Rain Gardens: Utilizing Nature's Filtration Systems

Kennett Square Golf and Country Club **Kennett Square, Pa. 19348**
Paul Stead, CGCS, superintendent

Issue

Many golf courses live with a horrible, season-long odor near the wash pad that permeates the air with the smell of rotting grass clippings. Not only is this situation unpleasant, it can also create environmental issues if the wash pad is built incorrectly and allows grass clippings to flow into local streams and lakes. Grass clippings can add nutrients into bodies of water, stimulating undesired algae and aquatic weed growth. Water recycling systems work to break down grass clippings and reduce odor, but these systems can be expensive and cumbersome in maintenance facilities already cramped for space.

Paul Stead, certified golf course superintendent at Kennett Square Golf and Country Club, wanted to reduce the amount of water his maintenance department was using to wash equipment and eliminate the overpowering odor of decaying grass clippings near their wash pad. He was looking for ways to construct an affordable wash pad that would improve their working environment while protecting the environmentally sensitive Red Clay Creek that runs through the golf course.

Action

Two new wash pad locations were chosen based on their accessibility. One wash pad was located at the maintenance facility, the other in an out-of-play area on the golf course. The wash pads were constructed with pavers and combined with rain gardens. Rain gardens are small, sunken landscapes that are planted with water-tolerant native plants to help filter and break down wastewater runoff before it reaches a waterway. Rain gardens can also help filter oil and fuel carried by runoff from parking lots and roadways. At Kennett Square, equipment could now be washed in a contained area without unfiltered rinsate entering Red Clay Creek.

Soil infiltration is an important consideration when creating a rain garden. Water must be able to enter the soil for contaminants to be properly filtered, otherwise they will escape the rain garden along with any runoff. At Kennett Square, the wash pad site located on the golf course was comprised of heavy clay soil that did not allow for significant water infiltration. To improve the rain garden's infiltration rate, the top 10-12 inches of heavy clay soil was removed and replaced with putting green aeration plugs that were comprised mostly of sand.

Before using the new wash pads, staff members blow excess grass clippings off their machines using leaf blowers. This removes approximately 90 percent of clippings before the equipment is washed, reducing the amount of water needed to clean the machines and reducing the organic matter that enters the wash pad and rain gardens. Keeping the organic matter to a minimum helps maintain the rain garden's drainage and filtration capacity. Controlling organic matter also eliminates the unpleasant smell that often accompanies wash pads.

Results

The new wash pads and rain gardens at Kennett Square have been very successful. They have reduced the amount of water used to clean equipment and reduced the risk of pollutants entering the Red Clay Creek. The rain gardens provide a habitat for native species and they have been very successful in eliminating the unpleasant odor of decomposing grass.

Following the success of the wash pad rain gardens, two additional rain gardens were built to filter runoff from clubhouse parking lots. Fuel or oil that may have accumulated on the parking lot asphalt is now filtered before runoff can carry it to the Red Clay Creek.

Rain gardens are used to filter runoff from the new wash pads, reducing the risk of contaminants reaching the environmentally sensitive Red Clay Creek.

Rain gardens were also installed along the clubhouse parking lots to filter fuel and oil from stormwater runoff.