FACT SHEET

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CONTROL DISEASES IN THE HOME LAWN

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Disease prevention is an important key to successful maintenance of a uniform, green living carpet around the home. The "green thumb gardener," who understands plant language and responds to symptoms before a problem develops, holds a prerequisite to efficient disease control. Most disease control chemicals act as protectants and prevent infection from microorganisms that enter plant tissue causing disease. The following descriptions help early recognition and treatment of potential problems.

Brown Patch

Brown patch disease, caused by a fungus *(Rhizoctonia solani)*, occurs in the late spring or early fall. The disease is characterized by circular patterns of dead grass blades in the turf. These range from 1 to 50 feet in diameter. Blades and sheaths are pulled easily from the stolons because of deterioration in the attachment area. Stolons often remain green. New leaves may emerge in the center of the circular patch in 2 or 3 weeks, giving the diseased area a doughnut shaped appearance. The entire spot eventually may become green during a long growing season.

St. Augustine grass is damaged more by brown patch than bermudagrass or zoysiagrass. Disease development occurs most rapidly in temperatures between 75 and 85 degrees F. when free moisture is present. Fungus activity stops when the air temperature reaches 90 degrees. This explains seasonal development.

Some lawns are affected almost every year, while others are damaged only occasionally. Fungicide application, which effectively prevents brown patch development, should be made when brown patch is expected. On lawns where brown patch occurs occasionally, apply fungicide when the disease first appears. See fungicide chart for specific recommendations.

Gray Leaf Spot

Gray leaf spot causes irregular brown to gray spots on leaf blades of St. Augustine grass. This disease, caused by a fungus, develops rapidly with abundant moisture and warm temperatures. It is usually noticed first in shaded areas that remain damp for some time. In areas of heavy disease development, the grass may have a burned or scorched appearance resulting from death or spotting of the leaf blades. Lesions also occur on stems and spikes of affected plants.

Disease severity is enhanced by excessive nitrogen fertilizer on certain types of St. Augustine grass. Newly-sprigged or rapidly-growing grass is more susceptible than well established grass.

Control is best accomplished by avoiding excessive nitrogen fertilization. Water during the day, so that foliage will not remain wet overnight. Most turf fungicides control this disease effectively when used at 10-day intervals during periods favorable for infection. (See fungicide chart).

Helminthosporium Leaf Spot; Root Rot of Bermudagrass

Symptoms of this fungal disease appear as irregular patches, ranging in size from 2 to several feet in diameter. Infections on leaves appear as small, olive green spots which enlarge to form dark blotches. Infected leaves die and fade to a light tan color. The entire plant is killed when the root rot phase of this disease develops.

The disease-causing fungus overwinters in thatch at the base of the plant and acts as a pathogen when weather conditions favor its development during the growing season. Chemical fungicides are effective in control. Apply at 7 to 14-day intervals during periods that favor disease development. See the fungicide chart for specific recommendations.

Fading-out

Fading-out is a serious problem in many lawns where the grass thins and becomes unsightly. This condition develops more rapidly during the summer when large dead areas appear in the turf. A fungus (*Curvularia* spp.) can be cultured from

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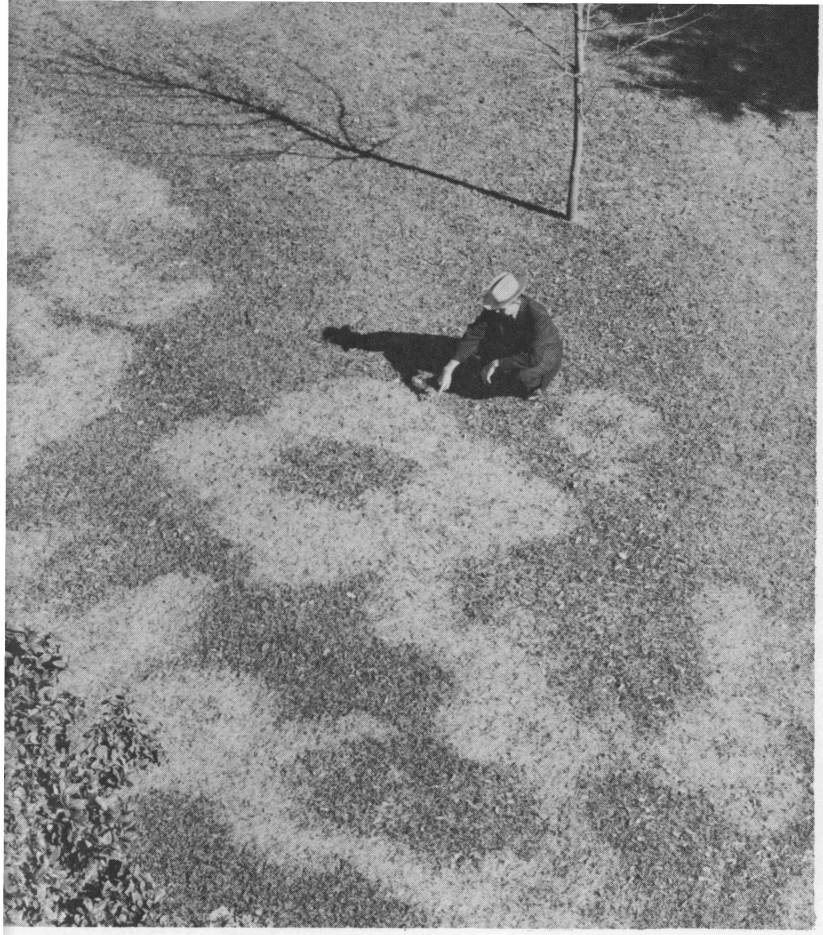

Brown patch

stolons of diseased grass, but reproducing infections on healthy grass is difficult. For this reason, it is believed this fungus causes fading-out on grass weakened by other disease-causing organisms, insect pests or nematodes.

Effective control of fading-out requires several different approaches. First, correct cultural conditions that limit plant growth. Mowing at the proper height, fertilizing according to soil test, watering properly and avoiding thatch build-up all contribute to healthy grass that resists development of weak pathogens.

Accumulations of fallen clippings and dead leaves, commonly referred to as "thatch," provide an environment favorable for microorganism build-up. In fact, activity of these organisms is necessary for converting this material into humus. Some types become overambitious, however, and begin deriving nourishment from living grass plants, resulting in the fading-out condition. These areas sometimes are difficult to resod where grass has died.

Thatch build-up can be prevented by catching grass clippings or by removing leaf accumulations by close mowing and raking just before spring growth begins. Follow with regular mowings which remove only short clippings that dehydrate rapidly and do not contribute to thatch build-up.

Fungicide applications hasten recovery of affected turf. However, use in combination with good cultural practices.

Fairy Rings

Mushrooms in a circle or semi-circle are called "fairy rings." According to ancient mythology, these result from fairies sowing seed as they dance in circles. In truth, however, these mushrooms are fruiting structures of fungi, produced when weather conditions are favorable. Mushroom-producing fungi develop an organic matter in the soil and produce fruiting structures on the outer limits of the colony, causing a circular effect. Grass is often greener in the ring area because of available nutrients liberated by decomposition of the fungus. Grass in the center of the ring may be declining because of fungus activity.

Control often is not necessary because of the condition's temporary nature. In other cases, however, the affected grass may decline rapidly if corrective steps are not taken. In such cases, aerate the soil by punching holes 6 to 8 inches deep at regular intervals. Apply a fungicide drench at a strength 2 or 3 times stronger than the normal recommendation. Mercury-type fungicides are effective but may burn the grass slightly.

Slime Molds

Slime molds are fungi which develop mostly during warm, moist weather. The most common slime mold *(Physarum cinereum)* found on turfgrass occurs as a dark gray to black crust-like material. This soot-type material rubs off easily on shoes or clothing.

Slime molds derive nourishment from decaying organic matter in or on the soil. Under certain conditions, they move upward on sticks, stones, grass blades, etc., to produce spores. They do not feed on green plants and cause no damage other than shading. Remove from lawn grass by applying water under pressure with a water hose or by brushing with a broom.

Smut

Smutted bermudagrass seed heads are a nuisance when the black spores rub off on shoes and clothing. These occur when the plants are systemically infected with the smut fungus *(Ustilago cynodontis).*

Conventional fungicides do not prevent this condition, because they are protective and do not enter plant parts. Since this disease is more of a nuisance than a threat to turf health, control usually is directed toward preventing seed head development. Adequate watering and fertilization helps prevent seed head development which occurs under stress conditions. Close mowing may remove seed heads when produced.

Rust

Rust, a fungal disease (*Puccinia* spp.), is most damaging during mild, warm weather. Plants affected with rust have a chlorotic appearance, and stands may begin to thin. Orange colored linear pustules or raised bumps are evident on leaf blades. These vary in appearance, depending on the species involved. Pustules are difficult to see on affected St. Augustine grass unless the blades are examined with a hand lens. Zoysiagrass is affected more than either St. Augustine or bermudagrass. Rust diseases can be controlled by using fungicides. (See fungicide chart).

Nematodes

Nematode injury symptoms often appear as areas of low fertility, even where fertilizers have been applied. This occurs when nematodes feeding on roots reduce their ability to absorb water and nutrients. These tiny roundworms which measure about 1/50 of an inch long have a spear in their mouth part that punctures plant cells and withdraws cell sap. This activity not only removes cell contents but opens points of entry for other organisms that infect injured or devitalized roots.

Identify nematode problems positively before taking corrective action with chemicals. Plant Disease Diagnostic Laboratories located at College Station, Lubbock and Weslaco analyze soil samples for nematodes. Extension plant pathologists at these locations will diagnose. Seal moist soil (1 pint) in a plastic bag and place in a cardboard box for mailing. Obtain information forms from the local county Extension agent's office and enclose in the mailing container.

Materials suggested for chemical control of nematodes are Nemagon, Fumazone and VC-13. The first two materials mentioned often come in large containers, thus it may be desirable to obtain the services of a commercial applicator. The third material, a phosphate insecticide, must be worked into the soil well since difussion is slow. Granular-type nematocides, such as Nematode-Killer and Nema-X, are available. These are effective if a means of working them into the soil is devised.

Where nematodes constitute the limiting growth factor, a nematocide application usually is needed yearly. Nematodes are seldom completely eliminated from the soil, but their populations can be reduced to allow normal plant growth. Good cultural and fertilization practices also help overcome nematode injury.

Iron Chlorosis

Iron chlorosis results from iron deficiency in the soil. Iron may not be available because of an alkaline soil reaction, changing the element to a form unsuitable for the plant. This condition is corrected by applying iron sulfate (copperous) or iron chelates (see chart).

This condition is typified by yellowing of the foliage. Often green and yellow streaks intermingle. In extreme conditions, the leaves are solid yellow.

Virus

A virus condition of St. Augustine grass has been identified which causes a chlorotic mottle of the leaf blades. Affected grass is unthrifty and thins badly. Spread and control of this condition is currently under investigation.

Other Problem Causes

Soil compaction — Certain soils are compacted easily, especially in areas of heavy foot traffic. This condition prevents adequate penetration of moisture and nutrients and restricts root system growth.

Several types of aerafiers correct this condition.

Dog urine injury — Circular spots 8 to 10 inches in diameter may appear in areas frequented by female dogs. Heavy watering helps correct this condition.

Fertilizer burn — Commercial fertilizers are salts and can burn grass when applied excessively. This condition is most often seen where fertilizers were spilled.

Excessive shading — Most lawn grasses require rather high light intensities. When a lawn is fertilized, this in turn stimulates growth of shrubs and trees that shade the grass. Selective pruning of trees and shrubs helps correct this condition.

Sun scald — Clipping grass too closely removes foliage necessary for food manufacturing and exposes stolons to direct sun rays. When this occurs,

Fairy rings

a brown lesion or burned area is found on the upper surface of the stolon. Avoid mowing too closely.

Improper fertilization — Excessive use of an individual element, such as nitrogen, makes plants more susceptible to disease attack. Avoid this problem by fertilizing according to soil test recommendations.

Shock — Allowing grass to become too tall before mowing causes grass to experience shock and lose vigor. Mow frequently to prevent this condition.

Permanent wilt — Grass allowed to become too dry may pass the permanent wilt stage where recovery is not possible. This may occur where water does not penetrate because of compaction.

Fungicide, Nematocide Recommendations

Use fungicides and nematocides to protect turf during periods favoring disease development. Their use should supplement good cultural practices. Fungicides and nematocides are capable of inhibiting or killing certain types of microorganisms on plants or in the soil.

No chemical kills all undesirable organisms and spares all desirables. Disease control chemicals should be used only when needed. The following chart suggests materials found most effective against specific disease causing organisms.

Selected References

1. Cole, Herbert and Houston Couch, 1963, Control Turfgrass Diseases — Circular 510, The Pennsylvania State University, University Park Pennsylvania.
2. Freeman, T. E., 1967, Diseases of Southern Turfgrasses — Tech. Bulletin 713, University of Florida, Gainesville, Florida.
3. Gould, Charles J., 1967, Use of Fungicides in Controlling Turfgrass Diseases. Reprint of The Golf Course Superintendent (Sept./Oct. 1966-January 1967).

MATERIALS FOR DISEASE CONTROL

Chemical	Trade name and formulations		Brown patch	Helmintho-sporium	Gray leaf spot	Fairy ring	Rust	Fading-out	Nema-todes	Iron chlorosis
PCNB	Terraclor	(L,G,WP)	x							
Maneb	Dithane M-22	(WP)								
	Manzate	(WP)		x	x		x	x		
Maneb and coordinated zinc ion	FORE									
	Dithane M-45	(WP)	x	x	x		x	x		
Zineb	Dithane Z-78	(WP)								
	Parzate	(WP)		x	x		x			
Thiram	Thylate	(WP)						x		
Captan		(WP)			x			x		
Cycloheximide + PCNB	Acti-dione RZ	(WP)	x				x			
Mercuries	(All)	(L)	x	x		x				
Daconil	One	(WP)		x	x					
Dyrene		(WP)		x	x					
DBCP	Nemagon	(L)							x	
	Fumazone	(L)							x	
	Nema-X	(L)							x	
	Nema-Kill	(L)							x	
VC-13									x	
Iron Sulfate	Copperas	(WP)								x
Iron Chelates	(Several)	(L or WP)								x

The product (s) mentioned herein does not guarantee nor warrent the standard of the product, nor does it imply approval of the product to the exclusion of others which may be equally suitable.
USE ALL PESTICIDES ACCORDING TO LABEL DIRECTIONS

Note:
L—Liquid
G—Granule
WP—Wettable powder

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