

Lawn Care

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GOOD LAWNS IN THE SHADE

BETWEEN houses and beneath trees are two places where green grass would make the greatest improvement on any property. These same spots, however, are the very ones which try the patience of lawn enthusiasts year after year. Here are some suggestions that will help solve your own shade problem.

Compared to the open fields of the country the average lawn presents such an unnatural environment that it is surprising grass grows at all. Many lawn soils are either too wet or too dry, and are usually deficient in plant food. Sometimes grass is subject to constant tramping and the ill effect of an atmosphere laden with smoke and soot. In a great many cases shade from trees or buildings is added to these unfavorable conditions.

A moderate amount of shade may be beneficial if it protects closely cut grass from a hot midday sun. But where a lawn is densely shaded most of the day, a real difficulty is encountered. If it is shaded only in the afternoon the effect is less harmful than when it is shaded in the forenoon and later suddenly exposed to the hot afternoon sun, a condition favoring rapid evaporation. In this latter case grass may wilt rapidly when the sun strikes it because the breathing pores do not close quickly. As a result the leaves transpire moisture faster than it can be supplied by the roots.

In analyzing the shade problem we find that some factors can be controlled and others can not. It is difficult to control tree roots which compete with

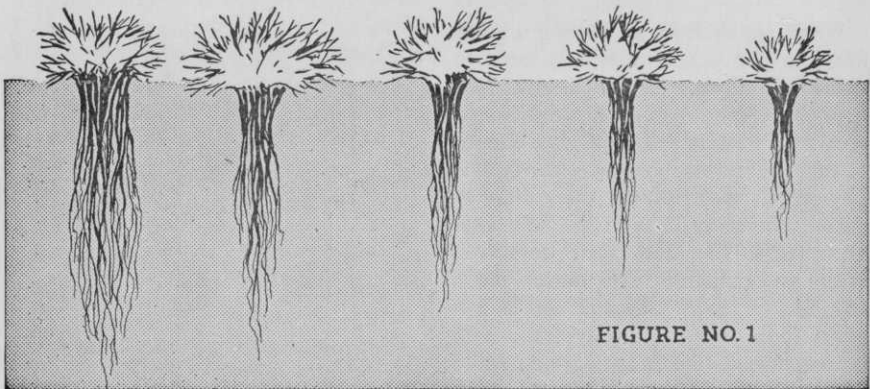


FIGURE NO. 1

EFFECT OF SHADE ON ROOT GROWTH

Reading from left to right: (1) sun all day, (2) afternoon shade only, (3) forenoon shade only, (4) speckled shade, (5) shade all day.—U. S. G. A. Green Section Bulletin.

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grass roots for food and moisture, or rainfall which collects on tree limbs and falls in large drops that wash soil away from grass roots and expose them to the weather. This latter factor is particularly harmful in winter when alternate thawing and freezing is apt to kill the exposed roots. The amount and intensity of sunlight is beyond modification except in a limited way such as by the removal of some tree branches.

Some of the difficulties that could be controlled yet account for many shaded lawn failures include: shortage of plant nutrients, too much or too little moisture, and unfavorable bacterial environment. All of these may be due to a poor physical or chemical soil condition.

Limited Root Growth

The main effect of most of these controllable and uncontrollable factors is to limit the root system. As the root system is diminished the whole plant is weakened, until it finally succumbs. In the test referred to in Figure 1, conditions for the grass were relatively favorable except for shade. If the root system of the average shaded lawn were compared with adjacent grass growing in the sun we would probably find even greater variation.

If we are desirous of having a good lawn in the shade it is necessary to make conditions favorable to root growth. Some of these cannot be changed but others can and they should be as nearly right as possible. The physical characteristics of the soil are of great importance. They should be such as to permit easy and rapid movement of air and moisture. This movement is retarded in heavy clay soil and is too rapid in sandy or gravelly soils. Tile drainage may correct the former while a change in soil texture and structure may be the only solution in the latter.

The chemical condition should also be carefully checked. Extremely acid

soils are improved by liberal applications of lime. However, the soil should be tested before lime is added because it is not advisable to use it unless actually needed.

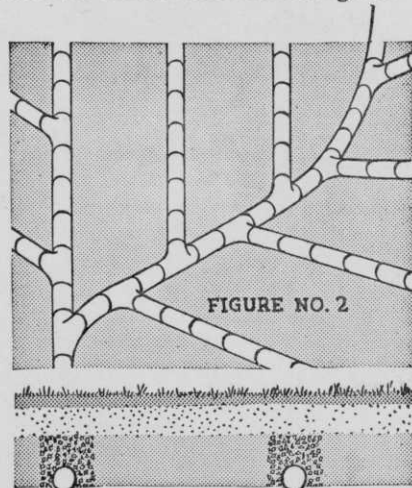
The lime must be incorporated into the soil to do the most good. Many folks still think that an early spring "white-wash" of their lawns is necessary. Actually it may do more harm than good because too much lime encourages certain types of weeds.

Certain Bacteria Essential

Enormous quantities of certain types of bacteria must be present in soils if they are to support a good growth of grass. These bacteria break down soil organic matter into humus, at the same time liberating certain chemical food elements to grass roots.

Soils that are waterlogged during winter and spring and excessively dry in summer, or extremely acid soils are unfavorable to the development of soil bacteria.

Both subsoil and topsoil need to be improved chemically by adding plant food and sometimes lime. Trees should be fed so they can obtain their sustenance from the subsoil and need not take the surface food from the grass.



1—New Lawns in Shade

A permanent turf can be had only if conditions are made right in the beginning. This is more economical than later superficial treatments.

As in building other lawns, the work on those that are shaded should be planned so that they can be seeded at the most favorable season. This is early fall in most localities. Although fall seeding may mean extra care in keeping leaves removed, the great advantage is that the grass gets a good start before tree leaves shut out warm sunlight the following spring.

Late winter or early spring is the next best time to seed shaded lawns. A valuable head start will be gained if the ground is prepared for spring seeding the previous fall.

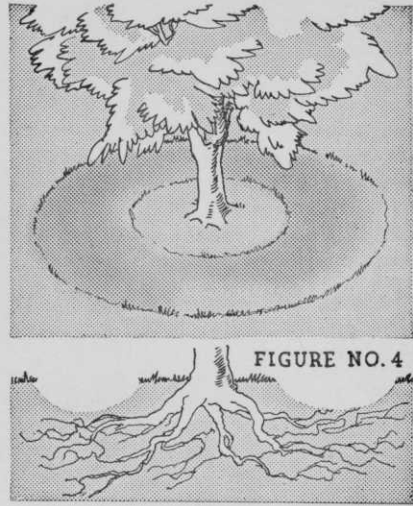
Drainage

In a light sandy soil natural drainage is adequate, but in heavier soils artificial drainage is often needed to remove excess water. Except for very long lines, four inch tile is sufficiently large. Lines are placed 15 to 20 feet apart from 12 to 18 inches below the final surface grade. (Figure 2.) The fall should be gradual, about three inches in 100 feet, and established by using instruments, not by guesswork. It is best to cover tile lines with 8 or 10 inches of coarse cinders or gravel, to insure proper functioning and prevent soil from clogging the lines. Further information about the installation of tile drainage may be found on page 17 of *GOOD LAWNS*.

Fertilizing the Trees

After suitable underground drainage has been provided, the next step in building a lawn under trees is to add a liberal amount of fertilizer for the use of the trees. This can be accomplished in several ways and is independent of later applications to benefit the grass.

A good method is to remove the topsoil under the spread of the tree and thoroughly cultivate the subsoil, using



care not to harm the tree roots. The feeding roots of trees are commonly found at the tips of the larger roots and so the fertilizer application is best concentrated in a zone extending from the ends of the branches to within 2 or 3 feet of the trunk. (Figure 4.) Mix in liberal quantities of Turf Builder or some other good tree food. Authorities consider the food requirements of trees and grass to be quite similar.

It is important to have food well below the surface so that the fibrous roots will develop downward to get it instead of growing up to take the limited supply available to the grass. If obtainable, liberal quantities of manure may be worked into the soil under the tree and the fertilizer thoroughly mixed with it. Peat moss, sewage sludge, leaf mold or any partially decayed organic matter make good substitutes for manure. Such materials are valuable for their ability to hold moisture and plant food for use of the tree roots.

The amount of fertilizer required depends upon its analysis and the spread of the tree. Forty to fifty pounds per 1000 square feet of ground is a moderate quantity to use. This is measured on the basis of ground area under

the spread of the tree.

Another method of determining the amount of food required is to allow 2 or 3 pounds per diameter inch of trunk. This quantity should be scattered evenly and worked in deeply as illustrated in Figure 4.

Good Lodging for the Grass

With these things done, the area can be prepared for seeding. Good topsoil is most important. It can be improved now but not after the ground is in turf. Sandy soils are much improved by incorporating liberal quantities of decaying organic matter and clay. The heavier soils are often broken up by mixing in sand as well as organic matter. Comparatively large quantities are needed but the investment is a paying one in the long run since the object is a good, permanent lawn. If the native soil is very sandy or a heavy sticky clay, replace it with good topsoil.

If existing topsoil is put back in place it is advisable to first have it tested for possible excess acidity, particularly if moss were present or if the soil has a sour, musty odor. Sometimes lime is needed but its use is not recommended unless it has been definitely determined that it is needed and in what amounts.

We will gladly check soil samples for lime and fertilizer needs. Send your sample to O. M. Scott & Sons Company, Marysville, Ohio. If you live east of Ohio, mail samples to us at Ridgefield, N. J. This service is free.

After the topsoil has been improved physically, it should receive a heavy application of fertilizer. This is most efficiently applied with a Scott Spreader. (Figure 5.) Twenty to twenty-five pounds per 1000 square feet is ample if a good grass food is used. Ordinary fertilizers must be applied twice as heavy. Recent experiments have proven the value of having a liberal supply of plant nutrients available to grass seedlings. They will develop into mature plants

much faster and be better able to withstand the effect of hot, dry weather or extreme cold.

A liberal application of fertilizer to the topsoil is always necessary for tree shaded lawns, even after food has been supplied to the trees. There the grass will be growing under a condition of severe competition and unfavorable environment. Every effort should be made to help the struggling grass.

More Air and Light

Beautiful trees should not be ruined by wholesale hacking and chopping but judicious use of the saw by someone who knows his business may improve the appearance and health of any tree. It will also let in more light to make conditions more favorable for grass. At the same time, it may permit better air circulation under the tree. Many turf failures in the shade are due to fungus diseases which develop in spots of poor ventilation.

The removal of a few tree limbs or the cutting of an opening in a surrounding dense hedge may be a great help in increasing air movement and reducing the possibility of disease.

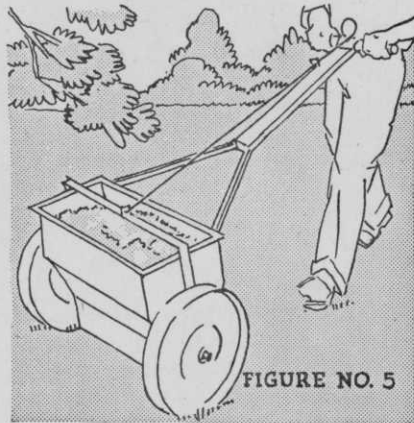


FIGURE NO. 5

The Surface Grade

Following the fertilizer application the soil is ready for final surface grading. Surplus water must not stand on

the lawn as standing water is the cause of much turf kill especially during winter. Grading should extend right up to the tree trunks so the heavy wash of water down the trunks will not collect in pools at the base of the tree. A slight rise at the tree base will solve this problem. Sometimes a cultivated area is maintained four or five inches out from the base of the tree. This should be of fairly light soil which will permit ready absorption of water.

Selecting Correct Seed

From this point the usual instructions for seeding new lawns apply. A firm seedbed with the upper inch of soil finely pulverized is desirable. Of equal importance is selection of the seed. It must be composed of grasses that will thrive in absence of sunlight. These are available but unfortunately many shade mixtures are that in name only. They will produce a temporary green effect but nothing permanent. The right mixture of shade tolerant grass varieties costs more than ordinary seed but the investment is well justified. Moreover it produces a type of turf harmonious in color and texture with the best open place grasses.

2—Improving Established Lawns

Although the shade problem can be permanently solved only by the foregoing procedure, there are many places where this is not feasible. In such cases certain treatments can be prescribed that should result in worthwhile improvements.

LAWN CARE readers often report their shaded lawns becoming worse and worse. For a few seasons grass grew successfully beneath the very same trees, but in spite of their efforts it has been gradually thinning out in recent seasons. They overlook the fact that in the period since the original planting the lawn has had to face increasingly shaded conditions and many more tree roots. This development has been so slow that it has gone unnoticed, but it

is nevertheless quite likely that the tree's foliage and roots have multiplied to a degree causing an acute shaded lawn problem.

Feeding Trees

Under no circumstance should feeding of the trees be overlooked. This means much to the health of turf and is of even more benefit to the trees. Many trees die needlessly every year because of starvation.

There are several methods of getting fertilizer into the ground for use of trees. Some people make a business of this and have efficient equipment for doing it. It is important to place the fertilizer to a depth of about eighteen inches and to locate it near the tips of the feeding roots. With most trees these are located as far from the tree trunk as the tips of the branches. A good plan is to make holes in a pattern similar to that shown in Figure 6. They can be made with a large crowbar or lead pipe

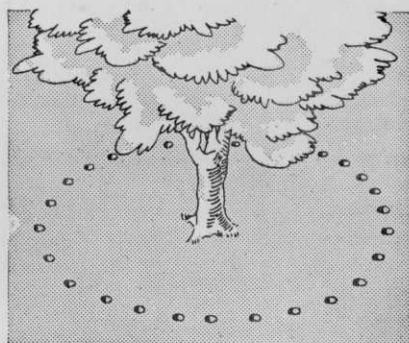
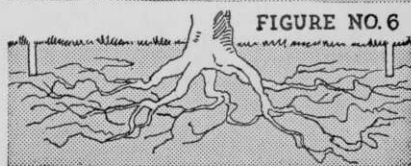


FIGURE NO. 6



and should be about 18 inches apart. Place into each hole the proportionate amount of fertilizer required to give the tree the amount needed according to the suggestion on page 4.

The frequency of feeding trees depends upon how near to starvation

they were. It is safe to say that many trees could well use fertilizer every year or two.

Sowing the Seed

The next step is a vigorous scarifying of the surface soil in preparation for seeding. A heavy garden rake can be used to loosen the surface soil, remove dead grass and weeds and make a favorable seedbed. The seed will have a better chance if a layer of good soil is spread over the lawn to a depth of $\frac{1}{2}$ inch or so. The established grass will grow up through it, while the new grass will find conditions favorable to a rapid root growth.

Whether or not topsoil is used, an application of fertilizer is essential. A specific grass fertilizer will give the best results, since the food requirements of turf, as well as trees, are quite different from those of flowers or vegetables.

All efforts to make a good lawn in shade will go for naught unless the right seed is selected. Seed for shaded lawns should be of the highest quality, and composed of varieties that will naturally tolerate conditions of limited sunlight.

After sowing the seed evenly it should be raked into the ground or covered lightly with screened soil or pulverized peat moss. This is important as otherwise the seed and later the seedling plant will hardly get enough moisture for germination and growth.

3—Care of Shaded Lawns

The general care given a shaded lawn will often determine whether it is to be satisfactory. Once a good turf is established it should be guarded diligently. Strong turf can successfully withstand adverse conditions to which weak turf would succumb.

The ultimate success or failure of a shaded lawn depends to a considerable degree upon the cutting of the grass. Close mowing is harmful. It is advisable to cut with a mower set no closer

than $1\frac{1}{2}$ to 2 inches. The effect of close cutting is to gradually starve the root system because food reserves for the roots are manufactured in the green growth above ground. The more this is limited the less extensive will be the root system, which, as we have seen, is already much reduced in shaded turf. Hence grass will not be able to meet the competition of trees and survive other unfavorable conditions.

Moisture Important

The moisture used by the trees as well as the grass during dry weather must be replaced by artificial means. Shaded lawns need lots of water yet this must be applied carefully. When and in what quantities water should be applied depends upon the soil, denseness of shade, and weather. One thing is certain: if the soil texture and structure are not right it will be most difficult to keep shaded lawns alive during dry weather. No amount of water will overcome a puddled soil condition which bakes and cracks in hot weather. Sometimes heavy waterings simply aggravate the unfavorable features.

Method of Watering

We might point out again that lawns should not be "sprinkled." They should be watered at infrequent intervals and in such a way that the ground is thoroughly moistened to a depth of several inches. It is best to use sprinklers that deliver the water in a fine spray but they should not be allowed to run in one place so long that the soil cannot absorb the water as it falls. Standing water is injurious to soils so it is well to move the sprinklers long enough to allow the water to penetrate the topsoil. They can be reset later if necessary to apply additional moisture. By cutting a small plug from the turf with a knife, the depth of moisture penetration is easily determined.

For a complete discussion of watering see LAWN CARE number 60.

Regular Feeding

Lawns and trees are in constant competition for the surface soil supply of food and moisture. That is why at least two feedings each year are suggested for the lawn, namely in early spring and early fall. A third feeding is sometimes advisable for densely shaded lawns. It should consist of one-half the usual rate, applied in early June and promptly washed off the grass blades with the garden hose.

The suggestion to avoid applying fertilizers when grass is damp is doubly important in treating shaded lawns. This protected grass is naturally softer and more tender than that out in the open so if much fertilizer sticks to the blades there is apt to be a burning. It is wise to examine grass carefully to satisfy oneself that it is not damp with dew or rain. Shaded lawns may be damp when surrounding grass exposed to the sun is perfectly dry. This precaution is not necessary when feeding during late winter while the grass plants are dormant, which, by the way, is to be recommended as a more general practice in the maintenance of both shaded and open place lawns. There is then no danger of burning and the fertilizer will be held by the soil until the grass can use it.

More help on choosing and using a good grass fertilizer is given in LAWN CARE number 64.

Leaves should be removed from lawns frequently. They do not offer protection but instead tend to smother the grass plants. They will do a lot of damage in winter when they become packed tightly against the ground by rain and subsequent freezing. Trespassers must be kept off lawns in the winter. Walking on frozen grass may injure the plant beyond its ability to revive.

Seed Important

Without in any way minimizing the importance of all described factors, the

seed used may in the final analysis determine whether your efforts will result in success or failure. No matter what the soil preparation, care in planting and feeding, all will be lost unless those varieties of grass are planted which will naturally tolerate limited sunlight. While no variety of grass will thrive if conditions are too bad, certain kinds have physical properties enabling them to better withstand the peculiar conditions encountered in shaded lawns. Such grasses are not any more suitable for use out in the open than are the best open place varieties suitable for shaded lawns. Unfortunately, because of lack of information, or the greater cost, correct seed is seldom provided for shaded lawns.

Ground Covers

In spite of what pains may be taken, there are certain places where permanent turf cannot be obtained. Shade may be so dense or the soil so bad that improvement is out of the question. In such cases a green covering can be maintained by sowing grass seed two or three times each year with the realization that each sowing will be only temporary.

Sometimes ground cover plants are brought into use. The three most generally acceptable evergreen covers are: Japanese Spurge (*Pachysandra terminalis*), English Ivy (*Hedera helix*) and Myrtle (*Vinca Minor*). These are all low growing and make a compact and uniform covering. Other plants are available and so it is best to consult a local nurseryman about the problem.

More information about ground cover plants may be found in LAWN CARE number 27.

Postman Brings Letters About Shaded Lawns

Those who have shaded lawns to battle generally think theirs is the worst burden. True enough, growing grass in

shade is quite a problem, but there are certain compensations. For one thing very few weeds grow in shade; crab-grass not at all, and dandelions to only a limited extent. Then, too, shaded lawns are protected from the burning sun that destroys so much turf during dry summers.

Here are some new angles to the problem of grass under trees.

One reader of *LAWN CARE* wrote us about an interesting problem regarding treatment of a lawn area around a tree. As this particular place in his yard received a lot of wear he was considering putting down a flagstone terrace on the area with grass between the stones and wondered if this would be injurious to the tree. We immediately took up this problem with The Davey Tree Expert Company who replied as follows:

"We see no objection to the method of treatment of the shaded place brought up by your correspondent. This would certainly be preferable to an all concrete covering over the surface of the soil occupying the tree roots.

"The crevices between the stones should be fairly effective in allowing for entrance of air and water to the tree roots and would also permit of the application of fertilizers to the tree roots by some modification of the perforation system which we recommend. From the standpoint of the tree, it would probably not be any more harmful than a heavy covering of grass."

Some other interesting letters have been received. Here is one from an experienced authority, Mr. John C. Ryan, Superintendent of St. Mary's Catholic Cemetery Association of Appleton, Wisconsin:

"With us, the only problem we have is growing it under evergreens. Nobody can grow grass under evergreens that grow close to the ground. Up to the time an evergreen reaches 10 or 12 feet in height, it should be kept cultivated as far as the branches reach, and therefore, up to that time, you have no grass problem.

"My rule has always been never to trim an evergreen of its lower branches until forced to do it. A beautiful evergreen is one that has its branches complete, from the ground up to the tip, regardless of the height. But when the time comes that you have to do trimming, don't do it all at once. Begin by trimming out several rounds of the lower limbs, and let it rest for a season, then take a few more. In fact, trim no more off the bottom in any one season than the distance the new tips will grow on the top. This prevents them from looking like a bush on the end of a pole. We reseed with your shady grass seed each year, and keep grass growing right up to the trunk on most of them.

"All evergreens will shed a lot of needles each year, and you can not grow grass in a bed of these. So, we always remove every trace of the needles each spring with a spring tooth rake or sometimes a dandelion rake will do better work. Then we topdress the bare spots, using plenty of fertilizer, and sow with the shady lawn mixture. This is work for almost every season, but the results are worth it. We have had no trouble in growing grass under any of our trees but the evergreens and not much under these after they have been trimmed up to five feet from the ground. We find that your shady mixture, plus topdressing, does the trick."

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