

# Researchers tackle problem of clogged underground irrigation pipes

By BILL SIURU

Underground irrigation that delivers moisture directly to the roots is a very efficient way to water golf courses, as well as lawns, sports complexes and other recreational areas. While "drip" irrigation is now commonly used for watering flower beds, gar-

dens, ornamental plants and so forth, it has only recently become practical for watering large expanses of turf. The problem has been keeping plant roots from clogging underground plastic water emitters.

The breakthrough, making underground irrigation a very practical alternative to conven-

tional sprinkler systems, may be here. It's called Rootguard, a technology originally developed by Batelle's Pacific Northwest National Laboratory in Richland, Wash., in the early 1980s. Rootguard was invented to prevent turf roots from penetrating clay and asphalt seals covering low-level radioactive waste such

as uranium mill tailings.

The technology is already used in Old Hickory, Tenn.-based Reemay, Inc.'s Tytar Biobarrier Root Control System for sidewalks, driveways, highway shoulders, tennis courts and swimming pools. More recently, the technology was licensed to Geoflow, Inc. of Sausalito, Calif.,

which has joined with the Toro Co.'s Irrigation Division to manufacture and market the Toro DL2000 Series Irrigation System.

The concept is quite simple. Molded-plastic water emitters are impregnated with Teflan, an environmentally friendly herbicide produced by DowElanco that inhibits root growth.

Teflan is released slowly into the soil around the irrigation tubing to prevent roots from clogging the holes. The treated emitter lines have a reported 20-year life expectancy, equaling or surpassing the life of many sprinkler systems.

The system can be installed at grade or buried four to eight inches underground to deliver irrigation directly at the plant's root zone.

Twelve or 18 spacings are used with two possible flow rates, 0.53 to 1.02 GPH. Installation of drip lines, one to four at a time, is conducted via standard trenching or by pulling the tubing below the ground without harming existing turf.

Installation is about 1.5 to 2 times more expensive compared to sprinkler systems. However, the cost is more than compensated by up to a 50 percent reduction in water usage plus reduced maintenance expenses.

Since the water is retained underground, there is minimal moisture loss due to mist, evaporation, runoff or wind. By installing optional pressure-compensating emitters, equal amounts of water can be delivered on slopes, long lines and hilly terrain.

Underground irrigation is also a good match for odd-shaped areas that are very inefficiently watered by sprinkler systems. Toro offers a special 1/4-inch DL2000 Microline for very small areas. Normal lines are 5/8-inch in diameter.

Underground irrigation is especially attractive for golf courses because play can continue during irrigation. Golfers are no longer soaked by a sprinkler that suddenly comes on. Further, there are no above-ground components to be damaged by mowers, golf carts or vandals.

Besides optimum water delivery to roots, the system can be used to deliver fertilizers and chemicals to plant roots. Since water and chemicals go directly to the roots, sub-surface water application decreases the need for chemigation or fertigation.

This reduces the impact of chemicals on the environment as well as costs.

Since no water is sprayed, no water marks are left on walls, windows or signs.

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