yellow color to grass. Grass withers and may thin.

Remedy: Give proper fertilizing and water, check recommended mowing height. If recurring, apply fungicide. Untreated clippings are “contagious”; be sure to bag and dispose of them.



Dollar Spot –

Symptoms: Circular, silver dollar-sized patches which can spread to cover large areas.

Remedy: Apply fungicide, water sufficiently in morning only, fertilize, dethatch.

Snow Mold –

Symptoms: Brown or yellow spots ranging from two inches to two feet in diameter appear in turf after snow melts, especially along fences and in shaded areas. Grass is matted within circles.

Remedy: To treat, apply fungicide, rake up matted grass, reseed as necessary. To prevent, apply fungicide in fall or early winter, don't use too much lime, place windbreaks or similar barriers to prevent drifts on turf.

Pythium blight –

Symptoms: Irregularly shaped spots of wilted brown grass. Cobweb-like mass of fungus on moist nights or mornings. Patches cluster to form streaks a foot or more wide.

Remedy: Apply fungicide, do not over fertilize or over water, do not mow wet.

Fusarium Blight (Summer Patch) –

Symptoms: Light green patches which enlarge, turn reddish brown, then die.

Remedy: To treat, apply fungicide. To prevent, apply fungicide or core aerate in late spring. Do not over fertilize, maintain adequate watering.



What About . . .

Q *I was digging in my yard and found greenish yellow algae in the soil. Should I have it sprayed?*

A Algae are microscopic plants of various colors — blue, green yellow, blue green, black, brown, red and orange. Most grow in the upper three inches of the soil and add a significant amount of organic matter to the soil. Algae are NOT the same as moss. As a group, algae seldom cause any problems with soil growing conditions or plants.

Q *There is moss growing in my yard. Should I have it sprayed?*

A There are no chemicals currently available to homeowners that will limit or prevent moss growth. However, usually moss is a symptom of a problem in the turfgrass and garden that can be taken care of. Some of these problems and the way to alleviate them are:

- 1) Poor drainage — Aerate the soil yearly if necessary.
- 2) Improper soil pH — Check the level and modify accordingly. The soil pH level should be between 6.0 and 6.5 for most turfgrass species.
- 3) Shade — Moss cannot grow in sunny conditions. Trimming lower branches or professionally thinning the tree's canopy may limit moss development.
- 4) Too much water — Avoid over irrigation. Unfortunately, you can't prevent rain.

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Managing Weeds

The best defense is a good offense. A healthy lawn will win out in the competition against weeds for light, moisture, and soil nutrients.

- 1) Set the mower height at the highest recommended for your type of grass.
- 2) Water the proper amount — one inch per week.
- 3) Control pests and diseases before they get serious.
- 4) Use a shade tolerant turf or groundcover in shady areas.
- 5) Fertilize correctly - not too much or too little.

Two factors are important in determining what method to use in managing weeds. The type of weed is the first. They are classified as either broadleaf, grass or sedge. The life cycle of the weed is the second factor. Annuals have a one-year life cycle, biennials have a two-year life

cycle, perennials have more than a two-year life cycle. Annual weeds

The problem with weeds is they grow like weeds.

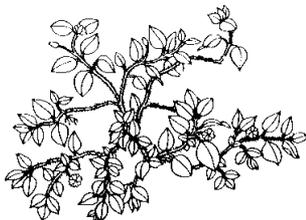
usually get a pre-emergent treatment where the herbicide acts on the sprouting seed and keeps it from forming roots thus killing the weed before it emerges. Perennial broadleaf weeds are better treated with a post-emergent herbicide. Once weed grasses have emerged they are much harder to control as the herbicide will also damage turfgrass.

What is a weed? It depends on you. Some people want to have their whole lawn in only one variety of grass. Others are happy if it is all thick and green even if it is mixed. The region you live in determines what is a weed, too. Zoysia and bahia are great in the south but are scourges in northern lawns. A good handbook of plants is helpful since there are literally hundreds of types and varieties of weeds.

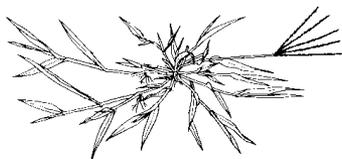


Black Medic (*Medicago lupulina*) – Spreads into dense mats that can reach one to two feet across. It looks like clover but has clusters of bright yellow

Chickweed (*Stellaria*) – A winter annual forming dense patches as it spreads abundantly in early spring. Light green leaves and small white flowers distinguish it.



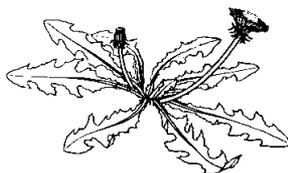
Common Chickweed



Smooth Crabgrass

Crabgrass (*Digitaria*) – Forms thick clumps of light green leaves. Highly competitive with turf grasses. Persistent weed that germinates with each irrigation.

Dandelion (*Taraxacum officinale*) – Deeply lobed leaves form a rosette. Bright yellow flower turns into a fluffy white seed head. Can grow from a piece of root or stem.

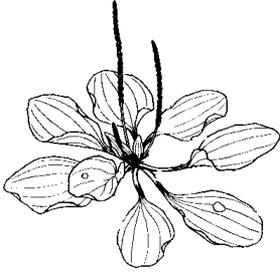


Knotweed (*Polygonum aviculare*) – Small, blue-green leaves with white flowers. Spreads to form large, dense mats. Presence is indication of compacted soil.

Nutsedge (*Cyperus*) – Looks like turfgrass but has triangular leaves. Spreads by seed and deep-rooted tubers. Purple nutsedge has purple flowers; yellow nutsedge has yellow ones.



Purple Nutsedge



Broadleaf Plantain

Plantain (*Plantago*) – Multiple varieties. Leaves form a rosette. Flowers form on a leafless stem. Has long taproot.

Purslane (*Portulaca oleracea*) – Forms thick mats of one foot or more. Thick, fleshy leaves with small yellow flowers. Often present where lawn is thin or bare. Seeds can lay dormant for years.



Red Sorrel (*Rumex acetosella*) – Arrow-shaped leaves with either reddish brown or yellowish flowers. Can grow to 16 inches high. Its presence may indicate low pH.

Wild Garlic (*Allium Vineale*) & Wild Onion (*A. canadense*) – Both species look similar with a smooth, waxy stem from one to three feet tall. They often occur together. Wild garlic has hollow stem; wild onion has solid stem. Can reproduce by bulb, bulblets or flowers.





Some Benefits Of Mulch

- ☑ Mulch makes plant beds look better.
- ☑ Mulch prevents weeds from germinating and can kill off many small weeds.
- ☑ Mulch that is organic provides warmth as it decays, helping protect plants in winter.
- ☑ Mulch such as pine bark keeps the soil cooler than it would be in direct sunlight.
- ☑ Mulch lessens the evaporation of moisture.
- ☑ Mulch helps protect against soil erosion and keeps rain from splashing mud against the house.
- ☑ Mulch keeps fungus spores and nematodes from splashing up against plants and causing disease to spread.

Mulching leaves is far easier than bagging them. It is also better for the environment than burning them. Oak leaves supply good nutrients to the soil and are especially beneficial for plants such as azaleas which require acidic soil.

Pine bark is attractive as mulch and has the added feature of lasting for a long time before needing to be replenished. Its bulkiness keeps it from looking as compacted as some other mulches.

Where sprouting weeds or trees are a particular problem, a special cloth is available at most nurseries that will block weeds. This cloth is black to prevent light from getting through but perforated to allow water to get to the roots. Most claim to last up to five years.

Remember to adjust the amount of water you give to a mulched plant bed. Though the moisture is retained better, it also needs to be able to get past the layer of mulch. If a weed block is used, some of the water will run off before permeating the cloth.



COMPOSTING YOUR YARD WASTE

Adding dry leaves or bulky plants...

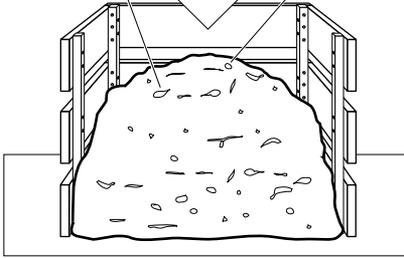
Helps ensure that the compost pile gets proper aeration.

Green leafy waste adds nitrogen. Woody materials add carbon

Add manure, lime and/or fertilizer as needed.

Six Good Reasons to Compost...

1. Many landfills don't accept leaves and yard waste.
2. Burning is not permitted in many communities.
3. Composting may be the easiest way homeowners can dispose of yard waste.
4. Low cost, low impact.
5. Composting can be done year-round.
6. It is a good reuse of organic matter from lawns, landscapes and gardens.



Graphics/Illustration: Tom Laird, College of Agricultural Sciences. © Penn State

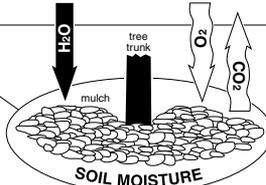
MULCHING PLANTS AND SHRUBS



Coarse mulch applied at the proper depth allows:

- ◆ Oxygen to enter the soil
- ◆ Carbon dioxide to exit soil
- ◆ Water to reach soil and roots
- ◆ Soil to retain moisture

Typically apply mulch from 2 to 4 inches deep. To help reduce rot, avoid piling materials against trunks or stems.



Choose a mulch...

1. With consistent color and texture.
2. That will resist compaction.
3. That will resist wind and water erosion.
4. With a slow rate of decomposition.
5. That reduces weed growth.

Graphics/Illustration: Tom Laird, College of Agricultural Sciences. © Penn State 2000



What About . . .

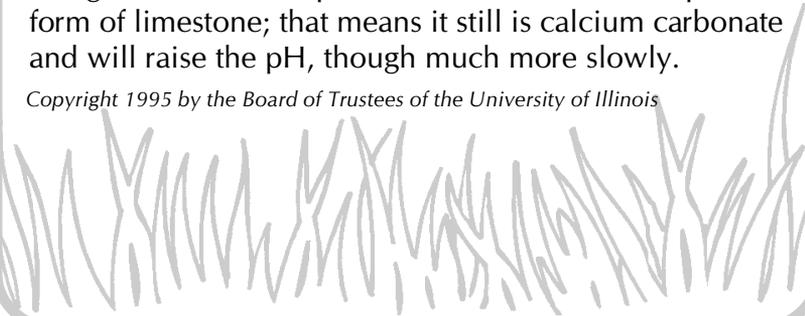
Q Are rocks OK to use as mulch?

A Rocks can be used as mulch in the landscape. They keep down weeds and do not require the remulching due to decomposing that you have with other types of mulches. Use river rock or pea gravel to maintain a proper size and color for your landscape. Make sure the rock is clean and does not contain pieces of limestone.

Q Does it matter what type of rocks I use for mulch?

A Avoid using ground limestone or marble. The cost of limestone (calcium carbonate) may be ideal, but it will alter the soil pH. This, in turn, will result in yellowing of evergreens and other plants. Marble is a metamorphic form of limestone; that means it still is calcium carbonate and will raise the pH, though much more slowly.

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Come Wintertime

Graphics/Illustration: Tom Laird, College of Agricultural Sciences. © Penn State 2000

WINTER'S COMING

A Fall Yard and Garden Checklist:

- Mow your grass until it stops growing.** Tall grass gets matted under the snow, encouraging growth of snow mold. 
- Clear your gardens of debris and garden litter.** Insect eggs, fungi and plant diseases can overwinter in dead plants and leaves.
- Turn the soil in food and flower gardens.** It helps debris decompose quickly so pests and disease cannot survive. 
- Remove weeds in late autumn and early winter.** A single weed pulled now can prevent hundreds of sprouting weeds in spring.
- Prepare trees and shrubs for winter conditions.** Remove dead twigs and branches. Mulch around trees. Fence and wrap as needed. 

Is There A Better Deicer?

It is not easy removing compacted snow and ice when winter arrives. Deicers help as they decrease the freezing point of water and loosen the snow and ice. Their use in proximity to driveways and sidewalks can impact your lawn and plant beds. Here are four of the chemicals used as deicers and what they do to plants.

Sodium chloride doesn't cost much, but it can burn plants and corrode metal and concrete.

Potassium chloride is a natural material that also is used as a fertilizer. Its high salt content can possibly burn foliage and slow root growth.



Urea is used mostly as a fertilizer. It is less likely to burn than potassium chloride and serves as a source of nitrogen. The result may be that when spring comes, you will find that the turf alongside sidewalks and driveways will grow excessively and be greener than the rest of the lawn.

Calcium magnesium acetate (CMA) is a new agent that is salt-free. Studies show that it doesn't do much harm to plants or animals.

Deicing agents may cause injury to plants. This rises from the fact that the salts and fertilization from deicers slow the intake of nutrients by the plants. In effect the plants become dehydrated as they lose the ability to absorb enough water even when it's available.

Symptoms of salt injury include desiccation, stunting and dieback. Leaf tips and margins appear burned. Roots may be injured.

Covering plants with burlap will help to protect them. Several years of growing salt content in the soil may decrease the health of the plant and result in its dying. If there are plants or turf that are exposed to deicing agents, it is helpful to apply large amounts of water to the soil after the last freeze.

—from the University of Nebraska-Lincoln

PREPARE TREES & SHRUBS FOR WINTER

<p>Remove dead branches and twigs. Wind, snow, or ice may break them off, resulting in torn bark or severe wounds.</p>	<p>Wrap or fence your trees and shrubs. Prevent rodents, rabbits and deer from damaging trees.</p>	<p>Proper mulching retains moisture. Mulch at least 6 inches away from tree trunk.</p>
<p>Support weak limbs with stakes or posts. Save major pruning for spring. Wounds can draw moisture from trees in the winter.</p>		

Graphics/Illustration: Tom Laird, College of Agricultural Sciences. © Penn State 2000



Common Questions & Answers

The following is a compilation of common questions that people have about various aspects of lawn care. Take time reading them and raise your level of expertise or keep them handy for troubleshooting problems as they come up.

1 Miscellaneous¹ (page 62)

- 1.1 Reading a soil test**
- 1.2 Lawn Paint**
- 1.3 Grass with flowers**
- 1.4 Dealing with clay**
- 1.5 Types of grass?**
- 1.6 Pets and grass types**
- 1.7 Lawn care and pets**
- 1.8 Facelift for a new lawn**
- 1.9 Aerating and seeding**
- 1.10 Reseeding**
- 1.11 Slowing lawn growth**
- 1.12 Organic material for lawns**
- 1.13 Greener, please**
- 1.14 New lawn in woods**
- 1.15 Weeds and lawn clippings**
- 1.16 Topsoil preparation**
- 1.17 Rust fungus on new lawn**
- 1.18 Sodding a construction site**

2 Pests¹ (page 67)

- 2.1 Holes drilled**
- 2.2 Moths**
- 2.3 Can't count the moths**
- 2.4 When do the moths leave?**
- 2.5 Nematode control of grubs**
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- 2.7 Grubs**
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3 Weeds¹ (page 70)

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- 3.2 Smooth crabgrass**
- 3.3 Mushrooms**
- 3.4 Mess of a lawn**
- 3.5 Trees Sprouting**
- 3.6 Sedgenut or nutsedge**
- 3.7 Like crabgrass but not**
- 3.8 Will it recover?**
- 3.9 Bentgrass infestation**
- 3.10 What kind of weed**
- 3.11 More mushrooms**
- 3.12 Unidentified**
- 3.13 Foxtail**
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- 3.15 Extensive moss**
- 3.16 Help with blight**
- 3.17 Organics for dandelions**
- 3.18 Seedy straw**
- 3.19 Timing for preemergents**
- 3.20 Easier way to sod?**
- 3.21 Clover**
- 3.22 Weeds on a sodded lawn**
- 3.23 Thistles**
- 3.24 Buttercups**
- 3.25 Sassafras sprouts galore**

4 About fertilizer² (page 78)

- 4.1 Trees and shrubs too?**
- 4.2 Water when?**
- 4.3 Fertilizer not enough?**
- 4.4 Is mulch enough?**
- 4.5 How hazardous?**
- 4.6 Trees at construction site**
- 4.7 Fertilizer and environment**

¹ from Bruce Spangenberg, Extension Educator, Horticulture, University of Illinois Extension, Rockford Center

² from Virginia Cooperative Extension



I Miscellaneous Lawn Topics

1.1 Reading a soil test

My soil test says "high in PK." Does it need fertilizer?

No, you may add nitrogen, urea is often recommended instead of ammonium nitrate as it will not burn the lawn. Be very careful not to overfertilize. Using only what your soil needs protects groundwater and saves money!

1.2 Lawn Paint

I am trying to find any info on a lawn paint that is used when you can't water the lawn but want it green. We live in semi-desert conditions with watering restrictions. I am sure I heard this stuff was used in California years ago.

There are some colorants used on turf during the off-season to make it look greener, such as for major sporting events. Ask your lawn care professional for information on any materials available.

1.3 Grass with flowers

I have a large amount of grass in my lawn that has been flowering for more than a month. Does bluegrass flower like this, or is it an annual bluegrass? The areas seeded last year with a mix of Kentucky blue and fescue do not have this type of flowering grass in it. There's a lot of this flowering-grass growing in lawns around town.

Kentucky bluegrass can flower at certain times of the year. Depending on the weather, seedheads may vary from year to year as far as persistence. Newer plantings may not flower as much as established plantings. Annual bluegrass will also flower at the same time of year. Often it will flower at much lower heights than Kentucky bluegrass.

1.4 Dealing with clay

My house is situated in an area where red clay is very predominant. What do I need to do to get grass to grow. There is a small hillside that needs quick growth to stop erosion.

The best way to improve clay soil for lawns is to add organic matter. Compost, peat, rotted manure, and quality topsoil are all good examples. Mix them into the existing clay rather than layering them over the surface. Slopes present a problem. Seeding mats are available. Sod is another option.

1.5 Type of grass?

On a small area of my lawn I have a different type of grass. It is low growing, very soft, and if you spread the blades of grass it's brown underneath. It holds up to low water condi-



tions, but appears to be very sensitive to granular pesticides.

Your description sounds like creeping bentgrass, or possibly some other type of bentgrass. Either leave it, tear it out, or have it sprayed. If tearing it out or killing it, reseed the area afterwards. August would be a good time to address this.

1.6 Pets and grass types

I would like to build a dog run that contains some grass for the dogs to play. Is there a grass type that would be tolerant to pet urine?

I don't know of any grass that tolerates pet urine better than others. Grasses in the pet run will also be subject to a lot of wear and tear. One option is a Kentucky bluegrass/perennial ryegrass mixture. Another option is tall fescue. In either case, occasional overseeding will be needed to help keep a reasonably thick turf. Tall fescue would tolerate heat and drought better than Kentucky bluegrass, but will not fill in when thinned unless it's overseeded.

1.7 Lawn care and pets

What can be done about dog's urine causing brown spots?

Add water right after the dog has been on the lawn.

1.8 Facelift for a new lawn

I planted a tall fescue lawn last spring. It looked beautiful until the heat hit. Now much of it is dead. We removed several trees from the area prior to planting. The area was tilled, also the remaining stumps were ground up and hauled off. The areas of dead grass are irregular and some areas, particularly shaded ones are in good shape. How do I replant these dead areas or do I need to? How do I know what to tear up and what and replant? Is it worth seeding back into the same soil? Will I have better results with fall planting?

Tall fescue is a bunch-type grass, so it will not fill in bare or dead areas on its own. Those areas must be reseeded. Areas which are dead should have debris raked off and the soil surface roughened. You should be able to plant into the same soil. Prepare all the dead areas for reseeding but allow those areas that have survived to be left alone. Most likely the shade had offered protection from the heat for the grass.

Late August/early September is an ideal time for seeding lawns, as the cooler weather of fall favors development. If rainfall is lacking, however, be sure to irrigate. Also keep in mind it may take a full season or more for the tall fescue to really become established and durable.



1.9 Aerating and seeding

Should you aerate and then slit seed as one process?

Slit seeding could be done right after aerating. The slit seeding process may actually speed up the degradation of the cores left on the surface as it breaks some of them apart.

1.10 Reseeding

My original backyard was produced from seeding. It has been more than twelve years since the original seeding, and there are spots which appear to need re-seeding. What is the best way to do this? Would it be better to just aerate the whole backyard, then reseed? Or should the seed be put down first, then aerate?

The main concern when overseeding an existing lawn is to assure the seed comes into contact with soil. The debris must either be raked away and then the bare areas reseeded or a slit seeder used. If core aerating, aerate first and then reseed.

1.11 Slowing Lawn Growth

Lately I have been hearing about a product that used to only be available to golf courses. It slows upward growth of lawns but thickens the lawn. You might cut only four times a year with this product. Can you tell me anything about it?

There are growth regulators used on turf, such as golf courses. They may be used for growth reduction, or perhaps to prevent seedhead formation (such as with annual blue-grass). A problem with reducing growth of turf is typically that the grass's ability to recover from stresses is reduced too, this is a reason to be cautious when using growth regulators.

1.12 Organic material for lawns

What organic materials can I add to my lawn to better the soil? How often should it be done?

Adding organic matter is an excellent way to improve soils, especially those soils high in clay or sand. Suggested materials include organic topsoil, compost, rotted or composted manure, peat, and similar materials. If establishing a new lawn, incorporate these prior to planting. On existing lawns, topdress these materials, that is, spread a thin layer over the surface (about 1/4 inch layer). Doing this in conjunction with aerating will help get the material down into the soil. Spring and/or fall are good times to do this. Base the frequency on how much improvement is needed in the soil.



1.13 Greener, please

I have Marathon Sod that was put in about eight months ago. When it was put in, the grass was a beautiful dark green color; now it's a light green. Can you help me make it dark green again?

The grass can be fertilized to make it darker green. If you plan to water as needed all summer, a small amount of fertilizer containing slow-release nitrogen could be used now.

1.14 New lawn in woods

I'm completing my new log home in Northeast Ohio. The house is situated in the woods with trees surrounding the house on all sides with the forest starting at 20-25 ft from the house. The area is very shady with all the trees. My question is: How, if at all possible, do I get a nice lawn in these conditions?

It will be difficult to achieve a high quality lawn under the conditions you have described. Refer to the chapter on managing lawns in the shade for complete details.

1.15 Weeds and lawn clippings

I live in Zone 5. I have crabgrass and clover growing in my yard. I would like to know how to rid my lawn of these pests. Should I gather my clippings and not use them in my compost.

Crabgrass and clover both tend to invade lawns that have thinned for some reason and allowed the weeds to invade. Crabgrass, an annual grass, often occurs in lawns that are mowed too short, although there are other reasons the lawn may have thinned. Clover, a perennial broadleaf weed, often thrives in lawns that do not get enough fertilizer.

The first suggestion would be to follow sound lawn care practices to get the lawn growing thicker and more vigorously. Crabgrass will die off this fall. Preemergence herbicides could be used to help prevent a repeat invasion next season. Clover, since it is a perennial, will not die out on its own. The patches can be dug out or a herbicide can be used. September would be a good time to treat them. As far as returning clippings after mowing, there is no reason not to.

1.16 Topsoil preparation

I have just spread 15 yards of top soil in my backyard for a new lawn. Is it necessary to compact it, and what works best?

You do not need to compact the soil. It is usually suggested to mix the added soil with the existing soil to help prevent any layering problems. Rake the soil to the grade desired. Waiting until a rainfall may help assure the soil has settled before seeding.



1.17 Rust fungus on new lawn

I live in Illinois. My landscaper seeded with Bluegrass and rye. 10-10-10 was applied on schedule. From March thru June the next year, we had the best looking lawn in the neighborhood. Now, its very average and sliding downhill fast. In mid-June, the lawn started to sprout seed stalks. We started to notice rust in July. The rust has spread to the entire lawn. It has not jumped onto the neighbors sodded lawn, nor has it touched the few areas we placed sod. What should be done?

Grass species and cultivars within each species will vary in susceptibility to rust; which explains why most of your lawn has rust and other adjoining areas do not. It is not unusual to see rust as we advance into the heat of summer and grasses slow down in growth. Rust tends to develop most on grasses growing slower. This is why getting grasses to grow faster, such as by watering or fertilizing, can help improve the situation. I would continue to water as needed through the summer and fertilize about Labor Day. Fungicides are available for rust control, but usually not suggested on a lawn. If the problem becomes a chronic one, you may want to consider using a fungicide. If you have not already done so, you may want bring this to the attention of the landscaper. Rust is a common lawn disease of the second half of summer.

1.18 Sodding construction site with cool season grass

We are about to close on a new home, the contractor will sod the front and sides and put down a seed blanket in the back using a cool season grass. Is middle of July a good time to put in sod or should we ask the builder to delay laying the sod.

Given a choice, wait until late August for cool season grasses. Sod can be installed in July for these cool season grasses, but little rooting will occur in hot weather, even though you can water to keep the sod green. Sod will root much faster as we advance into fall. Problems are less likely to occur as there will be less stress on the new sod. With cool season grasses, definitely wait until late August to seed.



2 Pests

2.1 Holes drilled

Last summer my lawn was attacked by some type of insect that “drilled” many perfectly round holes into the sod about 1/2 to 3/4 inches deep. This has caused large areas of the lawn to turn brown and die. I could not find the insect or observe the damage being done. What caused the damage and is there a way to prevent it?

I suspect the holes you saw were from birds feeding on some type of insect. Birds will make holes in the turf such as you describe when seeking sod webworms. Sod webworms are difficult to find (by us). The insect could cause areas of the lawn to turn brown. The insect could be something else, depending on what part of the country you live in. Watch the lawn carefully and examine areas starting to show problems for the presence of insects.

2.2 Moths

I have small white moths that flutter just above my grass. Do these moths indicate grubs? Or do they lay any eggs that produce grubs?

Small white moths are most likely sod webworm adults. Eggs are dropped onto the lawn and hatch into caterpillars. These caterpillars feed by chewing grass blades off just above the soil surface. Seeing a few moths does not mean you will have damage that requires control. Many lawns have a few sod webworms and damage is never noticed. However, large numbers of moths flying over the lawn about dusk may indicate future damage by feeding webworm larva (caterpillars). About two weeks or so after seeing a heavy flight, watch for browning areas of stubble. This is likely to be feeding damage. Lots of birds may be attracted to these areas. Damaged areas can be treated with an insecticide.

2.3 Can't count the moths

When mowing my lawn, a million moths come up while mowing during the middle of the day. I know that it means that I have some sort of insect problem. How can I get rid of whatever the insect is?

Lots of small, buff-colored moths flying up while mowing are sod webworms. The adult moths do not damage grass, but they do lay eggs that hatch into caterpillars. Sod webworm caterpillars chew off grass blades close to the soil surface, leaving brown stubble as damage. Expect damage about 10 to



14 days after a heavy moth flight. You may see the adult moths but never see damage if populations of caterpillars are low and the grass is vigorous. For control when damage is evident, conventional insecticides can be used. As an alternative, *Steinernema carpocapsae* nematodes can be used (see question below).

2.4 When do the moths leave?

How long for the moths to disappear after an application?

The insecticide does not kill the adult moths. Sod webworm control using insecticides kills the larva, or caterpillars, feeding on the grass. The adult moths do not feed. One application should be sufficient to control the larva. Also keep in mind that adult moths are often visible flying over a lawn but damage never occurs because the larva population may be quite low. Feeding damage will appear as areas of brown stubble, as the larva consume the leaves of the grass plant. It usually takes a population of one to two larva per square foot to cause noticeable damage. The larva are difficult to find, as they will hide in thatch and debris along the soil surface.

2.5 Nematode control of grubs

What do you think about the use of nematodes for grub control instead of insecticides?

Heterorhabditis bacteriophora nematode is an example of an alternative product for white grub control that is available. Research trials have shown acceptable control of white grubs with this product. This is a living organism, so needs to be handled carefully to assure viability. For example, it can't be applied in full sun in the heat of the day. It should be applied later in the day to apply to the lawn and then watered in.

2.6 Little mounds

For the last month there have been small mounds in the lawn about 1/2 inch in height and one inch in diameter. I don't think they're worms. I have not seen anything but locus shells here and there. Do locus cause this kind of mounds and what do locus feed on?

Cicadas, sometimes called locusts, can make small mounds. The nymphs will emerge from the soil, making a mud tube, sometimes called a chimney. The cicada climbs up on a tree trunk and emerges from its skin as an adult. Cicada nymphs feed on tree roots well below ground. No control is feasible, but they do not harm the tree.



2.7 Grubs

This morning I found about a quarter of my backyard in clumps (it looked like a football game was played on it). Looking under the clumps I could clearly see white grubs. What should I do now? Can an insecticide be applied now to control the grubs? And should I reseed the lawn now or wait until spring? And was the turf damage caused by animals digging for the grubs? Any help that you can provide would be appreciated.

The damage was most likely from skunks or raccoons feeding on the grubs. It is hard to say if treatment now is justified or not, as the grubs are getting larger (hard to control) and also will go deeper as the soil cools. If treating now, a fast acting insecticide should be used since it is so late in the season. The damaged areas could be overseeded now.

2.8 Skunk and raccoon damage

My lawn is infested with white grubs. I have lots of useful information about controlling them in the future, but my immediate problem is damage due to skunk and/or raccoons. They are tearing up the turf!

If the grubs are still feeding in the root zone of your lawn a quick-acting insecticide should be applied. Even if the grubs are killed quickly, the raccoons and skunks may keep coming for a period of time. Perhaps try lighting the area for a few nights or keep a radio playing to discourage the animals.

2.9 How to treat a grub eaten lawn

I've had my brown grub eaten patches treated with a grub control product. Now, what should I do about the brown lawn? Will it come back on its own? If not, do I have to pull out all the old grass before putting down new seed?

How much of the area grows back depends on the extent of damage done to the roots. Usually some reseeding or sodding is suggested when damage is extensive. I'd rake away the excess debris before putting down the seed. If some of the brown grass still seems somewhat anchored, then new root growth may be produced on those areas by watering as needed for a few weeks.



3 Weeds

3.1 **Four weeds**

I'm having a great deal of trouble with wild violets, creeping charlie, clover and dandelions that invade my lawn every year. They encroach from my neighbor's unkempt property and it is a headache to try pulling them by hand. Is there any application I can use to control these plants without killing my lawn.

There are several broadleaf herbicides that will kill broadleaf weeds without killing desirable lawn grasses. For the variety of weeds you've listed the best suggestion would be a three-way combination product, that is, a herbicide that actually consists of three active ingredients. Unfortunately, violets are not likely to be controlled, but the others you've listed should be. Early fall is a good time to treat for most broadleaf weeds.

3.2 **Smooth Crabgrass**

I have moved into a rental home with a nice size lawn in Southern California. I have a major Crabgrass problem which I am pretty sure is "smooth crabgrass." The stem of the grass is very twig-like and I have pulled areas of this crabgrass as large as four feet in diameter. It intertwines itself all throughout the grass stemming in every direction. What is the best method to rid this crabgrass?

It is difficult to control existing crabgrass plants. There are postemergence crabgrass herbicides, most of which work best when the plants are very small. Preemergence crabgrass herbicides, put down on lawns before crabgrass germinates, tend to be more reliable. The best times to use these herbicides varies from region to region as does the life cycle of the weed. Once it dies off, the preemergence herbicide can be used to help prevent the problem the following season. In addition, mowing higher helps considerably.

3.3 **Mushrooms**

I have recently sodded and have been watering a lot. I have patches of mushrooms growing. Are these weeds? How do I kill and stop these from growing?

Mushrooms are feeding off of organic matter in the soil. They tend to be more numerous after rainfall or irrigation. There is no easy way to get rid of mushrooms. Knocking them down as they appear may reduce some of the spores released. You can do this either with a stream of water or by sweeping them with a broom. There are not any fungicides available to



kill mushrooms. Keep in mind the mushrooms are not feeding on the grass.

3.4 Mess of a lawn

I live in Connecticut and had a new lawn sprayed on last year. This year I fertilized three times. When I fertilize I also aerate at the same time. Because this was a new construction the dirt is very hard and clay like. I think the lawn lacks top soil. The second problem we have is that we have large patches of dirt that need grass seed. We also have smaller bald patches all over our lawn. How do we reseed this? I understand that you need to rake/loosen the soil about an inch down before seeding. How do I do this without killing the existing grass? The ground is not good soil, it is dirt.

One of the underlying problems, which should have been addressed before the lawn was established, is the compacted clay from construction. Additional topsoil and organic matter should have been incorporated into the soil before planting. Core aerating and top dressing with topsoil may gradually help improve this. Bare spots can be reseeded in late August or early September. Rake away debris and roughen the soil, then overseed.

3.4 Trees sprouting

Last winter we removed all of the trees from our backyard and planted new tall fescue grass this spring. Now, in July, little tree seedlings are springing up all over. We go out and pull a half of gallon of them weekly. Is there a way to get rid of these seedlings without harming the grass? Are we going to have this problem forever?

Broadleaf herbicides can control these seedlings. Used properly, these products should not damage lawn grasses. Be aware that if the saplings are offshoots of existing trees or shrubs (connected via roots), those parent plants may be damaged. If the trees are cut down, this won't be an issue.

3.5 Sedgenut or nutsedge

When we moved into our home 18 years ago we had virtually no lawn. A lot of hard work was done and it became beautiful. About four years ago we began to see a "new" item in the lawn. I later came to learn that it is called sedgenut grass (or something like that) and was recently told that it is an anomaly and there is very little that can be done about it until the weather cools. The lawn can be cut today, and tomorrow, much of it is two to four inches higher. After a week, it has grown as much as eight inches in some areas. It looks absolutely horrible



and makes us feel as though people think we don't care about our lawn. What, if anything, can be done about this?

Yellow nutsedge is a perennial grass-like weed with triangular leaves and a yellow-green color. It will produce spreading rhizomes and also "nutlets" or tubers that form on the ends of the rhizomes. Yellow nutsedge tends to develop under wet conditions, but once established, will tolerate dry soils. Pull out existing plants, getting as much of the root as possible. Herbicides are also available and should be applied to actively growing plants. Crabgrass is an annual grass that appears as patches of lighter green, coarse, rapidly growing grass. As seedheads form, they are forklike or fingerlike in appearance. Crabgrass will die off in fall and preemergence herbicides could be used next spring to help prevent a return.

3.7 Looks like crabgrass but not

I have a weed that looks kind of like crabgrass but it grows tall very quickly. What is it?

The weed you are dealing with is very likely yellow foxtail. Yellow foxtail is an annual like crabgrass, but tend to grow much more upright and usually pulls-up easily. It will die off in the fall and can only return next season from seeds germinating in the soil. Getting your lawn to grow thicker this fall and next spring, along with possibly using a preemergence herbicide next spring, will reduce the chances of a repeat appearance next year.

3.8 Will it recover?

I planted tall fescue last spring and have watched it go from thick and luscious to dead looking in several areas. The hot weather really took a toll. There are several brown spots averaging four feet in diameter. Some spots have a hint of healthy blades in the middle, but mainly are shriveled and dead. My question is now what should I do. Shall I tear up the affected areas and start over? The rest of the lawn looks rather spindly although it is still green. The shaded areas seemed to survive really well. Also there were about 10 trees which I took out prior to planting last spring. Does this affect things?

The brown areas could be brown patch, a disease that thrives in hot weather. In addition, tall fescue usually takes a full season or more to become a durable stand of turf. Some of the surviving grass may improve in quality over time. Assuming your soil is in decent shape, the main thing to consider would be overseeding with more tall fescue.



3.9 Bentgrass infestation

I have what appears to be an infestation of some type of bentgrass. It started in areas near the down spouts and has now spread across the lawn, primarily in circular patches. In the summer heat it appears to die out, only to return as the temperature cools and the moisture is replenished. It doesn't seem to be securely rooted, and can be removed like lifting a piece of carpet. The worst part is the fact that it seems to be intermingling with the bluegrass and slowly taking over the lawn. Where does this stuff come from, and how do I get rid of it? Is there any way to remove this stuff short of killing off and reseeding the entire lawn?

It does sound like bentgrass. Bentgrass likes moisture and higher levels of fertility. At high heights of cut, it tends to be shallow rooted and pulls up easily. Bentgrass will spread via stolons. Reducing nitrogen applications and water may help reduce spread somewhat, although you still need to make sure the Kentucky bluegrass is getting enough fertilizer to stay competitive. There is no selective way to treat bentgrass in a bluegrass lawn. The patches will either have to be torn out or sprayed. In either case, it will be necessary to reseed or resod. August would be a good time to address the problem as late August/early September is a good time to reseed. Bentgrass can get started in a lawn through a variety of ways. It may have been in the original seed mix as a contaminant, for example, and then gradually got established and became more visible in the lawn. Perhaps the seed or stolons got carried onto your lawn in some way.

3.10 What kind of weed

I don't know what kind of weed I have. It has a thick stem and a broad leaf and it is a VERY bright light green, many many shades lighter than the Kentucky Blue that is left in the yard. The shaded parts of the yard seem to have less of this weed. Any ideas? What should I do to my lawn?

It sounds more like crabgrass than tall fescue. For now, either hand-pull or leave it. In a month or so, it will start dying off. It will have to reseed itself to be a problem next season. Any thin areas should be overseeded early this fall. Fertilize the lawn this fall. Next spring, it should get a preemergence crabgrass herbicide. Start mowing at about three inches high before summer starts.



3.11 More mushrooms

I have a small cone-shaped fungus in my lawn, it grows about a half an inch in height and is black with tiny white balls in the center of the cone. When they ripen the balls turn black. This cone has a mushroom odor and texture and grows in small clumps of three or four cones, the problem is it kills the grass around it in a circle of five to six inches creating dead spots all over the lawn. Can you please help me identify it and tell me a remedy to fix this problem.

You have described some type of mushroom fruiting bodies. Mushrooms will be feeding off of organic matter in the soil, often originating from old stumps, roots, and buried materials. Once the food supply is exhausted, the mushrooms will disappear, but this could take some time. Are these mushrooms in any pattern, such as a ring or an arc? If so, the problem is called fairy ring, and the visible mushrooms are the fruiting bodies of the fungus which develops in the soil. Control of this problem is difficult. Digging out the soil where the mushrooms appear is an option, but may not be very practical. Sometimes core aeration may help the situation. Also make sure the lawn is fertilized, watered, and mowed properly. There are not any sprays available for mushrooms or fairy ring.

3.12 Unidentified

I've moved to a new house and acquired a new weed. Please help me identify it. The lawn weed is woody on top. The plant branches like a tree, with blue-green long narrow leaves about 1/2 inch long. At the base, it grows out in a circular fashion. The plant has a long tap root (five inches). It has a sticky residue almost like a pine sap.

I am not sure what the weed is, based on the description. Depending on the numbers, hand-pulling might be the best bet. If the weed numbers are high and a broadleaf herbicide is used, it should be a 3-way combination (2,4-D, MCP, and dicamba). The weeds can be spot-treated directly with a liquid application. The weeds should be actively growing at the time. This method should control most broadleaf weeds in turf.

3.13 Foxtail

I've got foxtail growing in my yard. Do you have any recommendations for me?

Foxtails are warm-season annuals and will die off soon. Right now, there are no control options other than pulling by hand. Preemergence herbicides, like those used for crabgrass,



can be applied next season to help prevent the problem. Keep the lawn as thick and competitive as possible to help keep weeds out.

3.14 Buffalo Grass

Three years ago we seeded our lawn with buffalo grass. It was supposed to be low maintenance and would spread to choke out the weed. Unfortunately, the weeds (mostly broadleaf) are winning. We have been told we can't use weed killers because it will kill the grass too. So . . . how do we get rid of the weeds?

Weeds can be a problem in buffalograss when moisture is adequate. Buffalograss has an advantage over weeds when conditions are very dry due to its excellent drought tolerance. However, when rains increase, the weeds have the advantage and may invade buffalograss. Some broadleaf herbicides can be safely used and spot-treating weeds with glyphosate when the buffalograss is dormant (late fall or early spring) could also be an option.

3.15 Extensive Moss

Part of my lawn has moss growing on it. It is mostly on the thin spots where there is a lot of shade and moisture.

Moss invades weaker, thinner lawns, such as in shade, poorly drained soils, and/or low fertility soils. You need to correct these problems before the moss will disappear.

3.16 Help with blight

I had a new sodded lawn put in over clay, I have recently began see small patches of brown areas of the lawn. There is one area which was seriously burned out during the hot week we had in the last week in July and first week of August. Unfortunately I was on vacation and though I had someone watering, it was not consistent. I have one area that in all respects is gone. The area was thatched and overseeded, but I am concerned about the other areas of the lawn that are beginning to realize the same initial symptoms. I need some assistance in my course of action.

The main source of the problem is the clay under the sod. Roots tend to be limited in growth, thatch accumulates, and the grass gets stressed. Then diseases are more likely to occur. Most likely either summer patch or brown patch is the problem. As you mention, fungicides are not the complete answer to the problem. I'd suggest core aerating to try to improve the soil condition. The disease may or may not return next season. With sod over clay as mentioned above, diseases



tend to be chronic problems. Brown patch primarily occurs when we get extended hot, humid weather. Summer patch tends to appear about any summer when the lawn is stressed. If areas appear dead and even with moisture do not revive when the weather is cool, you may assume they are dead and need to be reseeded.

3.17 Organics for dandelions

I am interested in controlling dandelions with an organic product rather than a chemical product. If there is anything out there that may work I am interested in knowing about it.

I do not have any research-based information on organic control of dandelions. I have seen some suggestions using household chemicals in magazine articles, but do not have information on how well they work. In addition, these materials are not labelled for use as herbicides. Certainly digging them out is always an option.

3.18 Seedy straw

I planted a great new lawn this fall and put straw down in certain areas where I felt it was needed. I didn't notice that the straw was loaded with seeds. The rest is history, straw now grows with our new grass. We've pulled some of it, but it is overwhelming. Will it die this winter? Will it go dormant and return this spring? Can it be sprayed?

Bringing in weed seeds is a drawback of straw mulch. The advantages of mulch still make it worthwhile, however. Most likely the seeds brought in are annual weeds, meaning they should die off as the weather gets colder in the fall. As the lawn gets thicker, the chances of weed invasions next season decline. Preemergence herbicides can be used on established lawns to help prevent future weed invasions of this type. If by chance some of the weeds are perennial grasses, then either hand-pull or have them sprayed next season and then reseed.

3.19 Timing for preemergents

When is the best time to put down a preemergent for crabgrass prevention. I have heard things like, "right before the redbuds bloom." Well, I have no redbuds and don't even know what they look like. Is there a better example of when to treat? I have crabapple trees. Should it coincide with their bloom?

It is difficult to compare crabgrass germination with blooming of woody plants because crabgrass germination depends closely on soil temperatures. Crabgrass will germinate as soil temperatures get near 60 degrees and stay there for several consecutive days. Because of this the timing varies



greatly from region to region. In the midwest, having the preemergence herbicide is applied by early May. As you move south, that date would change to earlier in April.

3.20 Easier way to sod?

If you lay grass on top of the weeds that are already on your lawn will it suffocate the weeds and grass that are underneath?

Most likely, the weeds will emerge through the new grass. This is especially true of perennial weed species.

It is suggested to remove or kill the existing weeds before planting the lawn. The weeds must be green and growing to be killed.

3.21 Clover

I have a lawn that has been in for one year. I have a clover problem that is increasing. How can I eliminate the clover?

A herbicide is the best solution to getting rid of the clover in your lawn.

3.22 Weeds on a sodded lawn

I have a lawn that was laid during the summer of last year as sod. I have small amounts of dandelions and crab or quack grass. Is some sort of weed and feed the thing to use or is it better to stay away from any weed products. I am watering and not cutting my grass until it is about three inches high. I assume regular fertilizer is OK but I am afraid that a weed and feed product will damage my lawn.

If used correctly, the weed and feed should not damage the lawn. The weeds you've mentioned – dandelions, crabgrass, and quackgrass – each have different herbicides for control. Broadleaf herbicides will control the dandelions. Preemergence herbicides are best for crabgrass. But do not control existing weeds. However, there are a few herbicides that will control existing crabgrass. Unfortunately, there are not any selective herbicides for the quackgrass. If the weed populations are small, consider hand-pulling them. If weed problems are already severe in a sodded lawn as young as yours, it could be a sign of some other underlying problems.

3.23 Thistles

I have thistles growing in one part of my lawn. I have dug them out, leaving holes that I have to fill in, but this does not stop other thistles from growing. They grow big and have stickers that really sting when you try to lift them out. Any weed killer for these pests?

Most broadleaf herbicides should control thistles.



3.24 Buttercups

We have buttercups in our lawn. Will weed and feed work?

Weed and feed will not have much effect on buttercups.

The weeds need to be sprayed directly.

3.25 Sassafras sprouts galore

I cleared off a hillside and am trying to get a ground cover started. When I cleared it I cut down 30 small sassafras trees. Now I have sprouts everywhere. Is there anything I could use to kill it?

A single spraying will not be sufficient. It will take some time to get rid of them as they are growing off of roots in the soil. Eventually they will all be killed off.

4 About fertilizer

4.1 Trees and shrubs too?

If my lawn around my trees and shrubs is fertilized regularly, is it necessary to apply extra fertilizer for my trees and shrubs, too?

Possibly not. A good lawn fertilization program will usually provide enough nutrients for landscape plantings in the lawn as well. Monitor the vigor and color of the landscape plantings and apply extra nutrients when needed.

4.2 Water when?

Should I water before or after fertilizing?

Do not water before fertilizing, as the water on the grass will tend to make the fertilizer stick to the grass blades and burn them. Spread the fertilizer and then irrigate. The water will wash the fertilizer off the grass and into the soil, where the roots can use it.

4.3 Fertilizer not enough?

Certain plants are not doing well even though they are fertilized regularly. What is wrong?

Some plants require acid soil, some need alkaline soil – for example, rhododendrons and azaleas require acidic soil to thrive. Or plants might have a specific micronutrient deficiency, or the nutrient balance could be off. For accurate results, another soil test should be done requesting analysis for micronutrients.

4.4 Is mulch enough?

I use mulch, compost, and lime on my garden. Is there any need to fertilize, too?

Yes. Your soil needs a good source of NPK (nitrogen, potassium and phosphorus) – either organic or synthetic.



Mulch, compost, and lime enhance the plants' ability to use these nutrients, but do not supply them.

4.5 How hazardous?

Should I keep kids and pets off the fertilized area?

Probably not, after they are well watered, nutrient fertilizer granules in soil or mulch should pose no problem. The amount a child or pet could consume from the landscape is not enough to hurt them. If you use larger pellets or fertilizer stakes, be sure they are buried so children and pets won't try to eat them. Some fertilizer salts could burn or cause skin irritations. However, if the fertilizer is a blend that includes pesticides, it is toxic – follow your lawn care professional's advice carefully.

4.6 Trees at a construction site

Should I fertilize mature trees that are left after the construction of my house?

Do so in combination with aerating, watering, and mulching. A slow release fertilizer should be used so there's no burn potential. Since roots probably were damaged or removed, the fertilizer quantity should be reduced.

4.7 Fertilizer and the environment

Can fertilizer be harmful to the environment?

If improperly applied in high concentrations, it can kill earthworms. If too much nitrogen is applied it can stimulate too much vegetative growth at the expense of flower/fruit formation. Overfertilized lush plants are more susceptible to pests and drought. Applying too much fertilizer or at the wrong time can increase leaching into groundwater. Fertilizer increases the rate of decomposition of organic material, so it's important to add more organic matter periodically.