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Valley Landscape Views

Fresno, Tulare and Kings Counties

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IN THIS ISSUE

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THE VALUE of TURF in LANDSCAPE SETTINGS*

Pam Geisel and Michelle Le Strange
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What is the value of turfgrass in California landscapes? It's a tough question and one that has a multi-faceted answer that includes an aesthetic value, an environmental value, and an economic value.

Turf has a direct effect on the lives of many people living in California. Many of us use or view our lawns daily. Parks, school yards, sports fields, and golf courses are common features in cities and towns. In 1996 residential lawns were estimated to cover 1.1 million acres. An additional 97,500 acres were in golf courses, 54,600 in parks, 88,400 in schools and 55,900 in cemeteries. Another 386,000 acres of turf are used around airports, highways, industrial lawns and business complexes. All together, this totals to 1.9 million acres. In other words, in California "turf rules".

From an aesthetic point of view, turf adds to the beautification of property by providing pleasing and functional home landscapes. Turfgrass provides the "perfect" medium for play in many recreational facilities and reduces the extent of injuries to players, but it also adds to the beauty of sporting events. Would we be as excited to watch football, baseball, or golf, if it were played on bare dirt?

From an environmental point of view, turf plays a significant role in cooling and cleansing the air, improving water infiltration and decreasing soil erosion. It makes life easier and our environment more pleasant.

From an economic point of view, property values increase with beautiful landscapes and sports fields. In addition, the turfgrass industry has a significant direct economic impact on the state and a large indirect impact on the tourist economy. The entire Environmental Horticulture industry is valued at $5.5 billion in gross receipts with wages totaling $2.2 billion in 1991. Also, the service segments such as public parks, golf courses, and equipment and accessories segments are estimated to account for another $2 to 4 billion in value. Commercial activities involving turfgrass alone comprise about a $1.5 billion industry.

Turfgrass is an important component of our livelihood. In these tight budget times how we take care of our turf areas impacts their aesthetics, functionality, environmental quality, and monetary value. Short term sacrifices may lead to long term turf decline and may not be wise. **We hope that this newsletter will provide you with management tips to improve the value of turf in all of your landscapes.**

**Adapted from California Turfgrass Culture, 41(1-4)1991 and Principles of Weed Control, 2002, pp 459.*

Selecting the Best Turfgrass Species

There are many turfgrass species and all of them have their positive and negative attributes. Your goal as a landscape manager is to evaluate the various attributes of each species and compare them to the characteristics of the turf site. The primary characteristics of the site that should be evaluated include how the site is going to be used, available maintenance, and the level of quality desired and can be maintained. In addition, you also need to consider the climate zone in which you live.

What about our climate zone?

In the central valley, we live in a transition zone and as such we can grow most species of turfgrass. However, it also means that none of the species are completely adapted during the entire year, meaning that cool season grasses will have a "dormancy period" or down time during the hot summer and warm season grasses will go dormant during the coldest part of the year (when soil temperatures are lower than 55^0F).

The foothill regions, particularly the lower elevation foothills, can grow many of the same species that grow in the valley though they may be more prone to some diseases. Tall fescue, blends of Kentucky bluegrass, perennial rye and fescue, or hybrid bermudagrass are among the best-adapted species to foothill areas. Bermudagrass may, however, have a bit longer dormancy period in winter. As we move up in elevation to the Sierra Mountains, turf selections are more limited and warm season grasses are not recommended. Kentucky bluegrass, tall fescue, and perennial ryegrass are best adapted.

What about turfgrass for high traffic areas?

Many landscape managers site the inability of turf to tolerate wear and compaction from foot or vehicular traffic as one of their biggest problems. However, there are species that are more resistant to wear. For example, hybrid zoysiagrass is the most wear resistant, though once zoysia has become worn, it may be slower to recover. The species that recovers most rapidly from wear or injury is hybrid and common bermudagrass. Tall fescue is also relatively resistant to wear and will recover well from moderate wear. If you let it go too far however, tall fescue will not recover. Choosing from among these species in heavy traffic areas will reduce long-term maintenance costs.

What about saline soils?

Soils that may be saline are not common in the valley but there are those locations on the west side that do have some salt issues. Species that display a tolerance for salinity include hybrid bermudagrass and zoysia-grass. Most cool season grasses are not tolerant of saline situations and should be avoided, except tall fescue, which is moderately tolerant.

What if your site is shady?

Shade can be one of the more difficult situations to manage because the cool season grasses that grow best in the shade are not tolerant of heat. For example, creeping red fescue is wonderful in deep shade though it is at the bottom of the list for heat tolerance. St. Augustinegrass, zoysiagrass, and dichondra are moderately shade tolerant and are also relatively heat tolerant. Probably one of the best selections for the valley for shade, heat, and wear tolerance is one of the new hybrid zoysia such as De Anza, El Toro, or Victoria. These were developed by the UC Riverside turf breeding program.

What if you have little money to spend on maintenance (including labor, equipment, supplies and materials)?

Some species require more mowing, fertilizer and thatch management than others. The species that have the highest maintenance costs are creeping bentgrass and hybrid bermudagrass because of their frequent mowing requirements. The least expensive is tall fescue and common bermudagrass, though common bermudagrass can be better looking with higher levels of maintenance.

Choosing the best species is not always an easy decision. You need to determine what the priorities and limitations are for your site and make your decision accordingly.

Once you have decided upon a species, the next step is to determine which cultivars (varieties) are best for your local area. Universities, seed and turf companies submit their varieties to the National Turfgrass Evaluation Program (NTEP) for evaluation in a standardized local and national data base program. Reviewing variety performance in different areas allows you to select the best varieties based on their quality, dormancy, drought tolerance, disease and pest resistance and other factors. Many times reputable seed/sod suppliers have made that choice for you from the (NTEP) results.

You can access the results of the evaluations on the National Turfgrass Evaluation Program (NTEP) webpage at: http://www.ntep.org

Adapted from Turfgrass Selection for the Home Landscape, UC Pub #8035

Transition Management of Overseeded Turf

Pam Geisel and Michelle Le Strange

Warm season grasses are often overseeded in the fall with annual or perennial cool season grasses. Cool season overseeding grasses mask the dormancy of warm season grasses and provide green color all year while at the same time allow for a drought tolerant, durable warm season grass in summer.

In the past, the most common species for overseeding was annual ryegrass or creeping red fescue. These grasses naturally died out in summer allowing the bermudagrass to recover from dormancy and become the dominant turf species in summer. Over the years the trend has been to overseed with perennial rye because of its darker color, and disease resistance. However, perennial ryegrass doesn't appear to fade in summer. Because it remains actively growing in the turf it can become competitive with bermudagrass, delay emergence from dormancy, reduce the number of bermudagrass shoots in the summer turf and over time, reduce turf density and increase weeds.

In overseeding trials conducted in Fresno, we found that bermudagrass shoot density does in fact decrease when overseeding with perennial rye. However, it must be noted that all overseeded plots had better turf quality ratings and fewer winter weeds than in plots that were not overseeded (see graphs). The tradeoff comes when you decide you no longer want to overseed. The bermuda will be very thin and recovery will be slow. In addition the turf tends to look weedy because of the residual clumps of rye that remain in years following overseeding.

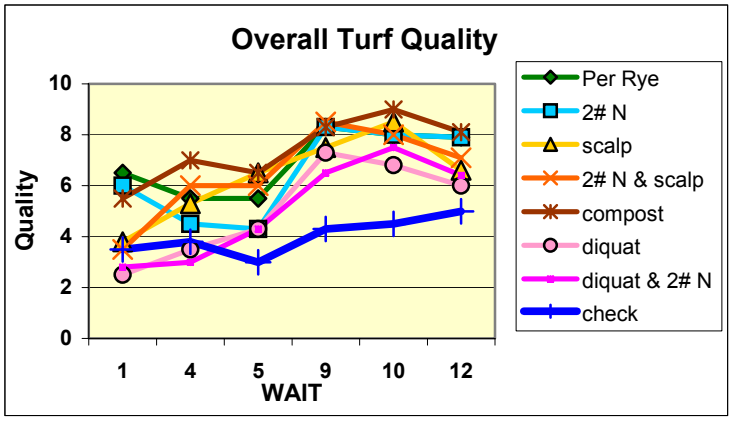
In this trial we wanted to evaluate cultural methods of managing the transition to favor bermudagrass during the summer. Commercially, it is not uncommon to spray with an herbicide such as Kerb to remove the perennial rye so the bermudagrass can gradually emerge from dormancy without excessive competition from the rye. However, this is not an option for home or landscape gardeners who do not have an applicators license.

Turf plots 3 weeks after initial treatment

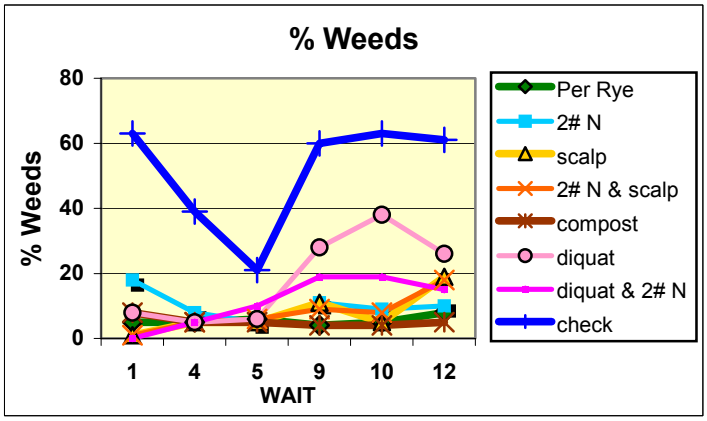
We evaluated techniques such as scalping, scalping and fertilization, contact herbicides such as diquat, and applications of compost topdressing. In all cases, none of the cultural methods reduced perennial rye permanently. There was an initial reduction in ryegrass shoots but by the 3rd or 4th week following the treatments, the perennial rye had returned to its early vigor.

The bottom line is that if you want durable and competitive bermudagrass, it is important to select less vigorous overseeding grasses such as creeping red fescue or annual/intermediate ryegrasses, or treat with a suitable herbicide to remove perennial rye or realize that you must overseed every year with perennial rye and that eventually, your bermudagrass lawn will become a cool season perennial rye turf.

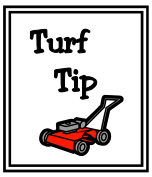
Turf Quality: 1-12 Weeks after Initial Treatment (WAIT)
Check is not overseeded.



% Weeds: 1-12 Weeks after Initial Treatment (WAIT)
Check is not overseeded.



Effective Use of Irrigation Water for Turfgrass Lawns



Spring is the time to prepare the lawn for summer heat because mild temperatures favor root growth and roots supply water to leaf blades. Watering thoroughly and infrequently allows roots to develop deeper than six inches in the soil profile. Deep roots help lawns stay vigorous in hot weather.

Short, frequent irrigations stop root development because there is no moisture at deeper depths so roots become concentrated in the top few inches of soil. On the other extreme constantly soggy soils also stop deep roots from growing because there is no oxygen at deeper depths (and roots need air to respire and grow).

Shallow rooted lawns look terrible during summer heat spells because roots can't suck up enough water to keep pace with the heat demands of summer afternoons and hot nights. Water stress leads to dry spots followed by insect and disease attacks and weed invasion. Even when abundant amounts of water are added, the lawn never looks as good as it could.

Deep rooted lawns draw water from deeper depths and use it to stay hydrated and cool during summer heat spells. Several days can pass between irrigations and as a result they are stronger and less susceptible to root rotting fungi and weeds that thrive when lawns are irrigated daily.

Lawn Watering Guide. The following techniques will help set up timed irrigation controllers for lawns. The simple procedure involves identifying the type of turfgrass and the output of the irrigation system. A table provides a general guideline for scheduling lawn irrigation based on average weather data. Environmental conditions vary slightly from year to year and from location to location within a region, so the irrigation controller will continue to need minor adjustments from time to time in order to deliver optimum results.

Step 1. Determine the type of lawn. The majority of lawns are tall fescue or bermudagrass (common or hybrid). Tall fescue is a cool season grass that performs exceptionally well in our region in the fall and spring, but almost stops growing in the hot summer heat. Other cool season grasses are Kentucky bluegrass, annual and perennial ryegrass, and bentgrass. Warm season grasses such as common and hybrid bermuda, St. Augustine, and zoysiagrass thrive in the summer sun, but go dormant and stop growing during winter.

Both grass types need summer water. Cool season lawns require about 20% more water than warm season grasses, but the question remains how long to water.

Step 2. Determine the output of the sprinklers. To determine sprinkler output, conduct "can tests" by setting small, empty, straight-sided, equal-sized containers such as tuna or cat food cans on top of the lawn every 10 to 15 feet (or closer depending on the size of the lawn) between sprinkler heads operated by the same valve. Run the system for 20 minutes and then use a ruler to measure (in inches) the depth of water in each can. Now determine the average depth in all of the cans. Multiply the average depth by 3 to determine how many inches of water the sprinkler system applies per hour.

Conducting "can tests" regularly is also useful to determine how evenly irrigation water is distributed over the area watered under real environmental conditions and allows for sprinkler-head misalignments and other mechanical problems to be discovered and corrected. If the sprinkler system does not have head to head coverage, matched precipitation rate heads, or if wind is a factor, then distribution uniformity is likely to be very uneven and the range of numbers in the can test might be wide. Irrigating to the average of the cans means that some areas will receive more than enough water and other areas will not receive enough. Try to fix the irrigation system to deliver a more uniform amount of water over the entire surface.

Step 3. Determine how many minutes you need to water your lawn each week. Scientific field studies have accumulated data on how to water cool and warm season grasses. The amount varies based upon the climate where these lawns are grown and the included table is specific to the San Joaquin Valley region which includes foothill areas.

Identify your lawn type and the current month on the table, and match that to your average sprinkler output. The value is the total number of minutes to run the sprinklers per week to provide enough water for the lawn during the current month.

Step 4. Determine irrigation frequency. In late winter or early spring start by watering once a week.

As temperatures rise it may become necessary to water twice and then three times a week so divide the weekly value by two or three. Sloped areas usually need several shorter watering cycles to avoid runoff. It is best to water any lawn until runoff just begins. The number of times to water each week depends on how long the irrigation system can run before water just starts to puddle or run off the soil surface laterally. For example, if a grass needs 40 minutes of irrigation each week, but runoff begins after 20 minutes, then water twice a week for 20 minutes. Avoid watering every day.

In cases where soils take up water so slowly that runoff occurs before 10 minutes, water cycling is necessary. To cycle, irrigate until runoff just begins, turn the system off, and repeat the process in 30 minutes before the soil surface dries out. Several cycles per day may be necessary to apply the desired amount of water.

Step 5. Time of day to water. The best time to water is early in the morning, when evaporation rates are lowest and water pressure is at its peak. Irrigating in the afternoon is wasteful because of higher evaporation rates, and prolonged damp conditions in the evening may encourage disease development.

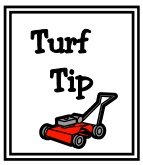
Step 6. Fine tune the guidelines. Remember that irrigation requirements change from month to month. Be sure to turn your system off when rainfall is high. Unseasonably hot or windy weather may require an extra irrigation to compensate for higher water loss from the lawn.

Don't forget that poorly designed sprinkler systems and broken heads need consideration or repair. Reset the controller to meet the lawn's changing water needs.

Adapted from UC Pub #7497, 8044, and 21503

Minutes to Water: San Joaquin Valley & Foothills								
Warm-season turfgrasses					Cool-season turfgrasses			
Minutes per week to irrigate if your hourly sprinkler output is:					*Minutes per week to irrigate if your hourly sprinkler output is:*			
0.5 in	**1.0 in**	**1.5 in**	**2.0 in**		**0.5 in**	**1.0 in**	**1.5 in**	**2.0 in**
19	09	06	05	**JAN**	25	13	08	06
38	19	13	09	**FEB**	50	25	17	13
69	35	23	17	**MAR**	92	46	31	23
101	50	34	25	**APR**	134	67	45	34
132	66	44	33	**MAY**	176	88	59	44
164	82	55	41	**JUN**	218	109	73	55
170	85	57	43	**JUL**	227	113	76	57
145	72	48	36	**AUG**	193	97	64	48
113	57	38	28	**SEPT**	151	76	50	38
69	35	23	17	**OCT**	92	46	31	23
32	16	11	08	**NOV**	42	21	14	11
13	06	04	03	**DEC**	17	08	06	04

Optimum Mowing Conditions for Turf



Maintaining a lawn at the recommended mowing height helps develop a uniform, dense turf, improves its attractiveness, increases its ability to support much traffic, and discourages disease and weed invasion. Mowing too low weakens grass, causing a stand to thin. Mowing too high produces a ragged unattractive stand and may encourage thatch buildup.

The mowing frequency should be based on the growth rate of the grass. Mow lawns often enough so that no more than one-third the length of grass blade is removed at any time. Removing too much of the grass blade depletes food reserves in the plant and makes it more difficult for the plant to recover from the stress and injury of mowing. Additionally it increases the susceptibility to several diseases. Repeated scalping greatly reduces the vigor of a turfgrass. When grass is mowed regularly, clippings can be left on the lawn, a practice called "grasscycling". Frequent mowing produces short clippings which readily filter into the turf canopy and do not cover the grass surface if left on the lawn. Grasscycling has not been found to significantly increase thatch or disease incidence.

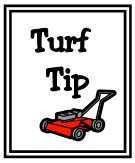
The two basic mower types are reel and rotary. A reel mower shears grass with a scissor action and is better for fine-textured turfgrasses or where a low mowing height is desirable. A rotary mower depends on impact cutting by a high speed, rotating blade. It is better adapted to higher cutting heights and coarser-textured grasses. Regardless of the mower used, maintain sharp mower blades for a nice clean cut and to avoid fungal infections that result from pathogen entry into ragged turf cuts. Turfgrasses should be mowed when the surface is dry.

Adapted from CA Turfgrass Culture, 50(1-4)2000 and UC Pest Note #7497

Suggested Mowing Heights and Mower Types for Central Valley Turf

Grass type	Mower height setting	Mow when grass reaches this height	Mower type	Comments
Common Bermudagrass	1 - 1½ ”	1½ - 2¼”	Reel or rotary	To reduce mowing frequency, reduce irrigation and fertilization
Hybrid Bermudagrass	½ - 1”	¾ - 1½”	Reel	In summer, mowing may be required every 3 or 4 days.
Buffalograss	1 - 2”	1½ - 3”	Rotary	
Perennial ryegrass	1½ - 2½”	2¼ - 3¾”	Reel or rotary	Mow higher in summer
Tall Fescue	1½ - 3”	2¼ - 4½”	Reel or rotary	Mow higher in summer
Zoysiagrass	½ - 1½”	¾ - 2¼”	Reel or rotary	Avoid scalping because of slow recovery

Fertilizing Lawns in the San Joaquin Valley



All turfgrasses require nitrogen and certain sites may also require phosphorus, potassium, and iron on a regular basis. Applying too much nitrogen, especially in a highly soluble, fast-release form, can result in excessive, succulent leaf and stem growth, leading to more frequent mowing, higher water usage, and higher incidence of fungal diseases.

In recent years many fine blends of fertilizers have become accessible to the turfgrass industry. Highly soluble and slow release formulations of nitrogen are available which affect rate and timing of application. Composted green waste, steer manure, and milorganite are some organic fertilizer sources that are somewhat bulky to handle but are suitable to use for lawns providing they contain at least 1.5% nitrogen.

The main tips for fertilizing lawns are to:

1) apply fertilizer during the months when the turf is actively growing,
2) distribute fertilizer uniformly over the surface,
3) apply fertilizer to dry grass blades, then water to wash the fertilizer off the grass blades and dissolve it into the soil, and
4) apply the correct amount of fertilizer for the season and avoid over-fertilization.

Cool season grasses have big growth spurts during the spring and fall. In summer months however, growth virtually stops. Make light applications of fertilizer every 4 to 6 weeks from February through June, skip July and August, and resume applications in mid September through mid November. A total of 4-6 lbs of actual nitrogen per 1000 sq. ft. per year is all that is needed for a healthy cool season grass.

Spring green up of warm season grasses depends upon soil and air temperatures and whether or not the turf has been overseeded. In general April is a good month to start fertilizing warm season lawns. Earlier applications can result in turf damage, if a late frost occurs. To prolong the onset of winter dormancy the last fertilizer application of the season should be made in September to early October. Later applications may make the lawn more susceptible to spring dead spot disease. A total of 4 to 6 lbs actual nitrogen per 1000 sq. ft. per year is the recommended maximum amount for warm season turf species. Hybrid bermuda lawns will respond to the higher rate.

Adapted from UC Pub # 8065

Compaction and Aeration of Lawns

Turf Tip

Compaction causes an overall decline in growth, vigor, quality, and longevity of the lawn. Poor drainage caused by compaction is the most common cause of turfgrass failure in lawns. Yet, compaction is not recognized as the leading cause of these problems by turf managers and homeowners. Compaction is "the hidden stress" symptom in lawns.

Compaction. Soil compaction in lawns is caused by continued foot and equipment traffic, which presses soil particles closer together. This destroys soil structure and adversely affects the relationship of air and water to the turfgrass roots. Soil compaction increases soil bulk density, moisture retention, and soil strength, and decreases soil aeration, water infiltration, and water percolation. Most turf compaction is in the top 3" of soil with the top 1-inch being the worst.

Aeration. Aeration is the remedy for compacted soil under turfgrass. Aeration is the removal of soil cores that are approximately ½ -inch diameter and 3-inches long.

Aeration can prevent or alleviate soil compaction and in the process improves water infiltration and efficiency. Aeration restores the balance of air and water in the soil, which are needed for healthy roots.

Many sizes and types of aerators (also called core aerifiers) are available in a wide price range that can affect the soil from 2 to 24 inches deep. Some slice, drill, vibrate or shatter, inject water, and spike the soil. Hollow tine aerators pull cores from the soil and are the most widely used. If using an aerifier that deeply penetrates the soil, be sure to watch out for any underground cables.

To prevent compaction aerate lawns 3 times per year (early spring, summer and fall), use 5/8' hollow tines and try to reach a 3" depth. Drag the field with a steel mat or leave the cores on the surface to melt down with irrigation. To alleviate compaction several passes with an aerator may be needed at regular intervals depending upon the degree of compaction and the lawn site until the situation is relieved.

Adapted from UC Pub #2586

Thatch and Thatch Removal

Turf Tip

What is thatch? Thatch is an organic layer composed of dead and living roots, stems, stolons, rhizomes, and shoots that develops between the soil surface and the green growth of grass.

What causes thatch? Genetics accounts for why some grass species develop more thatch than other species. In general, creeping grasses develop more thatch than do bunch grasses, but both types do develop thatch. Turfgrass management also affects accumulation of thatch. Thatch develops when organic matter accumulates faster than organic matter decomposes on the soil surface. Excessive nitrogen fertilization and factors that decrease earthworm and microorganism activity, like heavy compacted soils also increase the development of thatch.

What are the problems with thatch? When the thatch layer is too thick water penetration is restricted. Excess water is held in the thatch layer providing a habitat for insects and diseases, shallow root development, and a spongy and slushy turf. Fertilizer and pesticide application are less effective because they get "hung up" in the thatch layer.

Are there any benefits of thatch? The optimum thatch layer is ¼ to ½ inch thick. At this depth it acts as insulation and protects the turf from temperature extremes. It cushions the turf making for safer play by children and athletes and as a cushion it also increases wear tolerance. A thin thatch layer also acts like a mulch and prevents excessive evaporation and water loss from the turf surface.

How do you get rid of thatch? Vertical mowers have been developed to effectively remove thatch, especially useful in creeping grass lawns. A vertical mower has a series of revolving vertical knives, which cut through the thatch and bring it to the lawn surface so that it can be raked up and removed. Care must be exercised to avoid unnecessary or excessive injury to the lawn. Mid to late spring or late summer and early fall are the best times to remove thatch from both warm-season and cool-season grasses.

Adapted from UC Pub #2586 & CA Turf Culture, 34(#1),1984

PEST WATCH on Landscape Turf

The more you know about a pest and its host plant, the easier it is to practice IPM

DISEASE: Spring Dead Spot in Bermudagrass

Pam Geisel and Michelle Le Strange

Spring dead spot appears as circular areas of dead grass, 6 to 12 inches in diameter, that is most visible as bermudagrass resumes growth in spring. The spots may coalesce to form large areas. Spring dead spot typically affects common and hybrid bermudagrass that is more than 2 years old. It attacks dormant plants and does the most damage when temperatures are between 50° and 57°F.

The pathogen survives in old thatch and roots as fungal threads and sclerotia, which are tiny, hard, resting bodies. Spring dead spot is spread by sclerotia and infected plant parts.

Cultural controls include removing dead grass and fertilizing in late spring to encourage vigorous new growth and in summer to maintain vigor. Do not over-fertilize in late summer. Irrigate according to evapotranspiration needs of the turfgrass. Overseeding with ryegrass may be beneficial in that it masks symptom expression in the spring.

If the disease is severe apply a systemic fungicide in late summer (or early fall) and late fall before the grass goes dormant. Choose from the list below.

Azoxystrobin	Heritage
Fenarimol	Rubigan
Myclobutanil	Eagle WSP
Propiconazole	Banner Maxx

There is limited scientific data about the control of this disease in California. Field studies are underway in Fresno and Visalia to learn more about the disease causing fungi (*Ophiosphaerella korrae & O. namari*). We are conducting these trials in cooperation with Jim Farrar, Plant Pathologist at CSU Fresno and Frank Wong, Extension Plant Pathologist at UC Riverside.

INSECT: IPM in Turf - Correct Monitoring For Sod Webworm

Sod webworms are one of three different species that feed on the foliage of many turfgrasses. They include the Lucerne moth (*Nomophila noctuella),* Western lawn moth (*Tehama bonifatella*) and Sperry's lawn moth (*Crambus speryellus).*

Sod webworms are most active in summer, June through October, and tend to be most problematic on cool season grass species. Bluegrass and bentgrass often suffer the most damage, while perennial ryegrass and turf-type tall fescue infected with endophytes (symbiotic fungi) and warm season turfgrasses are more resistant.

Monitoring for Sod Webworms

To detect sod webworms, use the pyrethrum test. This test involves mixing 1 tablespoon of a commercial garden insecticide containing 1 to 2% pyrethrins in 1 gallon of water. If the insecticide has only 0.5% pyrethrins, use 2 tablespoons. One to two fluid ounces of a dishwashing liquid can be substituted for pyrethrins; while this test is easier to do than the pyrethrum one, it is not quite as sensitive. Apply the solution to 1 square yard of turf as evenly as possible using a sprinkling can. This will irritate the insects so that they move to the surface within 10 minutes. White grubs and billbug larvae will not respond to the pyrethrum test.

In large lawn areas such as parks, golf courses, and cemeteries, monitor several locations to determine the extent of an infestation. Certain pests, such as white grubs, often repeatedly infest limited areas where adults prefer to lay their eggs. If problems are localized, spot treatments may be suitable.

Sod webworm can cause significant damage. First instar larvae are leaf skeletonizers. Later instars notch or cut off leaf blades and pull them into the burrow. Heavily infested turf (more than 100/sq yd) quickly appears moth eaten, with irregular patches of brown grass or bare areas. Bluegrass and bentgrass green and tee areas are particularly susceptible. Lucerne moths are primarily a problem where clover and dichondra are mixed with turfgrass.

Monitor for sod webworms from June to early October. Consider an insecticide application only when a pyrethrum or detergent test indicates there are more than **5 larvae per square yard on stressed greens or 15 larvae per square yard in other situations**. If Bt is used to control sod webworms, apply it when there are predominantly early instar larvae.

There are several effective insecticides on the market for controlling sod webworms. AVOID the use of diazinon or chlorpyrifos, which have either been taken off the market or soon will be, because they have become pesticide pollutants in water as a result of widespread use in landscapes.

Adapted from UC IPM- Turfgrass Pest Management Guidelines

WEEDS: Crabgrass, Nutsedge, Oxalis, and Spurge

Crabgrass is the most prevalent weed in all lawns. It's a summer annual that germinates March through Sept when soil temp reach 50-55°F. It is favored by daily irrigations in low mowed and edged areas of turf. Many effective preemergence herbicides are available, including pendimethalin (PreM, Pendulum, Scott's Halts), bensulide, benefin/oryzalin (Amaze), prodiamine (Barricade), oryzalin (Weed Stopper), dithiopyr (Dimension). Dimension also has some postemergence activity, in case you are late in making a preemergence application. MSMA (WeedHoe) is effective in controlling young emerged crabgrass, but has some temperature use restrictions. *Consult UC IPM Pest Note on Crabgrass #7456.*

Yellow nutsedge spreads by smooth tubers that form at the end of rhizomes. **Purple nutsedge** has rough scaly, tubers that form along a single rhizome (pictured here). Each tuber has several buds that germinate separately. Lawn cultural practices typically favor nutsedge development. Manage (halosulfuron) works on both purple and yellow nutsedge. Applied postemergence with a surfactant, 2 applications are needed 6 weeks apart, MSMA also works, but less effectively. Bentazon (Nutgrass Nihalator) only works on yellow nutsedge and we have both species of nutsedge in this area. *Consult UC IPM Pest Note on Nutsedge #7432.*

Oxalis (creeping woodsorrel) prefers shady situations, but it also thrives in hot sun. This perennial spreads by running roots and by seeds. Heart shaped leaflets resemble clover; yellow flowers have 5 small petals. No cultural techniques seem to deter the weed. Postemergence herbicide applications must be repeated. Turflon ester controls oxalis in cool season lawns but is not safe to use on warm season grasses. Trimec or Quadmec or similar products can be used for postemergence control of oxalis in warm season grasses. Preemergence application of pendimethalin, dimension, isoxaben, or isoxaben/trifluralin will control new seedlings. Continued effort will be need to bring this weed under control. *Consult UC IPM Pest Note on Creeping Woodsorrel, #7444.*

Spotted spurge is a summer annual and prolific seed producer. This weed is hard to control if it gets a foothold. It forms a dense mat and is distinguished by other low crawling weeds by its milky sap and spotted leaves. Spurge is poisonous to animals and humans. Cultural control methods include maintaining a vigorous turf and avoiding low mowing. Preemergence herbicides are helpful in reducing establishment of spurge, if they are applied in late winter before weed seeds emerge. Dithiopyr (Dimension) is more effective than prodiamine, pendimethalin, and oryzalin, but costs more. *Consult Pest Note on Spurge #7445.*

SOURCES OF INFORMATION - Turfgrass

PUBLICATIONS FROM UC

Many of these items are available at no cost from local UCCE offices or can be downloaded from the world wide web at http://anrcatalog.ucdavis.edu *or from UC IPM at* http://www.ipm.ucdavis.edu

Free Publications

Turfgrass Selection for the Home Landscape, #8035

Lawn Watering Guide for California, #8044

Water Conservation for Home Lawns & Gardens, #8036

Interpreting Turf Irrigation Water Test Results, #8009

Mowing your Lawn and Grasscycling, #8006

Practical Lawn Fertilization, #8065

Turfgrass Traffic and Compaction: Problems & Solutions, #8080

Managing Lawns in Shade, #7214

Managing Lawns on Heavy Soil, #7227

Lawn Insects, #7476

Lawn Diseases: Pest Note #7497

UCIPM Pest Management Guidelines for Turf, #3365

Fee Based Publications

Evaluating Turf Sprinkler Irrigation Systems, #21503

Turfgrass Irrigation Scheduling, #21492

Effluent Water for Turf Irrigation, #21500

Lawn Aeration and Thatch Control, #2586

Turfgrass Pests, #4053

INDUSTRY ORGANIZATIONS

California Golf Course Superintendents Association
http://www.gcsaa.org

Sports Turf Managers Association
http://www.sportsturfmanager.com/my/shared/home.jsp

Professional Lawn Care Association of America
http://www.plcaa.org/home

Northern California Turfgrass Council
http://www.nctlc.com

Southern California Turfgrass Council
http://www.turfcouncil.org

UC Ornamental Horticulture Research & Information Center - *Includes access to:*
California Turfgrass Culture newsletter & Better Turf through Agronomics newsletter
http://ohric.ucdavis.edu

Weather And Irrigation

CIMIS-CA Irrigation Management & Info System
www.cimis.water.ca.gov

UCIPM-weather, day degree modeling and CIMIS
www.ipm.ucdavis.edu

Center for Irrigation Technology-CIT at CSUFresno
http://cati.csufresno.edu/cit

NEW UC Website Turf Tool !

UC IPM Healthy Lawns Interactive Webpage
http://www.ipm.ucdavis.edu/TOOLS/TURF

GLOSSARY OF TURF TERMS (From Crop Science Society of America)

Aerify - a form of cultivation whereby soil is loosened, cores are removed, and a hole or cavity remains in the turf.

Renovation - to renew; make over; repair. A term applied to those turf improvement practices, which lie beyond the scope of routine maintenance. Severe cultivation, possibly with chemical treatment, in combination with replanting or reseeding to improve the turf without complete rebuilding.

Scalping - The practice of removing most of the green leaf surface which leaves a stubbly brown turf.

Spiking - The act of perforating a turf area by use of a solid tine or blade.

Syringing - Hand hosing or sprinkling with light amounts of water on turf to prevent wilt resulting from excessive temperatures, and to reduce transpiration.

Thatch - Thatch is a tightly intermingled layer of living and dead stems, leaves and roots of grasses, which develops between the layer of green vegetation and the soil surface.

Topdressing - A selected or prepared mixture of soil or compost, which may contain physical conditioning materials, nutrients, and pesticides and which is spread over turfgrass areas for the purpose of improving the surface, adding to the nutrient base, or applying pesticides.

Vertical mowing - Cutting by blades, which move perpendicular to the soil surface. Specifically designed to thin turf, control grain, and aid in controlling and eliminating thatch.

Landscape Turf Management
A Seminar for Professionals

(School districts, parks, cemetery districts, business /apartment complex, etc.)

Thursday April 24, 2003

Center for Irrigation Technology on CSU Fresno Campus
Southeast corner of Chestnut and Barstow

FREE—No Attendance Fee
2.5 Continuing Education Hours Requested from DPR

PROGRAM

Moderator: *Pamela M. Geisel, UCCE Farm Advisor, Fresno County*

8:00 Check-in Registration – Coffee and Donuts

8:15 Welcome and Introduction - *Pam Geisel*

8:30 Weed Management in Turf—Getting the Most from Herbicide Applications
Michelle Le Strange - UCCE Farm Advisor, Tulare and Kings Counties

9:00 Safety in Turf Management Activities-Worker Protection
Lisa Kao, Risk Management Office, CSUF

9:30 Overseeding and Transition Management: Impact on Weed Management - *Pam Geisel*

10:00 BREAK

10:15 Mushrooms and Other Nuisance Fungi in Turf - *Jim Farrar, Plant Pathologist, CSUF*

10:45 Turf Management that Fits Your Operations Budget - *Pete Millier, Manager of Grounds & Landscape Architecture, CSUF*

11:15 Clopyralid Problems in Mulch & Compost – *John Karlik, UCCE Farm Advisor, Kern County*

11:45 Field Tour—Irrigation & Nitrogen Strategies for Tall Fescue
Pam Geisel and Michelle Le Strange

12:30 Adjourn

For special assistance regarding our programs please contact us. Wheelchair Accessible

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Please RSVP by April 18th
UC Cooperative Extension Fresno County Phone (559) 456-7285 FAX (559) 456-7575

There is NO cost associated with this meeting. It is FREE and open to anyone who is interested in attending. It has been designed for professionals in landscape maintenance, including city, county, park and school workers. Master Gardeners are welcome. To make sure that there are enough DONUTS and COFFEE, **please call or FAX** us a list of who will be attending from your organization. Seating is limited.

Business/Agency _____ Bus. Phone _____

Address _____ City _____ Zip _____

Names _____ _____

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April 2003

Valley Landscape Views

A regional newsletter for the Green Industry

Issue #2: Turfgrass Management

Free Seminar: Landscape Turf Management - April 24, 2003 – Fresno
Details Inside

Pam Geisel
Farm Advisor
Fresno County

Michelle Le Strange
Farm Advisor
Tulare & Kings Counties

U.S. Department of Agriculture, University of California, Fresno, Tulare & Kings Counties Cooperating