



MANAGING LAWNS IN SHADE

Maintaining a lawn in the shade of trees, shrubs, and structures is a challenging task to both homeowners and turf professionals. Most turfgrasses require 4 to 5 hours of full sun, or an entire day of filtered light. Reduction of light results in reduced photosynthesis (a plant’s incorporation of atmospheric carbon dioxide into carbohydrates) and therefore in reduced carbohydrate production. When carbohydrate production drops below a certain level, development of roots, stolons, and rhizomes is curtailed and turfgrass deteriorates. Trees with dense canopies, such as oak, maple, carob, magnolia, olive, and conifers are most likely to create problems or reduced light for turfgrasses.

In addition to light stress, turfgrasses grown in shady sites are also stressed from:

1. Restricted air movement, which causes turf to remain wet for long periods – especially after irrigation, rain, or dew. This increased moisture can cause disease development.
2. Shallow feeder tree roots which compete for water and nutrients with turf grown under or adjacent to trees.

SYMPTOMS. The above stresses, in addition to lack of adequate sunlight, can cause severe deterioration in turf quality. Symptoms include: development of finer leaves, reduced shoot and root growth, reduced shoot density, reduced tillering (secondary stems), delayed leaf initiation, increased leaf length, more upright growth habit, and succulent growth. Each of these abnormalities can increase turf disease susceptibility, and reduce turf tolerance to traffic, heat, cold, and drought.

REMEDIES. Despite the potential problems, growing a lawn in shade is not impossible with proper management. The following practices will help ensure success.

Turfgrass selection. Selecting a shade-adapted turfgrass species or cultivar is the single most important step to growing turf successfully under shade. Turfgrasses differ in their tolerance to shade. The relative shade tolerances of turfgrasses commonly grown in California appear in the table below.

Shade Tolerance of Common California Turfgrasses				
Turfgrass	Excellent	Good	Medium	Poor
Cool Season	Red fescue (dry shade) Chewings fescue (dry shade) Rough bluegrass (wet shade)	--- --- ---	Creeping bentgrass Colonial bentgrass Tall fescue Kentucky bluegrass 'A-34' 'Glade' 'Victa' 'Nugget'	Kentucky bluegrass Perennial ryegrass Annual ryegrass ---
Warm Season	St. Augustinegrass	Zoysiagrass Seashore paspalum	--- ---	Bermudagrass

Shade modification. It is often possible to modify the shady environment to improve conditions for turfgrass growth. To increase light reaching the turf selectively prune tree branches. Pruning is particularly effective for dense shade producers such as maple and oak. Prune limbs within 8 feet of the ground to allow direct sunlight to reach the turf during early morning and late afternoon.



Dense underbrush, hedges, or shrubs within the shaded area should be thinned or removed to facilitate air movement over the turf surface. Contrary to common belief, pruning of shallow tree roots is not recommended. The majority of tree feeder roots grow in the uppermost 18 inches of soil and removing them significantly reduces water and nutrient uptake. Although the negative effects of this reduction may not appear for 3 to 4 years, it may then be too late to save the tree. Practices not as damaging as tree root pruning include deep irrigation and fertilization of trees to discourage the formation of shallow feeder roots. If exposed tree roots make mowing difficult, a uniform shallow topsoil or sand topdressing around the tree may solve both problems. Never cover exposed tree roots with a layer of soil deeper than 1 to 1½ inches.

CULTURAL PRACTICES

Mowing. Since the amount of light reaching the turf surface is greatly reduced, it is important to allow the turfgrass to intercept as much available light as possible. This can be accomplished by raising the mowing height ¼ to ½ inches above normal, thus providing greater leaf area for more efficient absorption of light. This practice also encourages deeper and more extensive rooting which enhances the turf's ability to compete with trees for water and nutrients. Increased mowing height also alleviates the thin appearance commonly associated with turf grown on shady sites. In addition, the higher cut ordinarily reduces mowing frequency, which means fewer open wounds on the leaves and thus reduces likelihood of disease infection. And finally, fewer mowings mean less traffic on shady lawns. This is significant since the increased succulence of turfgrass tissue in shade decreases wear tolerance. All traffic on such lawns should be kept to a minimum.

Irrigation. Irrigation is critical to managing lawns in shade. Since turf root systems are severely weakened under shady conditions, and tree roots have an advantage regarding moisture uptake to begin with, heavy infrequent irrigation is recommended. This will encourage deeper rootings of trees, thus lessening the competition for moisture within the root zone of grasses. Deep, infrequent watering also reduces the chance of disease development by decreasing the period in which the lawn surface is wet. Water should be applied to turf early in the morning to allow for rapid surface drying. Late evening or night watering leaves the lawn surface moist too long and promotes disease activity.

Fertilization. Proper nitrogen fertilization is also very important for the shady lawn. Excess nitrogen favors turfgrass shoot growth over root growth. It also encourages formation of succulent tissue, which is highly susceptible to disease infection and traffic injury. Consider the following when fertilizing shaded lawns.

1. The nitrogen need of turfgrasses grown in shade is approximately half that of turf grown in full sun.
2. Only minimum amounts of nitrogen should be applied to cool season turfgrasses during the summer months. Fall and spring are the best times to apply fertilizer to shaded turf.
3. Trees in the area should not be surface fertilized. A good practice is to place the fertilizer about 10 inches below soil surface. This places fertilizer in the zone of greatest tree root activity and below the turfgrass root system.

Disease control. Effective disease control is essential on shady lawns. The incidence of several turfgrass diseases is linked directly to the presence of a shady environment. In general, disease is not a serious problem for most warm season grasses if they can be grown in shade. Cool season grasses, however, are often infected and damaged.

Alternatives. In some situations very dense shade makes the establishment or maintenance of a satisfactory lawn impossible, even with proper turfgrass selection and management. In these cases use a shade-adaptive ground cover, e.g., English ivy, *Vinca minor*, creeping cinquefoil (*Potentilla*), vineleaf cinquefoil, etc. In situations where plant materials are not suitable or cannot be worked into the landscape satisfactorily, decorative mulches such as shredded bark chips, wood chips, or gravel may provide useful alternatives.

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