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## Turf

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A quality lawn adds more to a landscape than any other single element. Not only is it beautiful, but it is also functional. A quality lawn is also one of the best examples of our attempt to establish a monoculture (the growing of only one type of plant) while witnessing nature's attempt to return to diversity ("weeds"). The secret to satisfaction and success is to balance what you want with what you really need. Consider what you have to [work](#) with, how much work you are willing to do and how much you are willing to spend.

Imagine the perfect lawn. A thick, green carpet of turf makes an attractive setting for the house and is one of the first things that passers-by notice. A smooth, level lawn provides an area for recreational activities such as croquet, volleyball or a game of touch football. On the practical side, turf prevents erosion of soil by wind and water, keeping the home cleaner. Grasses, like other plants, give off water as one of their growth processes. This is called transpiration and will cool the air, making a home cooler.

Turfgrasses are divided into two groups **warm season** and **cool season grasses**, based on type of photosynthesis (C3 or C4). Plants with the C4 photosynthetic pathway are those that can grow in **hot summer conditions**, while those with C3 photosynthetic pathways are **not physiologically able to be as effective in hot summer conditions**.

Common warm season grasses (C4 photosynthesis) are:

- Bermudagrass
- Carpetgrass
- Centipedegrass
- St. Augustine
- Zoysia

Cool season grasses (C3 photosynthesis) are:

- Bentgrass
- Bluegrass
- Fescue
- Ryegrass



Zoysia



Bentgrass



Ryegrass

The type of grass selected depends on the climate. Each type has many varieties, some or all of which should not be grown in your area. Most lawns in the southern United States consist of only one type of grass while many lawns in the northern U.S. are a mixture of more than one type. Blends of different types of grass are sometimes recommended. It is important to check with your local Cooperative Extension office for the best varieties for your climate and soil type.

### **Establishment**

There are three methods of getting a lawn started: solid sodding, seeding and planting small pieces called sprigs or plugs. Some types of grass are started by only one method while there may be a choice with others. Regardless of the method you choose, soil preparation is the same.

It is difficult if not impossible to get a lawn started on a site without topsoil. At the construction stage, it is beneficial to have the contractor push the upper 4-6 inches of soil to one side until building and subsoil grading operations are complete. Use fencing to protect existing trees from heavy equipment. Changing the grade (soil slope) within the drip line (edge of trees or buildings where water drips off) can be fatal. Use tree wells or retaining walls if grade changes are unavoidable. Remove all building materials such as paint cans, bricks, stone, concrete, boards, paper and wire. Do not bury these materials in the subsoil. If the subsoil is poorly drained it may be necessary to install tile drains.



Spread topsoil uniformly over the yard so that there are no low spots. Top soil should be tested and amended as necessary. If it is necessary to add lime, it should be tilled in before the final grade is established. Ground dolomitic limestone should be used when it is available since it contains magnesium in addition to calcium. A well-balanced inorganic fertilizer should be added and raked into the soil. Many soils are deficient in phosphorous, a nutrient important when grasses are being established.

Start with high quality seed or planting material (sprigs, plugs or sod) for best results. Examine the analysis tags on seed packages before you buy. State and federal laws require these tags to give percentages of each grass seed in the container, the percentage of noxious weeds, percent germination of the grass seed and date tested. **Amount of pure live seed can be calculated by multiplying the percent germination by the percent of grass seed.** It is important that seed be kept cool and dry prior to planting as high temperatures and humidity can lower germination.

Seed may be hand planted or with mechanical seeders. Regardless of the method, it is imperative that coverage be uniform. Divide the seed into two equal parts. Spread the first half evenly across the yard. Spread the second half evenly over the same area but at a right angle to the direction the first half was spread, insuring good coverage. Seed should be covered by raking lightly or by rolling.



Covering the lawn with clean straw (free of live seed) will help to keep young grass seedlings from drying out. Failure to use clean straw can result in years of fighting weeds. This layer of straw should be thin enough so that about 50 percent of the soil can be seen. One 60-80 pound bale of straw per 1,000 square feet gives this amount of coverage. It will not be necessary to remove this material before the grass is mowed.

Cheese-cloth, open-mesh sacking, or commercial mulching cloth helps keep soil moist while holding seed in place on terraced or sloping banks. Grass seedlings grow through these mulching materials and become established. This material can be left to rot.

Grass seedlings should be kept moist until established. This means watering at least once a day when it does not rain. In hot, dry weather it may be necessary to water as many as two or three times each day. Young plants are most vulnerable as seedlings. The lawn does not have to dry out for long to result in death. Avoid saturating the soil since excessive moisture is favorable for the development of a fungus disease called damping off. Keep people and pets off the lawn until it is established.



Starting a lawn from seed is not possible for grass varieties that do not come true from seed or when seed is not available in sufficient quantities. These grasses must be propagated asexually by solid sodding, strip sodding, plugging, sprigging, or stolonizing. Solid sodding is the most expensive method of getting a lawn established but gives that "instant" look. It is generally not used except where erosion will be a problem or results justify the cost. Sod should be 3/4 to one

(1) inch thick. Thicker sod does not knit to the underlying soil as fast. Lay pieces of sod in a brick-like pattern and as close together as possible. Keep it moist until well established.

A less expensive method involves cutting up sod into smaller pieces. If sod is cut into long, 2-4 inch wide strips it is called **strip sodding**. If it is cut into 2-4 inch round plugs or squares it is called **plugging**. Generally strips, plugs, or squares are set about a foot apart. Sprigging and stolonizing involve planting individual plants, runners, or stolons. These are obtained by tearing apart or shredding solid pieces of established sod. Spacing is governed by how fast the grass spreads, how fast coverage is desired and amount of planting material available.

Table 1 gives the seeding rate and time of year for many common grasses and Table 2 gives the rate and time of planting for grasses that are established by asexual (vegetative) means in Kentucky. Because climates change and winters vary greatly across the United States which in turn affect growing conditions and seeding times, check with the local Cooperative Extension office regarding seeding information timings.

<b>GRASS</b>	<b>AMT. PLANTING MATERIAL/1000 SQ FT</b>	<b>TIME OF PLANTING</b>
Bermudagrass	10 sq. ft. nursery sod or 1 bushel of stolons	Spring-summer
Buffalograss	10 sq. ft. nursery sod or 1 bushel of stolons	Spring
Carpetgrass	8-10 sq. ft. of sod	Spring-summer
Centipedegrass	8-10 sq. ft. of sod	Spring-summer
Zoysia	30 sq. ft. of sod when plugging; 9 sq. ft. of sod when sprigging	Spring-summer

<b>GRASS</b>	<b>LBS OF SEED/ 1000 SQ.FT.</b>	<b>TIME OF PLANTING</b>
Bahiagrass	2-3	Spring
Bentgrass	1-2	Fall
Bermudagrass	2-3	Spring
Buffalograss	1/2-1	Spring
Carpetgrass	3-4	Spring
Centipedegrass	2-3	Spring
Chewing fescue	3-5	Fall
Kentucky bluegrass	2-3	Fall
Red fescue	3-5	Fall
Rough bluegrass	3-5	Fall
Ryegrass (perennial)	4-6	Spring-Fall
Tall fescue	4-6	Fall

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## **Maintenance**

Establishing a lawn is only the beginning. A short period of neglect can cause a lawn to decline in quality.

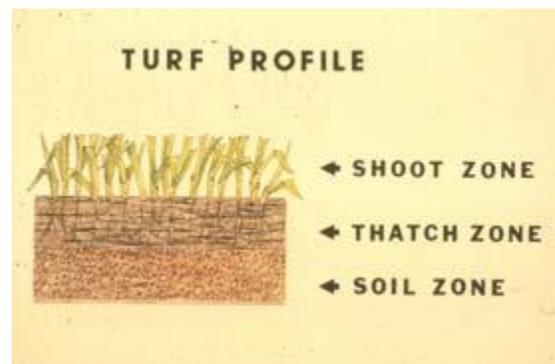
**Mowing the lawn properly is more important in maintaining quality than anything else.** Mowing frequency depends on how fast the grass grows. This varies according to the species of grass, season and soil conditions (water and nutrients). As a rule of thumb, no more than 1/3 to 1/2 of the leaf blade should be removed at any one time. Mowing grass at a height of about three (3) inches allows a more extensive root system to develop. This may be an important consideration where water is not available. It is not necessary to collect grass clippings unless they are so heavy that matting is a problem. Allowing clippings to remain will not result in thatch formation and adds additional nutrients as they break down. Keeping the mower blade sharp at all times insures that leaf blades are cut rather than torn off. Jagged, torn edges are a good entry site for diseases.



Lime is usually applied by itself. Nitrogen, phosphorus and potassium are applied together as complete fertilizers. Agricultural grade fertilizers are just as good as specialty and turf fertilizers. Care must be taken in applying agricultural fertilizers to turf to prevent burning and overfertilization. In order to have good growth, **potassium should be approximately half that of nitrogen and about twice that of phosphorus** (e.g. 4-1-2, 12-3-6, 20-5-10, etc.). To a large extent the amount of nitrogen will determine the quality of the lawn. A little nitrogen will green up a lawn faster than anything else but too much will cause grass to suffer from heat stress, disease and insect problems. Cool season grasses should be fertilized in the fall and warm season grasses should be fertilized in late spring or early summer. The amount of fertilizer applied should be based on results of a soil test and should be applied in the same manner as seed.



Thatch is mainly dead grass stems and roots that build up on the soil surface. If thatch gets too thick, grass will begin to form roots in this layer. Thatch will dry out before the soil and, once dry, is very difficult to rewet. Some thatch is an indication that the lawn is healthy but over a half inch can indicate that the lawn is headed for trouble. As more fertilizer is applied, the faster growing grass results in rapid thatch formation. Excess thatch is removed with a dethatching machine. This equipment has small blades or wires that dig down and pull a lot of the thatch up to the surface. It can then be raked up and disposed. It is impossible and undesirable to try to get it all. Spring and fall are best times for this operation.





Rust disease



Annual white grub

Turfgrasses, like other plants, are subject to attack by insects and diseases. The first job in controlling any problem is to identify it. Depending on the type of problem and its severity, chemical control may be necessary. Consult a professional for the best and safest control measure for your specific problem.

Cool season grasses turn brown and go dormant during hot, dry weather but may be kept green by watering. Regardless of the type of grass, it should be watered to a depth of 3 to 6-inches each time. This encourages a deeper root system. Watering can be done at any time of day if diseases are not a problem. If fungal diseases are a problem, watering should be done in the very early morning. Loss of water to evaporation is greater during the heat of the day and will be compounded by strong winds. This also allows leaf blades to dry and discourages fungal growth.



In the fall, rake leaves once a week. Do not wait until all leaves have fallen to remove them. A thick covering of leaves left on the lawn for several weeks may result in dead areas. If this happens, re-seed the area as previously described.