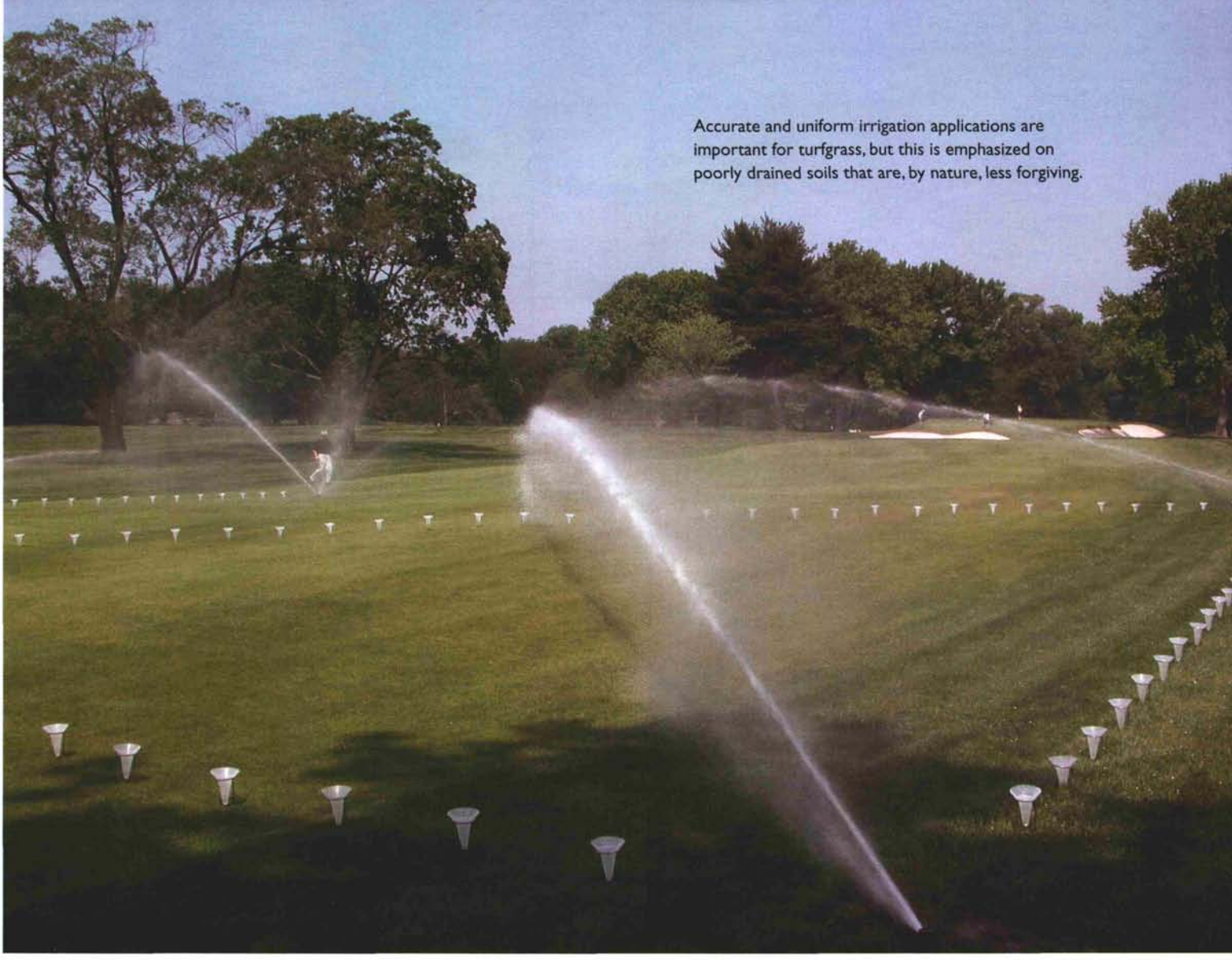


Accurate and uniform irrigation applications are important for turfgrass, but this is emphasized on poorly drained soils that are, by nature, less forgiving.

Factors Affecting Success

Having the wisdom to know what you can and cannot control!

BY DAVID A. OATIS

Being a golf course superintendent is much like being a referee: Fifty percent of the golfers are always mad at you and no one ever cheers for you. Few golfers understand the problems a superintendent faces, so before you compliment or criticize, take a closer look at some of the factors that affect their success!

Perhaps you have wondered why certain superintendents are more successful than others, or why some courses perform better than others in any given year. Sometimes it is the money; some courses spend a lot more on maintenance than others. However, some courses simply occupy better sites. The truth is, even courses right next to one another can be so innately different that they will perform very differently in any given year. Soils may be different. Growing environments may be different. Perhaps more is being asked of the turf at one course than at the other. There may also be infrastructure problems at one course and not another. Courses with topnotch irrigation systems typically fare better during droughts than courses with antiquated systems. Courses with good drainage usually perform better during wet years than courses that drain poorly.

Before judging your course or superintendent, understand some of the factors that affect turf performance and ultimately the success of the turf management program. There are indeed many factors involved in the complex world of turf and golf course management, and numerous texts have been written on the subject. This article can address only a few of the major problems that superintendents commonly face.

WHERE TO START?

Doing an inventory of golfer desires and an assessment of course characteristics is a good starting point. There will be obvious problems if the golfers want a links course and the property is not near the ocean!

The next important step is to make sure golfer desires and course characteristics are compatible with one another. Determine what the golfers' priorities are in terms of playability and what they are willing to spend and endure to achieve their goals. This means developing maintenance guidelines, which are a great tool for keeping maintenance programs on track and diffusing arguments about playability. Keep in mind that the committee that hires a superintendent may not be the group he or she answers to just a few years later. See "When In Doubt — Spec It Out" by Pat Gross (March-April 1997 *Green Section Record*) for help in this area.

Make sure the budget is adequate for producing the desired results. If it is not, golfer desires and/or the budget will have to be adjusted. If golfer desires and the budget are not in line, success cannot be achieved. Of equal importance, make sure the property and the design of the course are capable of satisfying golfer goals. Designs can be altered, but not all site characteristics can be changed, and certain designs and playability features are site specific.

Analyze the strengths and weaknesses of the course. This means evaluating every aspect you can think of. Be thorough and be specific. For example, evaluate the water management systems (irrigation and drainage). How well does the course handle moisture extremes? Are the bunkers maintainable and playable? How do they handle too much rainfall? Consider every aspect of the putting greens, such as growing environments, surface drainage, internal drainage, soil modification, cupping area, traffic flow, grass type, etc. Identify whether there are architectural problems with the putting greens that might require reconstruction or significant modification. Use the report-card articles on greens and bunkers written by Jim Moore and Chris Hartwiger ("Helping Your Greens Make the Grade," Moore, March-April 1998; "Help Your Bunkers Make the Grade," Hartwiger, November-December 1998) to help you in your evaluation.

Determine which aspects of each system can realistically be fixed or improved, and which aspects you will have to live with. Prioritize based on golfer impact, importance to turfgrass health, performance, playability, disruption, and cost. Your course may need a new irrigation system, but financially it may be out of reach. Alternatively, upgrading the existing system to make it more effective is rarely a good option, but improving drainage or implementing different mowing strategies may reduce the negative effects of a poor irrigation system.

These are all areas for which assistance can be needed, and your regional USGA agronomist is a great place to start. Getting an outside opinion of your course and the various priorities can be a big help in identifying the most critical aspects to address first.

SITE CHARACTERISTICS

Very few sites are ideally suited for golf. Many are adequate, and others support golf despite the inadequacies of the site. Low, wet sites with heavy soils are least desirable. Severe topography can be picturesque, but it can also increase shade problems and it usually causes traffic to be funneled. Realize that traffic causes more damage to turf grown on severe topography because of the added torque caused by the slope. Sloped turf areas are harder to irrigate than level turf, and south-facing slopes, particularly if they are severe, heat up more quickly. This all impacts turf health. Poor soils, such as heavy clays, shale, or rocky soils, can make digging a hole or installing drainage or irrigation an ordeal. Poor soils also make it tougher to grow consistently healthy turf. In fact, few courses are ideally suited to golf, and most have been further degraded by the overzealous planting of trees. Trees are a major contributor to turf and playability problems.

Geographic location is not something that can be changed, but it has a huge influence on every aspect of turfgrass and golf course maintenance. What is possible agronomically or what may be an agronomic problem in one climate may not be possible or may not exist in another. Understand-

ing local conditions, pest problems, and what works best in your area is essential to developing realistic goals.

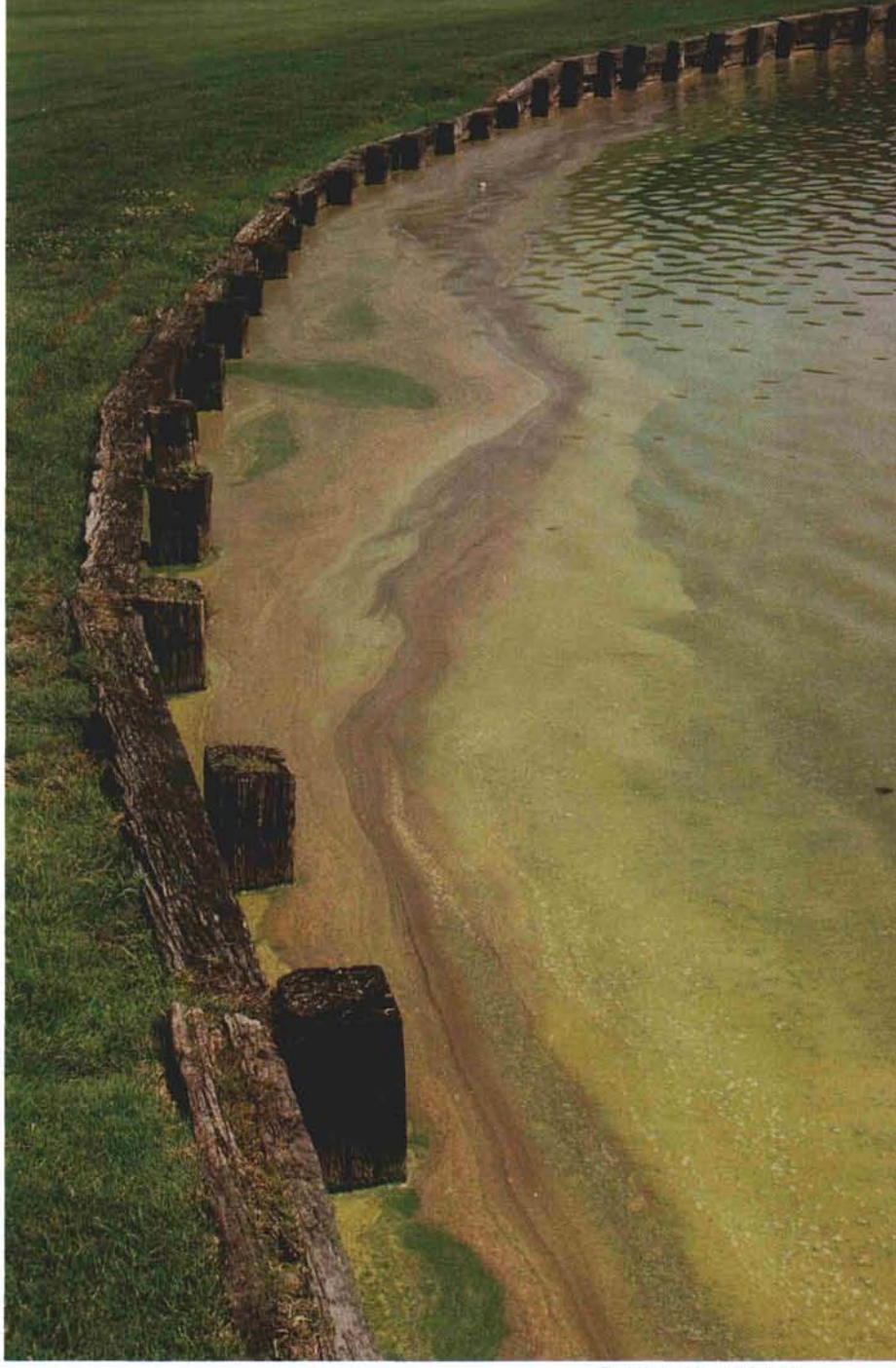
The microclimate a course is located in can have a significant impact on turfgrass management. A course's elevation and position relative to geographic features (mountains, rivers, lakes, etc.) influence the weather experienced. For example, elevation will influence temperature. A course with greater elevation will have a slightly shorter season. It often will be slower to warm up in the spring and it may stay cooler in summer, and this creates different turfgrass disease possibilities than warmer courses may experience. The elevated course will cool off more quickly in the fall, so it is important to plan cultivation schedules with the climate in mind.

It can be surprising just how regionalized weather can be. Weather can differ significantly between courses that are just a mile or two apart. A storm may hit one course, dropping several inches of rain, yet almost entirely miss an adjacent one. The microclimate also will influence what turf varieties will perform best and which would not be practical. The microclimate a course is located in cannot be changed, but the microclimate each feature is located in often can be adjusted.

The microclimate each green, tee, and fairway is located in has an enormous impact on their performance. Many courses have rebuilt greens, mistakenly thinking that the problem was in the construction, only to experience equally poor performance with properly built new greens. A few courses have rebuilt the same green several times, only to find the real problem was that the environment the green was located in was poor. Spending time and money on assessing and improving grass growing environments is always money well spent. The growing environment in which turf is located has a bigger influence on its performance than just about any other factor. While the geographic location of the course is not something than can be changed, the microclimate each feature is located in is something that can and should be adjusted. In fact, improving grass growing environments should be one of the highest priorities.

Soil type is something courses have to live with for many areas, and it is a big factor in turf performance. Fine-textured soils such as clays will stay wet and will be slow to drain, quick to compact, and may be difficult to rewet if they become extremely dry. They are very unforgiving. Sandy soils are much more desirable. Surprisingly, courses can have totally different soils in different areas of the course, and courses in close proximity may have very different soils. Also, realize that certain grasses will perform better in some soils. For example, fine fescues, which are commonly preferred in naturalized roughs in the Northeast, need drier, sandy soils to thrive. Plant them on wet, fertile soils and they simply won't perform well. Other grasses are better suited for these sites. Thus, it is important to understand whether the soils will support the desired turf.

Putting greens are an exception, as they are almost always built from or modified with non-



Poor water quality can have a major impact on aesthetics and pond ecology, and it can be a difficult problem to solve.

Few golf courses have soils ideally suited to golf, and many courses suffer with heavy, poorly drained soils that make growing good turf a challenge. Putting green soils can be modified, but most courses have to live with their native fairway and rough soils.

native materials. Because of the area involved (a fraction of the whole property) and their relative importance, great effort is usually expended in adjusting putting green soils. How effectively this has been accomplished, however, will play a big role in determining their performance. Tee soils also are frequently modified, and even fairway soils increasingly are receiving extensive cultivation programs, and some are being modified with sand. Sand topdressing is almost always performed on greens and can be very helpful for fairways, if you can afford it. No doubt about it, soils have a profound impact on turfgrass performance.

Many courses have utilized less than ideal ***construction methods***, and this can have a huge influence on turf performance and maintenance costs. Saving a few dollars or choosing inappropriate construction methods or materials may result in years of elevated maintenance costs, increased golfer disruption, and poor turf performance. Even the best maintenance programs cannot compensate for mistakes made during construction.

It is important to research thoroughly the construction methods to be utilized. Doing so will help direct the maintenance program. This may mean having soil cores analyzed and digging holes in greens to get a firsthand look at what is there. You may be surprised that even older greens built from seemingly native soils have drains underneath them, and when treated with deep aeration, drainage may improve dramatically. Don't probe one green and assume that all are consistent. Identifying precisely where the problems lie is the first step towards developing a plan to deal with them.

Warning: Don't fall into the trap of instituting programs that are successful at other courses if conditions at your course are different. Putting green cultivation programs are a good example. The old, soil-based greens at one course may benefit dramatically from deep aeration and drill-and-fill treatments. However, if you have properly built USGA greens, a drill-and-fill program is not likely to be very beneficial, and the expense and disruption are significant. It is more likely that an aggressive surface cultivation program to control thatch effectively would provide the desired results without the additional expense and disruption of a deep aerification program.

TURF CONDITIONS

Assessing the general health of the turf is another important step. Perhaps it has simply been placed under too much stress (from frequent and low mowing, under-fertilization, etc.) and is unhealthy, thin, and weak. Perhaps thatch levels have been allowed to get out of hand. Thatch must be controlled to produce healthy, reliable turf, better drainage, improved pest control, and good playability. Excessive thatch is a common problem on courses with less than optimal cultivation programs, and it is an especially common problem with high-sand greens. Implementing sound fertility and cultivation programs can improve turf health quickly, but if soil problems or thatch levels are severe, it may take several years to get things back into line.

The turf on one course may not be performing as well as the turf on a neighboring course because of genetics. There are major differences in turf performance, disease resistance, wear tolerance, etc., between turf species and among cultivars of the same species. Turf problems frequently are related to species composition. In the Northeast, old greens commonly are comprised of old bentgrass varieties and annual bluegrass that simply cannot handle the low cutting heights, stress, and disease pressure that modern varieties can withstand. Older courses, where turf has experienced years of natural selection, may have developed an excellent foundation of turf. Newer

courses, or ones that have frequently experienced turf loss, may have weaker, less desirable turf.

The difference in putting green performance among courses can be easily attributed to the soil conditions and turf varieties present. Soil conditions can be altered through cultivation, and turf composition can be altered through maintenance practices and overseeding. This is an area to concentrate efforts on, because changes in turf composition frequently will improve playability and turf performance. This usually is a long-term program, taking several years to see results, so it is one that should be put in place as soon as possible. It also is a program that rarely will produce good results if it is not implemented aggressively and consistently. This practice is one that often is cut short in different ways.

Unfortunately, it can be a slow, tedious process. Rapid changes can be obtained by regrassing (via fumigation or use of a non-selective herbicide and replanting). Many golfers do not want to go through this much disruption, but it is the most effective means of effecting rapid change. New cultivars developed in the last decade are light years better than most of the older varieties. Just be sure the growing environments will support the change.

WATER MANAGEMENT

No aspect of turfgrass management has a bigger impact on turf performance and playability than water management. Managing water effectively can get weak turf through tough weather. Manage it poorly, and healthy turf may not survive.

Someone once said, "The only thing more important than ***drainage*** is more drainage," and that is a fact! If there is any doubt as to whether drainage is adequate, it is not! Good drainage produces healthier turf and better playability. It can reduce the potential for summer problems and winter damage. Good drainage gets golfers back out on the course more quickly after precipitation.

Having a reliable and accurate ***irrigation system*** also is important, and having one that applies water uniformly is even more so. Irrigation systems are second in importance only to effective drainage systems, and having an effective irrigation system can actually improve drainage by reducing the problems associated with over/under irrigating.

EQUIPMENT

The equipment inventory may be old, out of date, inappropriate, or in such poor repair that it is not capable of doing the job effectively. Sorting the equipment situation out is an important part of the prioritization process. For example, mowers clearly need to be reliable, and they can have a big impact on turf performance and even species composition. If you find that golfers are complaining because aerification takes twice as long at your course as at a neighboring course, find out why. Perhaps the neighbor is not aerifying effectively or often enough. The reason also may be that your course does not have the right equipment or enough equipment or manpower to get the job done in an expedient manner.

WEATHER

Some years are difficult; some are nearly impossible. The 2005 season leaned toward the impossible in the Northeast, characterized by just about every weather extreme imaginable. Whether a season is difficult for a particular course often depends on the individual course's strengths and weaknesses that were previously mentioned. Timing of the major weather events relative to pesticide applications, the tournament schedule, cultivation events, etc., also can be important factors. High temperatures and a heavy rain event

that occur during a major tournament, when turf stress already is high, can push it over the edge. Bad weather that occurs just as a pesticide application is wearing off also can be damaging. Healthy, less-stressed turf will handle challenging weather much better than weak, over-stressed turf.

Warning: Local weather recordings can be helpful, but rainfall is so regional that there is no substitute for having one rain gauge or weather station (or more) on-site.

If there is a silver lining, it is that tough years clearly identify problems that might otherwise be ignored. Even the best maintenance programs may not produce ideal turf conditions in very difficult years, but tough weather can at least be a good teacher.

GOLFER DEMANDS

Everyone seems to want what they perceive as being "the best," but few can afford it. Thus, being realistic regarding goals and resources is essential. Being realistic about what is possible with a given course (and all of its idiosyncrasies) is equally essential. Green committee members must understand the strengths, weaknesses, and limitations of the course and should participate in the budgeting process. If certain programs are desired but not currently budgeted for, a decision must be made: increase the maintenance budget or give up a program or practice that currently is being performed. Spend more or reallocate resources. Many committees require superintendents to make that decision and later are unhappy with the results. It is important that committees fully understand the consequences of their decisions.

As a golfer, it is important to keep motives in mind when considering the performance of a given superintendent and the relative condition of the golf course. The golf course management industry basically is a service industry, and it is in the best interest of a golf course superintendent to maintain a blemish-free golf course with green turf and firm, fast greens. Few, if any, golf course superintendents enjoy aerating putting greens. The process entails a tremendous amount of work, it disrupts playability, and, most important of all, it irritates the people superintendents most want to please: the golfers! Why would a turf manager aerify putting greens, not to mention cut down a tree or apply a pesticide? Because it is in the best long-term interest of turf performance to do so. It is difficult to bake a cake without breaking an egg or two, and aeration, tree removal, and periodic pesticide applications are important and necessary maintenance practices.

MAINTENANCE STAFF

Taking care of those who take care of you is something to keep in mind when it comes to golf course maintenance staff. The most successful superintendents always have excellent staff behind them. Regardless of a superintendent's skill level, the maintenance staff at any course can make or break the maintenance program in a heartbeat. A motivated, well-trained staff is an enormous asset. Developing a conscientious, hard-working crew starts at the top, and it takes time and effort. The wages you offer can certainly affect the quality of staff and your ability to attract applicants, but the working environment you create through your dealings with the crew has an even greater effect. It can drive good employees away or it can make marginal employees better.

Periodic barbeques at the maintenance shop are not very expensive compared to the typical maintenance budget and are a great way to build morale. Playing a team sport at lunch or after normal work hours can be enjoyable and bring crews closer.

CONCLUSION

Many factors influence turf management and a turf manager's performance. Regrettably, many factors are not controllable and others are only marginally so. These uncontrollable and difficult-to-control factors are the cause of most turf problems. Because there are so many of them, it is imperative to effectively manage those factors that can be controlled. It is equally important to know the difference. Considering the ideas presented in the Serenity Prayer offers wisdom that applies especially well to golf course superintendents.

The Serenity Prayer

God grant me the serenity
to accept the things I cannot change,
courage to change the things I can,
and wisdom to know the difference.

— Reinhold Niebuhr

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