

Lawn and Shade
Problems
and
Corrective
Measures



COOPERATIVE EXTENSION SYSTEM

THE UNIVERSITY OF CONNECTICUT ■ COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

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Lawn and Shade Problems and Corrective Measures

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This bulletin is to give people who have or suspect they have a shade problem on their lawn, a method to determine the extent of the problem and suggest courses of action to correct the problem.

Problems and Symptoms: Typical problems associated with a shade environment compared with grass grown in full sun are:

- reduced light
- poorer quality of light
- reduced air movement
- higher relative humidity
- prolonged wetness following rainfall or irrigation
- cooler temperatures and reduced temperature fluctuations
- increased disease problems
- moss and algae growth
- competition between trees and grasses for plant nutrients
- competition for moisture especially from shallow rooted trees such as maple or beech

Common symptoms of shade grown turf are:

- thin, narrow and elongated leaf blades
- reduced rate of leaf appearance
- reduced tillering
- poor wearing ability
- slow recovery after being damaged
- shallow, weak root system
- more succulent turfs

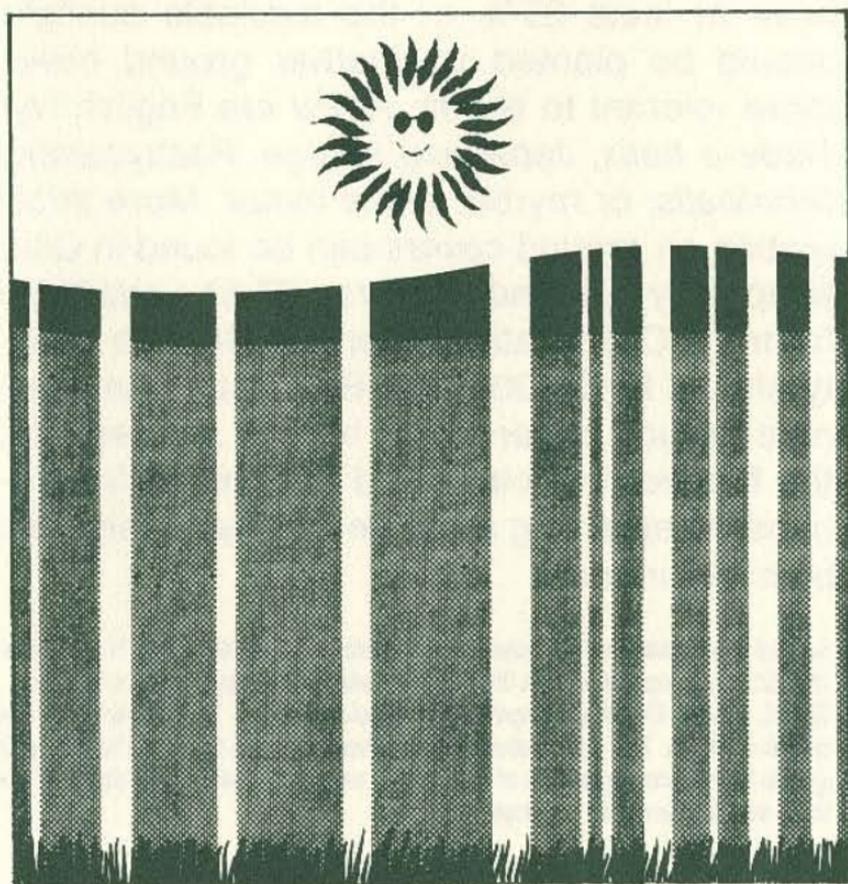
Defining Shade: The traditional practice of defining shade as light, medium or heavy, without attaching a value, is almost useless. Therefore, the following values are used in this bulletin for purposes of discussion.

FULL SUN — 100% of the daily available sunlight. This is the optimum for good turf development.

LIGHT SHADE — Less than 100% but more than 75% of the daily available sunlight reaching a particular area. This range of sunlight should not present a problem for lawn maintenance.

MEDIUM SHADE — Less than 75% but more than 25% of the daily available sunlight reaching a particular area. This range is good to fair with the ability to maintain a satisfactory lawn becoming increasingly more difficult as the total available light diminishes to 25%.

HEAVY SHADE — Less than 25% of the daily available sunlight reaching a particular area. It is very difficult to establish and maintain a lawn at this light level. Choose a more shade-tolerant ground cover.



Average Light Intensity — The average light intensity of a given area can be determined by taking a light meter reading at 9 a.m., noon, and 3 p.m. When the leaves are on the trees, take a reading in the shaded area and one in full sunlight. Total the readings of each area separately. Divide the sunny area total into the shaded area total to determine the percentage of sunlight in the shaded area. If the average is below 25%, consider reducing the shade or growing a more shade tolerant plant.

EXAMPLE:

	Sun	Shade
9 a.m.	4000	900
Noon	8000	1400
3 p.m.	<u>7000</u>	<u>1200</u>
	19000	3500

$$3500 \div 19000 = 18.4\%$$

If the decision to reduce the shade is made, another reading should be taken after the work is completed to be sure enough light is available for good grass growth.

A light meter calibrated in footcandles is needed to take the light measurements. If one is not available a photographic light meter, hand held or built into a camera, can be used with the following formula:

$$\text{Footcandles} = \frac{20(f)^2}{TS}$$

f = f stop (aperture opening)

T = exposure time in seconds or fraction of a second (shutter speed)

S = film speed (ASA)

Place a piece of white paper, 8½ x 11 or larger, on the ground and take a reading by pointing the meter or camera toward the paper. The meter or camera should be 9 to 12

inches away from the paper. When taking the readings the same meter or camera should be used at the same spot and the same distance away from the paper. The readings are recorded and converted by using the formula.

EXAMPLE: S (ASA) = 100
 f (aperture opening) = 8
 T (shutter speed) = 1/60

$$\text{footcandles} = \frac{20(8)^2}{1/60 \times 100} = \frac{20(8 \times 8)}{1/60 \times 100}$$

$$= \frac{20 \times 64}{1/60 \times 100} = \frac{1280}{100/60} = \frac{1280}{5/3} = 766$$

The formula yields the following results if the A.S.A. is set at 32 and the exposure time, read at f stop 5.6 is:

	1	19.6	
	1/2	39.2	
	1/4	78.4	
exposure time	1/8	156.8	footcandles
in seconds	1/15	294.4	
	1/30	588.8	
	1/60	1177.6	
	1/125	2450	
	1/250	4900	
	1/500	9800	

The accuracy is $\pm 20\%$ using the above formula depending upon the cone of light accepted by the meter. However, provided the same meter is used to take all the readings, it is accurate enough in determining the percentage of light reaching the shaded site.

Reducing the Shade: It may be possible to establish and maintain a respectable lawn in a shaded area by removing some trees in a wooded site. Trees should be spaced far

enough apart for good air flow and light penetration. Forty to sixty feet apart is suggested.

Low branches on trees should be removed to a height of 10 feet or more. This will allow more early morning and late afternoon light to enter the area. Thinning the tops of dense trees will allow more light to penetrate the tops. Thinning is the selective removal of some small and large branches.

Cultural Practices

LAWN ESTABLISHMENT: Lawn establishment in a shaded site is more likely to be successful if seeded in early fall — mid-August through September. The area then has the maximum length of time with the leaves off the trees. This should allow good root and tiller development. It is extremely important to continually remove the fallen leaves. Sodding can be done at this time provided the sod contains the correct species of grasses. Most sod is predominantly Kentucky bluegrass which is not well adapted to shade.

Once the lawn is established, mow the grass to a height of 2-2½ inches. The longer leaf blade will have a larger surface to gather sunlight. This will result in a stronger plant.

FERTILIZING: Fescues, the dominant grasses in shade grass mixes, are not tolerant to high levels of nitrogen fertilizer. Therefore, apply fertilizer only once or twice a year. Limit each application to 1 pound of actual nitrogen per 1000 square feet. The first number of a fertilizer grade on the bag of fertilizer is the percent nitrogen by weight. For example a 10 pound bag of 10-6-4 contains 1 pound of nitrogen.

If a once a year fertilizing program is chosen apply the proper amount of fertilizer in early April or November.

With the two application programs, the fertilizer is put down in early April and early September or early September and November.

It is important to maintain the proper pH of the soil, therefore, have the soil tested every 2-3 years. The pH is maintained by applying limestone and the amount of limestone required is determined by the soil's present pH and its texture.

WATERING: Water only when it is necessary during prolonged dry periods. Apply ½-1 inch of actual water not more than once a week. Place a few cans in the sprinkler pattern to measure the water depth. Water in the early part of the day to allow the grass to dry before nightfall. This will help reduce disease problems.

TRAFFIC: Limit the amount of traffic and play activity in the shaded site. This will reduce the damage to the thin bladed grasses that are slow to recover.

COMPACTED SOIL: Loosen compacted soils by aerating or if the grass needs replanting, till the area to make a good seed bed.

LEAVES: Remove leaves every few days as they are shed by the trees in the Fall. A thick carpet of leaves will smother the weakened grass plants.

DISEASES: If fungi becomes a problem, apply the correct fungicide at the proper time and rate. See Lawn Diseases, 79-27 for more information.

Shade Tolerant Grasses: The fine leafed fescues are the preferred grasses for dry shaded sites. Banner, Pennlawn, Jamestown, Highlight, Koket and Ruby are a few varieties of red fescue and Beljart and Scaldis are improved varieties of hard fescue. Several varieties of Kentucky bluegrass have shown some shade tolerance. These are Glade, Nugget and Warren A-34.

Where the shaded site remains wet most of the year the rough bluegrass, *Poa trivialis* L., will do better. Sabre is a new variety of rough bluegrass.



Pachysandra

Alternate Ground Covers: Sites that do not have at least 25% of the available sunlight should be planted to another ground cover more tolerant to shade. A few are English ivy, *Hedera helix*; Japanese spurge, *Pachysandra terminalis*; or myrtle, *Vinca minor*. More information on ground covers can be found in Contemporary Ground Covers, 67-51, available from the Cooperative Extension Service county offices for \$1.00 each. By planting an alternate ground cover in the heavily shaded site, the homeowner can avoid the annual frustrations of replanting grass seed only to see it die by mid-summer.

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