



Note in the top left picture that the *St. Augustinegrass* has wilted, but the *largeflower pusley* (also top right) is still green and even flowering! Plant diversity means sustainability and more green during dry spells. Two ornamental groundcovers (broadleaf “weeds” for some) are the *largeflower pusley* (*Richardia grandiflora*) and the bottom left picture shows a delicate, fine-leaf legume called *threeflower beggarweed* (*Desmodium triflorum*). Alternative groundcovers may be a smart low maintenance choice in hard to maintain spots such as the little “puppy stops” between the curb and sidewalks.

Drought Conditioning Your Lawn

Doug Caldwell, Commercial Landscape Horticulture

With the driest two years in a long time and a possibility of going to once-a-week watering looming in mid-December, depending on how things weigh out at the Water Conservation Summit meeting in West Palm Beach on December 4 (see, www.sfwmd.gov), we may see some serious dieback of lawns that have been pampered with too much water. However, a **drought conditioned lawn** can withstand more stress than a lawn that is not conditioned. A properly prepared lawn will have a deeper reaching root system that is able to pull water from more points within the soil profile. The aim is to develop deeper rooted turf that won't require as much water and develops a denser root system that will capture fertilizer elements more effectively. Here are some steps that should be considered if you want a *St. Augustinegrass* that will survive the hard times.

Relying on water from an irrigation system that is on a timer is detrimental to the grass when it comes to dry times. Timed irrigation periods that aren't based on the condition of the turf will promote a lawn that requires more water because it has a shallower root system. Less frequent, longer irrigations will assist in establishing a deeper, more viable root system. To develop a deeper root system, wait

until the first signs of wilt appear to water. When the lawn needs water, you'll see areas in the lawn that go off-color and one can readily see tracks (footprints or mower tire tracks). Because of the moisture stress, the turf has lost turgidity and doesn't spring back into its upright position. Leaf blades will fold or curl lengthwise as the plant goes into a "must-minimize-water-loss" reaction plan. Apply only enough water to wet the soil in the rootzone. For Florida's sandy soils, $\frac{3}{4}$ inch of water per week during the winter should suffice. Once this $\frac{3}{4}$ inch of water is applied, do not apply any more until drought symptoms (curled leaves) are again noticeable. If rainfall occurs, irrigation should be suspended until drought symptoms reappear.



To conserve water and create a deeper root system, wait until the grass blades start to fold or curl (left) before watering.

When watering restrictions limit the frequency with which we can irrigate, some people are tempted to irrigate to the point of run-off. **This should never be done**, as we are wasting water, encouraging disease and weed problems, and creating potential pollution problems. This is not only wasteful but may also damage or kill your lawn.

To determine how long to run your sprinkler system to apply this much water, set out coffee or tuna fish cans around the perimeter of the sprinkler system and see how long it takes to fill them to the desired depth. Be sure to check your irrigation system for uniform coverage at the same time. Your irrigation system should be zoned separately for turf and ornamentals as irrigation requirements differ between the species. **Rain sensors**, which are mandatory on all new irrigation systems and in most areas of Collier County, should be checked to see if they are functioning and properly located (many are under the roof-line!).

It may take up to 6 weeks to condition your turf to survive several days or more without wilting between irrigations or rainfall. During this time the root system is developing and growing deeper into the soil. In time, your lawn will establish a more uniform appearance

with less thatch and a deeper root system.

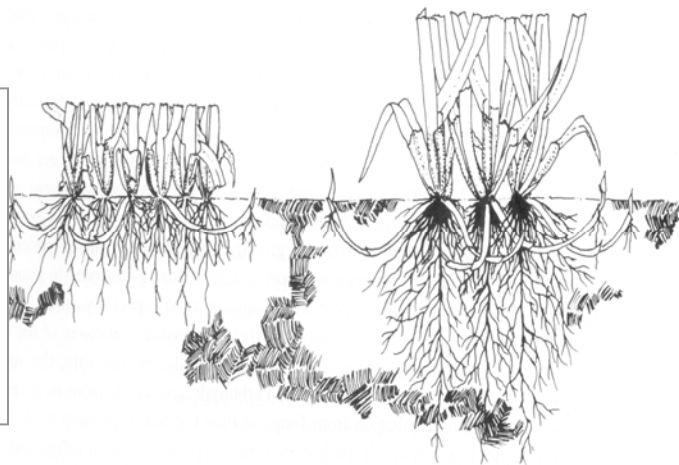
Proper mowing practices are essential for good quality and drought-tolerant turf. Every time a lawn is mowed, the metabolic activities of the grass are stressed, which reduces root growth. Mowing frequency and cutting height need to be carefully considered for a healthy lawn. Using the highest cutting height on the mower will facilitate turfgrass drought-conditioning. This will increase the grass leaf area, allowing for more photosynthesis. This results in more carbohydrates, which are then available for use in recovery from stresses such as drought. The higher the mowing height, the deeper and more extensive the root system will be. Although transpiration (water loss through leaves) will be slightly greater with higher mown turf, the expanded root system proves more advantageous. Mowing should be done often enough to minimize the shock of cutting. 'Floritam' St. Augustinegrass should be mowed at a 3 to 4 inch height.

Cutting it short is a severe stress factor. Never mow more than one-third the height of the leaf blade at any one time. If the lawn is allowed to grow to 4 inches, do not mow it lower than 3 inches. Adjust the frequency of mowing to the growth of the turf. In the summer, it may be necessary to mow more than once a week, but in the winter, twice a month or less may be enough. Keeping the mower blades sharp and properly balanced is also important. A leaf cut by a sharp blade will lose less water than a leaf blade shredded by a dull blade. Mowing should be done often enough to minimize the shock of cutting. 'Floritam' St. Augustinegrass should be mowed at a 3 to 4 inch height. Cutting it short is a severe stress factor. Never mow more than one-third the height of the leaf blade at any one time.

If the lawn is allowed to grow to 4 inches, do not mow it lower than 3 inches. Adjust the frequency of mowing to the growth of the turf. In the summer, it may be necessary to mow more than once a week, but in the winter, twice a month or less may be enough. Keeping the mower blades sharp and properly

balanced is also important. A leaf cut by a sharp blade will lose less water than a leaf blade shredded by a dull blade.

This diagram of the rooting depth of turfgrass compares a sward of St. Augustinegrass mowed at 3 to 4 inches and watered properly (right side) with a sward that is scalped and given shallow watering. Mowing higher and watering one time per week with 3/4 inch (in the winter) per 7 to 14 days or between wilt episodes will promote deeper rooting that will help the turf survive dry spells.



Fertilizer practices can enhance drought tolerance of turfgrasses, if properly done. Understanding plant responses to nitrogen and potassium fertilization is helpful in developing a beneficial program as well as providing a well-balanced nutritional program. All of the drought conditioning accomplished by proper irrigation and mowing practices can be defeated by excessive nitrogen fertilization. Excessive nitrogen enhances shoot growth but root growth is reduced. Leaf blades become more lush as nitrogen fertilization increases. Drought conditioning can only be accomplished by applying just enough nitrogen to obtain a small but continuous amount of growth.

Potassium fertilizer, however, can help turfgrasses increase their tolerance to many stresses, including drought. Potassium promotes increased root growth and thicker cell walls. Turfgrasses require potassium in nearly the same amount as nitrogen, especially in sandy soils where both can readily leach out.

Other macro and micronutrients, as well as the soil pH, should be kept at recommended levels for optimal growth. Supplemental iron applications can provide desirable green turf without promoting succulent shoot growth. Iron applications have also been shown to increase turfgrass rooting. Soil testing is helpful in monitoring nutrient levels and determining turfgrass fertility requirements. Much of this information and more is available from: <http://yourfloridalawn.ifas.ufl.edu>, see: ENH57, "Improving Drought Tolerance in Your Florida Lawn; ENH157, "Managing Your Florida Lawn under Drought Conditions" and ENH63, "How Often to Water". "Snake-oil" products seem to pop-up during these droughty periods, avoid unproven and strangely expensive products that haven't been university tested. If you must experiment, just try the product on a small patch and not the entire yard.

I'd also like to suggest that if we were more open to plant species diversity, we could have a sward of green that would be more interesting (to some) as well as more sustainable and survive dry times or irrigation malfunctions. Currently, a favorite of mine, largeflower pusley (*Richardia grandiflora*) is in full bloom. I also like ornamental peanut and threeflower beggarweed (*Desmodium triflorum*)! Other groundcovers to consider, especially in hard to mow, fertilize and water areas (such as those little rectangles between the curb and sidewalk), may be found at: <http://edis.ifas.ufl.edu/EH139> .

Doug Caldwell is the Commercial Landscape Horticulture educator with the Cooperative Extension Service, an off-campus branch of the University of Florida, Institute of the Food and Agricultural Sciences and a department of the Public Services Division of Collier County government. E-mail dougbug@ufl.edu Call 239-353-4244 x203. Extension programs are open to all persons without regard to race, color, creed, sex, handicap or national origin. For updates on the Southwest Florida Horticulture Learning Center and more landscape pest management details, visit <http://collier.ifas.ufl.edu>.