

# Recovering from "Waterworld"

**Due to the** hurricanes this year (2004) I had several fields that were either partially or fully submerged. After the water receded, most of my fields seem to look ok. I have some yellow turf, but it seems to be coming back. I have one field that will probably require replanting. My question relates to short term and long term damages: Should I be expecting some particular symptoms this winter as a result of the turf being under water?

East Central Florida

**D**uring the last active hurricane season, I had several phone calls and e-mails from Florida's turf managers with questions related to flooded turf areas. In general, the most heavily damaged areas from flooding were golf courses and home lawns along the Florida coast. The more severe turf damage was from the storm surge pounding turf with salty water. In many cases once the water subsided and the ground began to dry, the turf died from salt injury.

Luckily, most athletic fields are not immediately adjacent to the coast. But the high rainfall rate and the fact that the ground was already saturated from previous storms meant widespread flooding in many coastal and inland areas of Florida. Hurricane Ivan also brought similar damage to lower Alabama and southern Mississippi.

Over the years there have been several reports related to turf injury from submersion. The degree of injury depends on turfgrass species, water temperature, duration of submergence, and depth of submergence. Observations have indicated that turfgrass can withstand submersion for up to 60 days when water temperatures are below 50 degrees. On the other hand, turf can be killed in one day when water temperatures are in the high 80s or higher. Submersion injury also increases when the entire plant is submerged. If the plant is submerged for a more than a few days under water cloudy with silt, clay, and debris it is more damaging than if the water is clear.

In addition, floodwaters may contain toxic contaminants such as salts or petroleum. These may cause longer-term problems because the contaminant may linger in the soil, impeding regrowth. Even low levels of salts can indirectly affect plants by reducing water uptake or by causing an imbalance of plant nutrients. And while it may seem minor, the lack of oxygen to the roots brought on by saturated soils may cause turf loss.

Understanding the cause of your damage helps in developing a plan to renovate the turf. If the floodwaters deposited silts and clays on the surface, these

should be removed with shoveling, hosing, power washing, etc. In some cases debris and soil material can be blown off the surface with a blower. The airflow from the blower can also hasten the soil drying process. If the grass does not begin to green up by the time the soil begins to dry out, it may be a sign that the turf is dead or that it is so severely set back that regrowth is going to be very slow. Given enough time, Bermudagrass will grow back from almost any flooding damage. But if the damage is more than just a thin turf, and time is an issue, it may be better to start over completely.

If the damage is not too severe, begin aerification once the area can support a lightweight aerifier or tractor-mounted aerifier. Not only will this alleviate compaction, but also it will help break up the soil layers and get more oxygen into the rootzone. If the flooding was associated with a salt-water storm surge, then leaching the saltwater out of the rootzone may be necessary. It is not unusual for Florida to self-flush the rootzone with additional rainfall. In the absence of rainfall, the irrigation system may be used to dilute and move the salts below the rootzone.

Once the water has subsided and the rootzone begins to dry, initiate a normal grow-in fertilization and irrigation program appropriate for your grass and soil conditions. Do not expect much residual activity from previously applied preemergence herbicides. And the moving floodwaters may have replenished your weed seed bank. Plan on increasing your post-control weed program or if you are growing in a Bermudagrass you can apply an oxadiazon preemergence herbicide without any significant delay in grow-in. Remember to not apply a preemergence herbicide if you plan on overseeding with a ryegrass in the near future.

Long-term problems will also reflect the type of initial storm damage. With rainfall and irrigation, salt damage should be fairly short-term. If topsoil was eroded and replaced before renovation, there may be some long-term variation in turf growth and color due to differences in soil. Also, and silt and clay deposits that were not removed may result in long-term visual and performance differences. Regular aerification and topdressing should address these

problems over time. Let's hope that 2005's hurricane season does not add more salt to the wound. **ST**

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