

The Economics of Golf Course Maintenance

Golf course maintenance programs must innovate to adjust to changing demographics and economic conditions.

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Limiting ornamental plantings and utilizing perennial plants instead of annuals can reduce maintenance costs.

The economic recession that started nearly 10 years ago has had a significant impact on the golf industry, one that is still being felt today. A few golf facilities have prospered since that difficult time, but far more have struggled, some closing their doors while numerous others changed hands or significantly altered their business model. These effects are not surprising, given the challenges created by an oversupply of golf

courses that is partially the product of the aging golfer demographic and declining participation rates among younger generations. Furthermore, extended periods of severe drought have increased the price of water and limited its availability for golf courses.

When the recession hit, golf course superintendents faced the familiar challenge of trying to do more with less. Out of necessity, maintenance budgets were frozen or cut at many golf courses

while the cost of many inputs — e.g., plant protectants, water, equipment — continued to rise. The maintenance budgets at some courses still remain lower today than they were 8-10 years ago, testimony to the long-term effects that changes in demographics and the economy have had on golf.

Golf course superintendents are accustomed to budget cuts. Recent rounds of belt tightening, however, were accompanied by pressure to

reduce costs and course closures by avoiding disruptive maintenance practices. Convenient changes to maintenance practices, such as skipping or rescheduling aeration and topdressing, took precedence over more sensible ways to reduce costs, such as reducing the intensity of bunker maintenance or scaling back unnecessary landscaping. Golf facilities also wanted to achieve budget cuts without a noticeable change in course conditioning. Unfortunately, cutbacks were noticed by golfers at many facilities.

When it comes to cutting costs, there is a big difference between eliminating needless amenities and compromising essential agronomic programs. The good news is that the recession caused golf facilities to re-evaluate maintenance practices, presentation options, and course amenities. Many golf courses were forced to differentiate between essential and nonessential maintenance programs so they could focus on what matters most. Surprisingly, some cost-saving changes had positive effects on playability and aesthetics.

Numerous strategies have recently been utilized to reduce golf course maintenance costs; a brief review of the more common strategies and their overall impacts follows.

LABOR

Not surprisingly, reducing staff size is a very common cost-cutting strategy because labor often represents between 50 and 60 percent of a typical golf course maintenance budget. However, reducing the number of staff, particularly when experienced and motivated employees are lost, can have very negative consequences.

Golf course maintenance work is demanding and the labor market is very competitive. Recruiting and retaining reliable maintenance staff is currently one of the biggest challenges at golf facilities across the country.

Additionally, there are many [hidden costs](#) associated with hiring and training new maintenance employees. It often takes several weeks to train a motivated individual to perform multiple maintenance tasks with a consistent

level of competency. However, it may take several years for new employees to become as efficient as experienced staff. Eliminating experienced, dependable, and highly skilled staff that are paid more than new hires can save money in the short term, but replacing them with new employees to reduce payroll expenses often results in more mistakes, reduced efficiency, and generally more wear and tear on turf and equipment.

A well-trained labor force is an extremely valuable asset. If labor costs must be cut, a better option may be to reduce the number of less-experienced staff. This approach may save less money than eliminating experienced staff positions, but it is also likely to minimize the disruption to overall productivity and result in fewer costly mistakes. Staff with less experience are more likely to be assigned tasks that require less skill, so their loss may have a smaller impact on playing conditions than the loss of a higher-paid, experienced staff member. Reducing the number of inexperienced staff



Some courses maintain ornamental plantings but inadequately invest in fertility, weed control, and other programs that directly benefit playability.



Striped mowing patterns are less efficient than the classic half-and-half mowing pattern in terms of labor, fuel consumption, and equipment wear.

makes especially good sense if the number of tasks requiring less skill — e.g., weeding landscape areas and filling ball washers or divot boxes — can also be reduced.

Reducing staff size can also be an effective way to reduce costs if highly efficient maintenance equipment is available to offset the lost labor. However, turfgrass health, playability demands, and the design of the course must allow for the use of such equipment.

FERTILIZER AND PLANT PROTECTANTS

Carefully analyzing fertilizer costs can reveal some significant opportunities to save money, even though fertilizer does not represent a major percentage of a typical golf course maintenance budget. Savings can add up if expensive, highly specialized plant nutrient

products can be replaced with more cost-effective products — e.g., urea and ammonium sulfate. The USGA article “[Does the Grass Know the Cost?](#)” explains the subject in greater detail. A [fertilizer calculator](#) can be useful for determining the amount of savings that can be realized by switching products.

Many courses have adjusted fertility, pest control, wetting agent, and plant growth regulator (PGR) programs in an effort to cut costs. However, overzealous reductions to these programs are a double-edged sword. For example, timely applications of wetting agents can reduce the need for labor-intensive hand watering. Abandoning preventive insect- or disease-control programs can yield initial savings, but the cost of controlling major pest outbreaks can far exceed the cost of preventing the problems from occurring.

It also is important to recognize that the impacts associated with cutbacks in fertility and plant protectant programs do not always have immediate consequences. For instance, a course may have low weed pressure because it properly fertilized and judiciously used herbicides to control weeds for several years. In this situation, skipping pre-emergence weed control for a year may result in some savings and little weed encroachment. However, cutting pre-emergence weed control and reducing fertility for several consecutive years may lead to a steady increase of weed encroachment. Once weeds become established, aggressive control programs that rely on expensive herbicides and higher application rates may become necessary to reduce weed pressure and restore turf density. In such cases, short-term savings can lead to greater expense in the long run.

Fertilizer, plant protectants, and other applications are areas where money can sometimes be saved, but it is important to maintain turfgrass health and adequate wear recovery. Otherwise, the benefits of short-term savings may be outweighed by long-term problems and increased future costs.

CAPITAL EXPENDITURES

A common approach to save money during the recession was to suspend capital expenditures for course improvements, replacing turf maintenance equipment, and upgrading infrastructure such as irrigation systems and maintenance facilities. In the short term, this tactic was reasonable and successful.

On the other hand, courses with available capital during the recent economic downturn were able to negotiate better prices for irrigation systems and course improvement projects. Despite rising costs associated with daily maintenance, golf course contractors were hungry for business. Some courses obtained terrific deals on capital expenditures during the worst of the recession.

Unfortunately, many courses simply did not have enough liquid capital to take advantage of the reduced pricing offered by golf course contractors.



Moss on a putting green may be the result of scaling back aeration and topdressing programs combined with failing to remove trees that block sunlight.

Many facilities now are exposed to high costs caused by failure to replace old equipment or upgrade inadequate facilities, including higher equipment repair costs, reduced efficiency, increased labor requirements, playability issues, and many others.

Failing to invest in improvements and upgrades may also affect how golfers perceive a facility. Golf is a competitive business, and golfers are more likely to play at golf courses that demonstrate a commitment to quality by making improvements.

Finally, courses that are unable or unwilling to invest in replacing equipment will eventually get to a point where a major influx of capital will be needed to get their equipment fleet to a stable, efficient position.

FAIRWAYS

During the recession, many courses streamlined fairway mowing operations

by simply switching from striped mowing patterns to the classic half-and-half pattern. This pattern reduces mowing time and reduces labor, fuel consumption, and equipment wear. Many also feel that the more traditional appearance of the classic cut pattern is an improvement over complex stripe patterns.

Fairway mowing frequency was also reduced at many courses in an effort to cut costs. Often, this was achieved with the help of PGR programs.

Reduced mowing frequency has had minimal impact on turf quality and the playability of fairways at most courses. Furthermore, a shift to mowing fairways two or three times per week versus three to five times per week reduces labor and fuel consumption while extending the life of equipment.

Clipping removal is another important consideration. There are agronomic, playability, and aesthetic reasons to

collect and remove grass clippings, but the costs associated with doing so have spurred many courses to forgo collecting clippings in favor of dispersing them. Using PGRs to reduce clipping yield and blowing or dragging excess clippings to disperse them when necessary can prevent playability or aesthetics from deteriorating. The nitrogen released as clippings decompose can also help reduce fertilizer budgets.

PUTTING GREENS

Putting greens are the most frequently mowed area of golf courses, and the associated costs are significant. Mower technology has improved to the point where triplex units can produce a quality of cut equivalent to that of walk-behind mowers. The labor savings can be considerable because a single operator with a triplex can accomplish the same amount of work

as several employees operating walk-behind mowers.

While the initial investment in equipment is high, making the switch to using triplex mowers on putting greens can generate long-term savings in labor. Unfortunately, course design makes it challenging for some facilities to utilize this strategy. Other courses sporadically use triplex mowers to reduce costs.

Reducing the mowing frequency of putting greens while increasing the frequency at which they are rolled can generate the same or better playability with fewer inputs. Additionally, some courses have found that outfitting a putting green mower with 14- or 15-bladed reels or adjusting its clip rate can eliminate the need to double cut.

Understandably, some courses cut back or altered the timing of aeration programs in an effort to minimize golfer disruption and reduce costs during the recession. This strategy

achieved mixed results. In situations where organic matter levels are optimal, a slight reduction in core aeration can be tolerated if an effective topdressing program is in place. Conversely, even with a very aggressive aeration program, significantly reducing the topdressing amount or frequency is likely to cause problems. Ultimately, cutting back on putting green aeration and topdressing programs is rarely a good strategy to reduce maintenance spending.

BUNKERS

With fewer funds available to pay for labor, bunker maintenance changed at most golf courses during the recent economic recession. A common change was to reduce the frequency of bunker raking so that bunkers were completely raked only once or twice per week. On the remaining days, only those bunkers that had been disturbed were raked. Labor-saving raking techniques also

became more common. Mechanical bunker rakes experienced a resurgence in popularity, though their use can be limited by bunker design and construction method. Courses that have bunkers with steep faces, irregular shapes, and certain types of liners may find that mechanical bunker rakes do not work well.

The “Aussie method” of bunker raking also gained popularity. Courses that use this approach rake the floors of bunkers by hand or with a mechanical bunker rake. The bunker faces are then groomed by hand with the smooth side of a rake, a paint roller, or a squeegee. This raking technique leaves the sand on bunker faces firm and requires less labor than hand raking entire bunkers. The USGA case study [“Bunker Raking to Reduce Labor and Washouts”](#) describes the “Aussie method” in more detail.

Many facilities also took a hard look at the design and number of bunkers



Bunkers are expensive to build and maintain, leading many courses to reduce the number and size of bunkers to save money.

on their golf course. A growing trend has been to decrease the size of bunkers and remove those that rarely come into play. Bunker reduction has the potential to provide significant long-term cost savings since the cost of maintaining bunkers is high. Some courses also are making their bunkers more maintenance friendly by softening slopes in and around bunkers and improving drainage to reduce washouts. The USGA article "[Bunkers: Can Your Golf Course Afford Them?](#)" discusses many of these issues in great detail.

Although golfers still want bunkers to be well maintained, there seems to be an understanding that bunkers are hazards and their maintenance can be taken down a notch in the interest of significant cost savings.

ROUGHS

Roughs represent the largest area of maintained turf at most golf courses. Even though they usually are not maintained intensively, the mowing and equipment costs associated with roughs add up because of their large size. The cost of maintaining rough areas may be much higher in arid regions where rough requires irrigation and water costs are high. Out of necessity, many courses in the Southwest removed maintained rough in peripheral areas to cut down on water usage and save money.

For years, golf courses have also replaced mown rough with naturalized or unmown rough. The visual and strategic impacts of naturalized roughs can be dramatic, and reducing mowing can generate significant cost savings. However, savings can quickly evaporate if golfers insist on maintaining pristine, thin, wispy, and weed-free conditions in unmown roughs. Achieving such conditions requires extensive inputs; hence, the savings associated with naturalized roughs vary greatly. The savings can be significant, negligible, or nonexistent depending on the level of maintenance desired by golfers.

The pressure to reduce maintenance costs also prompted golf courses to re-evaluate whether the expense of maintaining dew paths and intermediate roughs is worthwhile. Maintaining dew

paths and intermediate roughs adds labor costs and requires dedicated and expensive equipment. Furthermore, few courses maintain primary roughs at a high enough mowing height to justify having intermediate rough, so the playability benefit is negligible. Intermediate rough also can be challenging to maintain, and many golf courses produce excellent playability and aesthetics without the burden of intermediate rough. The USGA article "[A Waste of Time and Money](#)" explains this issue in greater detail.

COURSE ACCESSORIES

Golf course accessories — e.g., ball washers, benches, tee caddies, cleat brushes, divot mix containers, and ornamental plantings — have become commonplace at many golf facilities. While course accessories are meant to add convenience or decoration, purchasing, installing, and maintaining them requires considerable expense and labor. Increasingly, courses are removing some or all of their course accessories and ornamental plantings in an effort to focus more time and money on tasks that improve playing conditions. The result is streamlined

maintenance, considerable savings of staff time and maintenance dollars, and a cleaner presentation. The USGA case study "[Eliminating Golf Course Accessories Saves Time and Money](#)" documents the positive results at one course that chose to reduce course accessories.

TREES

Many golfers enjoy the presence of trees on a golf course, but trees also increase maintenance costs. Although the cost of planting a tree is a one-time expense that is easy to compute, few golf courses fully consider the long-term economic impact of trees. A tree may live for 100 years or more, and a considerable amount of labor is required each year for trimming turf around tree trunks, removing debris, pruning branches and roots, controlling pests, and ultimately removing a damaged or dead tree. Trees can also make it more difficult and expensive to maintain healthy and wear-tolerant turf, which affects golfer satisfaction in addition to the budget.

Tree removal is expensive, but so are the [hidden costs of maintaining trees](#). Tree maintenance may be



Course accessories are nonessential amenities that divert time and money away from programs that directly help maintain quality playing conditions.



The weeds you see this summer may be a result of cost-cutting decisions made during previous years, such as reducing fertilizer or weed-control applications.

worthwhile when trees provide tangible, clearly defined benefits to a golf course, but it is difficult to justify years of increased expenses for poor-quality or poorly located trees. Few courses undertake tree removal just to reduce expenses, but many have removed trees to realize substantial improvements in turf performance and notable reductions in expenses.

NEW TECHNOLOGY AND DATA-DRIVEN DECISIONS

GPS-guided sprayers can help reduce the amount of product applied to a golf course by 15 to 20 percent, resulting in

obvious financial savings. Moreover, the improved application accuracy also ensures better product efficacy by greatly improving the uniformity and precision of each application. The startup costs are steep, but the savings can make an investment in GPS-guided equipment worthwhile, especially considering the value of improved applications.

Robotic mowing equipment also has the potential to reduce labor costs. The benefits of this technology are just beginning to be evaluated on golf courses. Unfortunately, like GPS-guided application equipment,

the entry costs for adopting robotic mowing equipment are high. The USGA article "[Advancing Golf Course Maintenance Equipment with Positioning Technology](#)" discusses many of the factors associated with some of these new technologies.

The USGA is currently developing and testing a web-based product called USGA Resource Management. It will help golf facilities better understand and measure how resources are allocated to different playing surfaces. Using site-specific information, the cost of maintaining each putting green, tee, bunker, fairway, and rough area can be estimated using interactive mapping technology. Facilities can also use USGA Resource Management to model alternative maintenance strategies and design changes to understand their potential financial impacts.

SUMMARY

Golf course superintendents are an innovative group. The economic pressure on golf course maintenance programs has stimulated even further innovation. It also has prompted many golf courses to evaluate which programs are essential and which they could do without. Golf facilities have no choice but to adjust to changing demographics and economic conditions, taking necessary steps to remain viable in a volatile environment. Golf is a challenging business, and most courses are constantly evaluating options to reduce inputs without negatively impacting the golf experience.

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