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BEST PRACTICES FOR CEMETERY LAWN MAINTENANCE

What Do “Best Practices” Mean?

Before beginning, it is important to explain what we mean by “best practices.” These are recommendations generally offered by conservators as likely to cause the least damage to both the cemetery landscape and, in particular, the stone markers. These recommendations, however, are not meant to represent a “one-size-fits-all” approach to landscape maintenance. Every cemetery is different – the topography is different, the composition of the lawn is different, its public use is different, even the funding available for maintenance is different. Individual conservators are also likely to hold different views concerning similar issues. These “best practices” provide guidance that must be customized to each cemetery’s specific, and particular, needs.

What Causes Lawn Problems in Cemeteries?

Grass in cemeteries is often neglected and, as a result, may be in poor condition with areas of erosion, bare spots, dense weeds, and depressions. Some of these problems are the result of pedestrian traffic, especially in the absence of defined pathways (keep in mind that pathways are not always appropriate). Other problems are the result of runoff on compacted soils, steep slopes, competition from trees, poor soil fertility, or poor watering practices. Weed intrusion is usually the result of poor fertility and soil dryness. Heavy shade, typical of areas of heavy tree coverage, will also impact the quality of the lawn. Some trees tend to have shallow root systems, resulting in surface roots that also cause problems. Depressions are usually the result of grave settlement and displaced or removed trees (keep in mind, however, that filling grave depressions at unmarked graves should only be done if you have an accurate map of the cemetery that shows the location of these graves – otherwise filling the depressions will result in the grave locations being lost).

Moss is often found in cemetery lawns and is usually the result of low light levels, acid soils, and low fertility.

Solving Problems

Soil Tests

The first step in dealing with any lawn problem is to test for soil fertility. There are do-it-yourself tests that can be used (for example, companies such as Forestry Suppliers, www.forestry-suppliers.com, 800-543-4203, offer inexpensive soil test kits) or most state agricultural extension services provide free or low-cost soil testing. The benefit of the latter is that you can also get expert assistance in determining how to rectify problems, with specific recommendations on issues such as fertilizer and pH adjustment.

Soil tests should be conducted once every three years. This will provide a moving benchmark of soil fertility and pH, allowing superintendents to evaluate the need for additional treatments. Keep in mind that it usually takes about this long for the results of lawn treatments to stabilize and be reflected in consistent readings.

Fertilization and Lime

Fertilizer and lime should be added based on soil tests – we strongly discourage “rule of thumb” applications as both costly and having the potential to create additional problems. In general you will want to spread ground limestone several weeks prior to the application of fertilizer. Likewise, you will generally get better results from light, frequent applications of fertilizer, especially nitrogen than occasional, heavy doses.

Keep in mind that trees, shrubs, and lawns all compete for fertilizer. Lawns, however, are the primary beneficiaries of fertilizer applied on the surface. You will need to deep fertilize for the benefit of trees. In general, a slow release fertilizer with a ratio of 3-1-1 is recommended for trees. This effort will not only improve the health of cemetery trees, but will also prolong their lives.

You must exercise extreme care in applying chemicals to cemetery lawns. Some fertilizers contain chemical salts that, if allowed to come into contact with stone, may cause damage. The best for use in cemeteries is a non-acidic, slow release, organic fertilizer. If a broadcast spreader is used, you must sweep off all fertilizer that comes into contact with stones.

Weeds

Often a lawn can recover and, in time, push out weeds. If the weeds are very thick, however, you may need to treat them. Unlike a residential lawn, where weeds are simply viewed as unattractive, in a cemetery weeds cause other maintenance problems – most noticeably the need to mow more often. And this costs money. Hence, weed control is not an issue of aesthetics, but of solid fiscal management.

In dense areas a power rake or vigorous hand raking can loosen weeds. Rototilling is not recommended because of the potential for damage to stones, graves, and archaeological remains.

Chemical herbicides are not recommended for broadcast or spray application. Many contain salts and are often acidic – conditions which can be harmful to marble and limestone. If herbicides must be used, in order to minimize the conflict between stone conservation and healthy vegetation, select the least acidic one available and apply with great care.

Where herbicides are being considered for control of very noxious brush, such as poison ivy, the best approach is to cut the vines and then paint the herbicide directly on the exposed vine. The herbicide will be transported directly to the root system, with little migration into the soil or nearby stones.

Remember that most herbicides are not target specific and the drift of spray or movement after rain can do a great deal of damage to adjacent vegetation (and stones). Application must always be done with the greatest care.

Compacted Ground and Aeration

Compacted soil is a common problem in every lawn, but one that is often ignored in cemeteries. This leads to the decline in grass health, although the decline is often blamed on insects, diseases, nematodes, improper watering, or a lack of fertilization. Compaction is particularly a problem where there are fine, heavy textured clay soils. Left unmanaged thatch will build up and the lawn suffers. There is a straight forward solution: aerify.

Cool season grasses are best aerified in the fall while warm season grasses are best aerified in the late spring and summer, when they are actively growing. Generally a hollow tube aerator is preferred since it creates a cleaner hole and brings up less soil. Tines are usually about 3/4-inch in diameter and penetrate to 3-inches.

Drought

Soil moisture is critical for the success and well-being of grass, shrubs, and trees. While potentially desirable, the installation of an irrigation system can be very damaging to gravesites and even gravestones. In addition, such an activity is very costly and creates its own maintenance issues.

An effective compromise is the installation of frost proof hose bibs where feasible, perhaps along roadways. This allows greater access to water and, if necessary, allows portable sprinklers to be used in stressed areas or newly seeded patches.

If an irrigation system is being considered one study projected that a cemetery would use approximately 1,062,000 gallons of water per acre per year. Valve-in-head sprinklers are recommended since they allow individual heads to be shut down when a grave is being opened, a burial is in progress, or an area is under repair. It is also recommended is sprinkler zoning be done by plant type, area-use type, and exposure. Systems should have a flow meter and master valve that allows zones to be automatically shut down if a head blows or pipe bursts. The watering should be ET-driven from on-site weather data in order to conserve water. Irrigation should generally be withheld from November through February.

Mowing

The single most damaging lawn maintenance activity (to stones) is mowing. In addition, mowing is frequently the single largest cemetery expenditure. It is critical that lawn mowing is done in a manner that protects the monuments, as well as the lawn.

As a rule of thumb it is recommended that no more than a third of the grass height is cut in any one mowing. Table 1 shows the highest recommended cutting height for a variety of grasses (courtesy of Clemson University) and the maximum allowable growing height to ensure that no more than a third is cut at any one time.

The rule of thumb is also that grass should be cut every five to seven days from the beginning of the growing season to mid-June; every 10 to 14 days from mid-June to mid-August; and again every 5 to 7 days from mid-August to the end of the growing season. This frequency depends, of course, on the nature of the grass (for example, while Bermuda grass has a medium high to very high mowing frequency, centipede and carpet grass have a low frequency – meaning a significant savings to the cemetery). As Table 1 indicates, however, it may

be possible to reduce the frequency of mowing in some areas. Some cemeteries, especially if the grounds have a low visitor population, are mown only once or twice a season.

Table 1. Recommended Mowing Heights		
Grass Type	Cutting Height in Inches	Maximum Height in Inches
Kentucky bluegrass	Winter: 2.5 Summer: 3	Winter: 3.5 Summer: 4
Fine fescue	Winter: 2.5 Summer: 3	Winter: 3.5 Summer: 4
Tall fescue	Winter: 3 Summer: 3.5	Winter: 4 Summer: 4.5
Ryegrass	Summer: 3.5 Winter: 2.5	Winter: 4.5 Winter: 3.5
Common Bermuda grass	2	3
Carpet grass	2	3
Centipede grass	2	3
St. Augustine grass	4	5.5
Zoysia grass	2	3

The most serious issue is the routine removal of grass in the immediate vicinity of gravestones and tombs. The best practice is to mow to within 12-inches of markers and finish the work using hand shears. This approach, however, is almost universally cost prohibitive. Another approach recommended

by some conservators is the removal of grass around the bases of stones. We discourage this solution since (1) it creates an unnatural and unattractive landscape and (2) its long-term maintenance creates additional costs and threats to the stone (especially since there will be an inclination to use weed killer as a simple solution).

The best workable solution is to use no power mower within 12-inches of markers. Weed whips (rotating nylon filament trimmers) may then be used – with extreme care – to finish the job up to the stone.



Figure 1. Example of mower damage to a fragile stone. Note the impact and scratch through the date, as well as the two scratches completely across the stone. There is also abundant edge damage from impact.

For these procedures to cause minimal damage four precautions are **absolutely** critical:

1. The maintenance crew must be carefully trained and closely supervised. They must understand that historic markers are very fragile and that the activities used on residential or commercial grounds are unacceptable for historic cemeteries.
2. Only walk behind mowers should be used – riding mowers offer too little control and operators are too inclined to take chances in an effort to speed the mowing up and get on to another job.
3. All mowers –even when used no closer than 12 inches – must have bumper guards installed to offer additional protection. This can be achieved by using cable ties to attach closed cell foam, such as that used for the insulation of pipes, to the sides, front, and rear of all mowers.
4. The nylon string in the trimmers must be lightest gauge possible – no heavier than 0.09 inch.

Perhaps the best protection from mower damage, however, is the active involvement of the superintendent in the oversight of the landscape maintenance operations – inspections should be made during and after mowing operations. In addition, contracts for mowing should clearly specify that the landscape firm is responsible for all damage caused to stones and should ensure that adequate insurance is being carried to provide coverage for

claims made.

Web Sources for Additional Grass Maintenance Issues

Clemson University Mowing Lawns
Clemson University Aerating Lawns
Clemson University Broadleaf Weeds
Clemson University Grassy Weeds
Clemson University Fertilizing Lawns
Clemson University Drought

<http://hgic.clemson.edu/factsheets/hgic1205.htm>
<http://hgic.clemson.edu/factsheets/hgic1200.htm>
<http://hgic.clemson.edu/factsheets/hgic2301.htm>
<http://hgic.clemson.edu/factsheets/hgic2300.htm>
<http://hgic.clemson.edu/factsheets/hgic1201.htm>
<http://hgic.clemson.edu/factsheets/hgic2351.htm>

