September 2012
Prepared by David Minner, extension turfgrass specialist
Iowa State University Extension and Outreach

Drought Damaged Lawns Need Help

While the drought of 2012 may be remembered more for its economic loss to corn and soybean farmers it also took a toll on many lawns across Iowa. The crispy brown lawns of August have begun to recover with September rains, but all is not well.

Kentucky bluegrass is the most dominant grass in Iowa lawns. In most summers when water is lacking the turfgrass leaves turn brown but the below ground crowns, buds and rhizomes survive in a dormant condition only to produce new growth when water returns. We have become very accustomed to letting the lawn turn brown in the summer and then watching it re-green in the fall.

The problem with this strategy is that summer dormancy is not an absolute guarantee that the grass plants will survive. Most of the time non-irrigated lawns turn dormant in late July after about two to three weeks with no water. They can remain brown and dormant, but alive, for approximately four to six weeks without water. Again, these are general statements and estimates, not absolute values. It is important to remember that the dormancy factor in Kentucky bluegrass also has its limit, and it was reached in many lawns across Iowa in 2012.

I have been driving through many new and older neighborhoods in Iowa to get a feel for the amount of turf damage caused by the drought. Older neighborhoods where trees shade the ground don't seem to have as much turf loss. Lawns with hills and slopes, especially those facing the south lost substantial turf. Thatchy and sandy soil lawns left un-irrigated also experienced severe turf loss. The green grass of watered lawns is easily discernible from the dormant lawns that are now struggling to recover. My travels across Iowa indicate that most neighborhoods have approximately 25 to 50 percent of the lawns showing some degree of turf loss from the drought and of the injured lawns approximately 25 to 50 percent of the turf in each lawn has been killed.

The bad news is that some of you are now dealing with dead grass and no amount of watering or rain will make it recover. In fact, the dead areas of the lawn that are not repaired this fall will likely be invaded by weeds next year. The good news is that September is the perfect month to renovate the lawn or at least reseed the damaged areas.

Don't delay, if the grass is brown it's probably dead (not dormant), won't recover and you will have missed the best seeding window to re-establish the lawn. By the middle of August I determined that over 50 percent of my full sun Kentucky bluegrass backyard was dead. So I set the mower as low as it would go and scalped off all the dead grass and what little green grass remained.

Next, two passes in opposite directions were made with a slicer seeder from the local rental store to plant seed in perfect little rows approximately one inch apart. The shredding action of a verticutter or the hole punching action of an aerifier are other machines that could be used to facilitate inter seeding into the existing dead lawn. Just make sure that you are getting the seed planted into the top ¼ to ½ inch of the soil.

Then lightly rake the surface to further plant any exposed seed into the surface. Seed left on the surface usually remains too dry and seldom establishes. Add fertilizer and water and watch it grow. Water just enough to keep the top inch moist during the first two weeks; start by watering an area for ten minutes once or twice a day and adjust as needed. There is no need to soak the soil deep because the seed is near the surface.

After the seedlings produce two or three leaves and are over an inch tall, reduce the frequency of watering to every other day and eventually to once a week. I seeded turf-type tall fescue on August 15 and 28 days later my first mowing occurred on September 12 at 2.5 inches high. I changed my front yard from Kentucky bluegrass to the more drought tolerant turf-type tall fescue three years ago and liked it so much that I was planning on killing my backyard with glyphosate and inter seeding tall fescue this year. The 2012 drought did such a nice job of killing the old lawn that I didn't even bother using herbicide. If your lawn has a variety of weeds and other undesirable grasses use glyphosate to kill the undesirables and then seed into the dying vegetation. Tall fescue is a bunch grass that could require some overseeding if it were to thin, however it has fewer disease and insect problems and because of a deeper root system will remain green about two weeks longer than Kentucky bluegrass when water is limiting and this ultimately means less irrigation is needed compared to a Kentucky bluegrass lawn.

However, if you are not a fan of turf-type tall fescue then just reseed with Kentucky bluegrass or a mixture of 80 percent Kentucky bluegrass and 20 percent perennial ryegrass by weight. Seed tall fescue at 10 pounds/1000 square feet and Kentucky bluegrass or the bluegrass/ryegrass mixture at 3 pounds/1000 square feet; both seed scenarios will cost approximately $12/1000 square feet or approximately $100 for an average lawn of 8000 square feet. My cost for seed, fertilizer, and equipment rental to do 8,000 square feet of my lawn was $196 and my labor was free but I didn't move real fast the next day. A local lawn care company quoted me $280 for the same work and next time I just might watch them do it from my lawn chair on the porch. Both could have been avoided with one ($86) or two ($172) timely irrigations to apply 1 inch of water per month during the drought to insure that my dormant turf did not die.

The take home message for 2012 lawns is that summer turf dormancy is no guarantee that the lawn will survive and that a little water is a good summer investment to avoid the expense and aggravation of having to re-establish a dead lawn.

Prepare for a drought

Management practices in the fall and spring determine the drought tolerance of the lawn in summer. To reduce the need for irrigation, your lawn management program should maximize root volume and depth in preparation for summer drought. By the time summer rolls around, there is little you can do to help a lawn except mow and irrigate properly. The following lawn

care tips will help reduce the need for irrigation and increase the chance of surviving summer drought.

- **Mow grass as tall and as frequently as possible** with a properly sharpened blade to produce a dense cover with a deep root system. Taller grass has deeper roots that draw moisture from a larger volume of soil and results in less need for irrigation. Taller grass shades the ground and reduces heat stress from high soil temperature. Two and a half inches is often recommended as a height for Kentucky bluegrass, but I am seeing a sensible trend on commercial sites and expensive neighborhoods where lawns are being mowed at heights of 3.5 and 4 inches.
- **Water deep and infrequently.** Avoid the temptation to irrigate in the spring just to get the grass growing; allow it to green up naturally. As summer progresses don't water until the lawn is showing obvious signs of wilt, then water deeply and infrequently; one inch of water once a week. Irrigated lawns that do not experience brief periods of wilt are being over watered and produce shorter root systems that are not able to withstand drought and city enforced water restrictions.

Conserve water by knowing when to water

- The best time to water a lawn is from 6 to 8 a.m. when disruption of the water pattern from wind is low and water lost to the atmosphere by evaporation is negligible. Watering early in the morning also has the advantage of reducing the chance of turf diseases that require extended periods of leaf moisture. Avoid irrigation during midday and windy conditions.
- Move sprinklers frequently enough to avoid puddles and runoff. Difficult-to-wet areas such as slopes, thatched turf and hard soils may benefit from application of a wetting agent to improve surface penetration of water.
- Water only when the plant tells you to. Become familiar with areas of the lawn that wilt first (blue/purple leaves, rolled leaves, foot printing). Water within 3 days of observing these symptoms.
- Water problem areas by hand to postpone the need for irrigation of the entire lawn. Some areas of a lawn usually wilt before others. These areas, or "hot spots", may be caused by hard soils that take up water slowly, slopes, southern exposures, and warmer areas next to drives and walks. Lawns that have unusual shapes also may require some hand watering to avoid unnecessary watering of paved surfaces, mulched beds and buildings. Soaker hoses that have a narrow pattern and supply water at a slow rate may be useful in these areas.
- As an alternative, allow the lawn to go dormant by not watering. Apply an inch of water per month to dormant cool season grass lawns during prolonged drought to avoid substantial turf loss.

Fig 1. An irrigated lawn on the left in stark contrast to a non-irrigated lawn on the right that is nearing complete dormancy

Fig 2. A good example of deep and infrequent irrigation and beneficial wilting. Irrigated lawn that is properly allowed to wilt before next watering. Notice the down spout area that remains green (top left); front yard showing foot printing and beneficial wilting (top right). Same lawn a week after irrigation showing rapid recovery and no injury from wilting (bottom left)

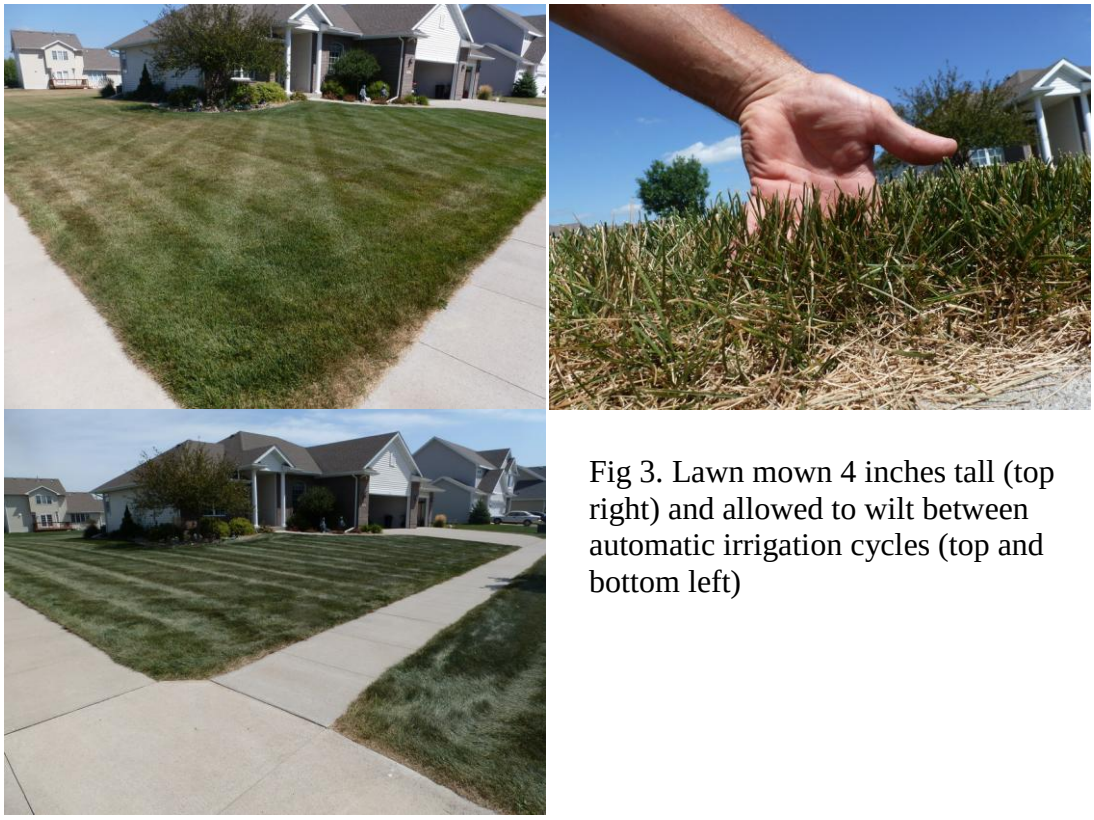

Fig 3. Lawn mown 4 inches tall (top right) and allowed to wilt between automatic irrigation cycles (top and bottom left)

Fig 4. Lawn without irrigation allowed to go dormant; picture taken 7-19-12 (left); same lawn showing 25 to 50 percent of the lawn dead on 9-1-12 after rain and recovery (right)

Fig 5. Picture taken 8-7-12 from dormant Kentucky bluegrass lawn showing plant on left with a live bud and some green tissue and plant on right with crown and basal buds completely dead (Dormancy is a plant mechanism that explains how a plant can turn brown from lack of water and potentially recover from basal buds, crowns, and rhizomes when water returns. However, dormant plants under continued drought can eventually die.)

Fig 6. Pictures of September lawns that did not recover from dormancy after rainfall or lawn watering occurred