ENH 02

UF UNIVERSITY of FLORIDA
IFAS Extension

Preparing to Plant a Florida Lawn[1]

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Proper soil preparation prior to grass planting is critical to ensure the establishment of a quality turf. Preparation will determine how quickly the lawn becomes established and its long-term maintenance requirements. Soil should be prepared whether you are planting a new lawn or replanting an old one and whether you are seeding or propagating vegetatively. The following steps provide a general guideline for preparing to plant a lawn.

Clean and Rough Grade

Remove all construction debris, brush, large roots, rocks, weeds, and old tree stumps. If the area needs extensive grading, remove the topsoil and stockpile it for replacement after the rough grade is established. Slope the ground away from the house at a 1 percent to 2 percent decline (the ground should decline six inches to a foot every 50 feet). The rough grade should conform to the final grade after the topsoil is replaced. Swales or mounds with steep slopes of more than 10 percent should be sodded and not seeded to avoid erosion problems. Avoid steep slopes and mounds since it may be difficult to establish grass on them and mowing may be dangerous. If an area cannot be leveled, use groundcover plants other than turfgrass. Control of perennial weeds such as Bermudagrass and torpedograss should be performed during site preparation. Several applications of a nonselective herbicide such as glyphosate (Roundup®) may be necessary for complete weed control.

Soil Analysis

You should always obtain a soil analysis before planting. Take a representative soil sample by collecting small plugs or garden trowels of the top 6 inches of soil at 10 to 15 locations around the yard. Combine and mix these samples thoroughly and allow them to air dry. When your soil mixture is dry, submit a subsample (approximately 1 cup) to the Florida Extension Soil Testing Laboratory for analysis. For more information on soil sampling and testing, see EDIS SL281, *Soil Sampling and Testing for the Home Landscape or Vegetable Garden.*

Soil samples can be analyzed for pH, lime requirement and available plant nutrients (P, K, Ca, and Mg). A soil pH test will indicate whether pH adjustment is necessary. If the pH test indicates the soil is too acidic (pH is too low), the laboratory will run a lime requirement test to determine the amount

1. This document is Fact Sheet ENH-02, a series of the Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. First published: May 1991. Revised: January 2001, June 2003 and May 2009. Please visit the EDIS Web site at http://edis.ifas.ufl.edu.

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of dolomitic limestone (dolomite) you should apply to increase the soil pH. The lime requirement test is essential. It takes into account not only the soil pH but the soil's ability to resist changes in pH (called its "buffering capacity") as well, so that you apply neither too much nor too little lime. Soil pH adjustments should be done before a lawn is planted.

A soil test analysis for extractable nutrients will provide the basis for your lawn fertility program. Phosphorus is generally found in sufficient quantity in Florida soils and seldom needs to be applied to turfgrasses. Do not apply fertilizer before you plant grasses because there is a great potential for the nutrients to leach or run off when there is no vegetation to absorb the nutrients.

Installation of Irrigation Equipment

If you want to install an irrigation system, it should be designed by an irrigation specialist and installed according to design specifications before you plant grass. An irrigation system's capacity to perform properly is limited by its design, construction, and operation. A poorly designed or improperly installed system will never operate satisfactorily. To irrigate the lawn properly, the system must deliver water uniformly and in the amount the grass needs. In order to conserve water and cultivate a strong, healthy turf, turn off the automatic setting on the system so that you irrigate only when the lawn needs water. For more information on this, see the EDIS publication LH025, "Watering Your Florida Lawn." Systems should be designed to irrigate shrubbery and other plantings separately from turfgrass.

Soil Amendments

The majority of Florida's soils are sandy-based, with little organic matter and low water- and nutrient-holding capacities. Soil amendments can be applied to soils prior to planting a lawn in order to improve soil physical, chemical, and/or biological properties.

Soil amendments can be organic or inorganic in nature. Organic amendments, such as compost, can improve soil drainage, increase water- and nutrient-holding capacity, and promote a healthy soil organism community. Unlike inorganic (or mineral) amendments, organic amendments will decompose over time as the organic matter is oxidized by soil microorganisms. However, organic materials will release plant nutrients as they decompose.

A general guideline is to add organic soil amendments at a rate of 3 to 6 cubic yards (roughly 15–30 percent by volume) per 1000 square feet of area. Do not exceed 6.5 cubic yards per 1000 square feet (approximately 35 percent by volume) as there may be issues with soil subsidence as the organic amendment decomposes. Organic amendments should be tilled or mixed into the top 6 inches of the soil. Only well-decomposed organic amendments with a carbon to nitrogen (C:N) ratio no higher than 30 should be incorporated into the soil, otherwise, the nitrogen present in the soil may be immobilized and unavailable to your plants. High C:N ratio materials, such as wood chips, are more suitable for use as mulching materials on the soil surface. All organic materials should be sterilized or fully composted to prevent the incorporation of weed seed. Table 1 lists the properties and suitability of several organic materials for use as soil amendments when preparing soils for planting turf.

Inorganic, or mineral, soil amendments may also be used during soil preparation to improve soil properties. In general, inorganic amendments can permanently improve soil drainage, but their effects on soil water and nutrient holding capacity will be minimal. Also, unlike organic materials, inorganic amendments will have little to no effect on soil biology and nutrient status. Inorganic amendments should be incorporated into the soil at a rate of 4.5 to 6.5 cubic yards per 1000 square feet (approximately 25–35 percent by volume). In general, the greater the depth of incorporation of inorganic soil amendments, the better. Table 2 lists the properties and suitability of several inorganic (mineral) materials for use as soil amendments when preparing soils for planting turf.

Deep Tillage

Rototilling loosens compacted soil and improves the speed and depth of rooting. If soil amendments, lime, or fertilizer have been added in the preceding

steps, the soil should be tilled to a depth of 6 to 8 inches. A tractor-mounted or self-propelled rotary tiller will do an adequate job of tilling the soil.

Final Grading

Final grading completed just prior to planting provides a smooth planting bed. The site can be hand-raked and dragged with a hand-pulled drag, such as a metal doormat. Large areas can be smoothed by tractor-drawn equipment with a tiller rake or grading box and then hand-finished. Soil particles should be no larger than golf balls, with even smaller sizes preferable. To achieve a uniformly firm planting bed and to reduce erosion, compress loose soil with a water ballast roller. Take care not to add too much weight and cause soil compaction. Driveways and walks should be level with, or slightly above, the final grade. A good job of grading will result in a more level site and a more attractive lawn that is easy to mow. Irrigate to settle the soil before planting. Hand rake to break up a crusty surface before you seed.

Figure 1. Hand Raking

Figure 2. Final Grading

References

Craul, P.J. 1992. Urban Soil in Landscape Design. John Wiley and Sons, New York, NY.

Urban, J. 2008. Up by Roots. International Society of Arboriculture, Champaign, IL.

Table 1. Comparison of selected organic soil amendments

Soil Amendment	pH	Approximate C:N ratio	Water-Holding Capacity	Cation Exchange Capacity	Decomposition Rate
Biosolids	Acid to alkaline	10–25	Fair	Good	Rapid to moderate
Composted yard waste	Acid	less than or equal to 30	Good	Good	Moderate
Manures	Neutral	less than or equal to 25	Good	Good	Rapid (raw) to moderate (composted)
Peat moss	Acid	15–30	Good	Good	Rapid to moderate
Sawdust[z]	Acid	200–400	Fair	Fair	Slow
Straw[z]	Acid	50–150	Fair	Fair	Slow
Wood chips[z]	Acid	100–500	Fair	Fair	Slow
[z] Due to their high C:N ratios, these materials are best suited for use as mulches on the soil surface. If you incorporate them into the soil, add N fertilizer in order to prevent immobilization of N.					

Table 2. Comparison of selected inorganic (mineral) soil amendments.

Soil Amendment	pH	Water-Holding Capacity	Cation Exchange Capacity
Calcined clay	Neutral	Good	Fair
Colloidal phosphate	Neutral	Good	Good
Diatomaceous earth	Neutral	Good	Good
Expanded shale, clay and slate (ESCS)	Neutral	Good	Fair
Perlite	Neutral	Fair	Poor