Wastewater Use for Turf

The availability of fresh water for irrigation in many parts of the United States is becoming critically limited. This is especially true for irrigation of nonfood and fiber productions sites including parks, commercial and residential lawns, athletic fields, golf courses, cemeteries, sod farms, and other landscape plantings. This is true even for the northeastern US where many people perceive an abundance of fresh water. Major metropolitan water suppliers in the northeastern US are required to double the supply capacity of their systems for the three summer months that are dominated by landscape irrigation demands. As urban and suburban sprawl continues to grow, the demand for freshwater resources also increases. There is an obvious need to consider wastewater conservation and the use of alternative water sources for landscape irrigation. Wastewater has long been successfully used for irrigation in the southwestern US. Wastewater includes treated sewage effluent and nonhuman wastewater, grey water. Most large-scale wastewater irrigation comes from sewage treatment plant effluent.

The benefits of wastewater as an irrigation source include: conservation of freshwater that would be used for irrigation, supply of small amounts of nutrients to enhance plant growth every time the site is watered, and a reduction of pollutant (phosphorus and nitrogen) discharge into surface water.

The potential hazards from wastewater irrigation involve salt injury to plants, long term effects on soil health (reducing drainage, increasing runoff/erosion), other soluble compounds in the water, and human pathogens in the wastewater. Proper water treatment has all but eliminated the human pathogen issue. Long-term wastewater irrigation of turfgrass sites in Arizona, a low rainfall area, has been shown to increase salt levels in the soil which could harm plant growth and destroy the structure of soils with clay.

In the northeast there has been very limited use of wastewater for irrigation. For example, in New York, just two of 850 golf courses in the state use wastewater for irrigation. One 36-hole golf course in Lake Placid, NY gets all its irrigation water from the city of Lake Placid; the city has reduced its phosphorus load into Lake Champlain by 25 percent. To date, the Lake Placid golf courses, which have very sandy soil, have seen no turf damage from salt.

A. Martin Petrovic

Festuca: Versatile, Weed-Suppressive Turfgrasses for Diverse Settings

The presence of a high quality turfgrass in a landscape influences our lives visually, functionally and recreationally. In the United States, there are currently more than 30 million acres of turfgrass including lawns, parks, golf courses, sod farms, industrial and institutional grounds, and highway rights-of-way. In New York State alone, over 3.4 million acres have been established in turfgrass (NY State Turfgrass Survey, 2004), and over 18,000 miles of major highways. In all turf settings — especially lawn and roadside turf — weeds are a key pest problem.

A substantial pesticide market (over $2 billion dollars) currently exists for control of weeds, insects and diseases in private and commercial turfgrass settings. Although herbicides continue to be the predominant form of weed management in commercial turf settings, herbicide use in public and private landscapes is increasingly challenged by environmental and health concerns. Consequently, turfgrass managers, including homeowners, are seeking alternative weed management tools.

One preventive strategy to minimize weed infestation is the use of appropriate turf mixtures or cultivars that are well adapted to a given setting for optimal density and growth. Weeds are much less likely to invade a well-managed turf in good condition, maintained with appropriate cultural practices including timely mowing, fertilization and irrigation. In recent years, our research has focused on the selection and utilization of fine leaf fescues as low maintenance, stress tolerant and weed suppressive turfgrasses in landscape and roadside settings. The genus Festuca or fescue represents one of the largest groups of grasses in the tribe Poaceae. Approximately 100 different fescue species are currently found in the United States and Europe. If one looks closely at a collection of fescues, it is easy to see that fescue species vary greatly in morphology, cytology and growth habit. Generally, the fescues are divided by appearance and usage patterns into two specific types: fine or coarse leaf fescues.

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