

Compost Use Case Study

Turf Restoration Demonstration Project

Arena Green at the Guadalupe River Park and Gardens

Part of the City of San José’s impressive, 3-mile long Guadalupe River Park, Arena Green, is located across Autumn Street from the HP Pavilion. On the east side of Arena Green, the meeting of the Guadalupe River and Los Gatos Creek is marked by Confluence Point and Confluence East. Confluence East includes a number of monuments and event spaces of different sizes which provide a variety of amenities for park visitors, including visual access to the Guadalupe River. At St. John Street, Crossing Paths Monument is a plaza that lies between the paths winding through Confluence East. This plaza celebrates the cultural diversity of the city. The turf area directly west of the plaza is a typical example of turf landscape and, as such, was chosen for the City’s Turf Restoration Demonstration Project.

Reducing Inputs and Improving Performance

The City was interested in setting up a demonstration site to determine whether turf areas could be managed in such a way as to reduce water requirements while achieving the same level of performance as current practices. In line with its Integrated Pest Management (IPM) and Urban Run-off policies, the City was also interested in exploring turf management practices that could minimize or eliminate the need for chemicals such as herbicides, pesticides, and fertilizers which can contaminate the watershed. Soil specialist and consultant Brian Debasitis of Mauby All Natural was contracted to treat the turf at the demonstration site. Mr. Debasitis specializes in building healthy soil by reestablishing the appropriate microbiology in order to improve plant health, water retention, and disease resistance.



Turf on the Arena Green near the HP Pavilion

Assessing the Site

The City of San José’s Parks, Recreation and Neighborhood Services Department, which maintains Arena Green, primarily wanted to find ways to keep the turf from drying out in

the summertime. Heavy foot traffic from year-round events at Arena Green resulted in extreme soil compaction. When the soil is compacted water stays close to the surface and evaporates quickly in warm weather. In November 2008, Mr. Debasitis first analyzed the soil chemistry and perhaps more importantly its biology. The soil chemistry tests revealed very low nitrogen, high iron, and high sulfur content in the soil. This is due in part to fertilizers used by the City containing water-soluble nitrogen which tends to wash away with irrigation or rains. In addition, turf fertilizers, which are high in iron, and sulfur-based fungicides used by the City in turf management can exacerbate soil chemistry imbalances.

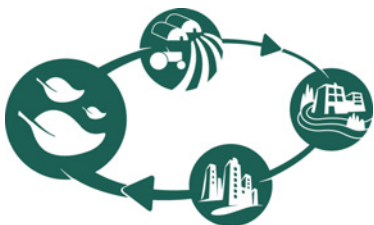
The soil biology analysis revealed high active and total bacteria levels, high active fungi levels, and normal total fungi levels. Since turf prefers a soil with equal levels of bacteria and fungi to a slightly fungal-dominant soil, the ratio between bacteria and fungi was clearly out of balance. The analysis also showed a very high concentration of root feeding nematodes, with almost 90% found to be pathogenic.

Treatment

The first step in the treatment was to change the standard turf management practices. Beginning in January 2009 the City crews who maintain the site were directed to discontinue fertilizer and herbicide use at the demonstration site. In order to restore the soil's chemical and biological balance, which will ultimately reduce soil compaction, Mr. Debasitis applied a top dressing of specially amended compost to the turf. The compost was amended with calcium, phosphorus, and kelp meal to supply trace minerals which were low. In order to increase the level of beneficial fungi in the soil, the compost was inoculated with mycorrhizal fungi and amended with chitin, a food source for fungi. Every three months, Mr. Debasitis has applied compost teas containing beneficial nematodes to displace the root-feeding ones.

Outcomes and Benefits

The Turf Restoration Demonstration Project is still in progress, but after seven months of treatment, the results are beginning to show. At first glance, the turf at the demonstration site looks just as green as its nearest neighbors, despite the fact that no fertilizer is being used on the demonstration site. In fact, the neighboring areas still being treated with commercial fertilizers are showing a few more brown spots. A visual comparison between the demo site and the other turf areas at Confluence East shows that the turf demonstration site is having fewer problems with weed encroachment, and in particular with bindweed. A walk through the different sites reveals that the turf at the demonstration site feels spongier, springier to the feet than its neighbors, suggesting that compaction is not as severe as it once was and that the soil structure is gradually improving. As the soil structure continues to improve, the City anticipates that the turf demonstration area will likely need less water, which along with the elimination of fertilizers and herbicides, constitutes a major benefit to the City and to the environment.



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