MANAGING BUNKERS FOR SUCCESS

By Tim Butler

One cannot deny the importance of sand bunkers from both an appearance and playability standpoint in the modern game of golf. Regardless of the golf course, it is likely that at least one golfer believes that the bunkers fail to meet the grade. When we think about golf course management, the green comes straight to mind. However, in reality, many golf course managers and greenkeepers frequently hear complaints about the performance of the bunkers on their course. It is vital to remember that bunkers are by definition a hazard, and this likely adds to frustration from some players.

Having visited numerous golf courses, I have come across many first-hand that have rebuilt their bunkers because they were performing poorly. Among the main problems associated with bunkers is washout from the sides, flooding of the surface under heavy rainfall, and ball lie within the bunker itself. In many instances, bunker performance has declined only a few years after construction or reconstruction.

More often than not, the reconstruction process failed to address the underlying problems that caused the unsatisfactory condition of the original bunkers on the course.

USGA agronomist Jim Baird has suggested that five areas should be addressed when trying to achieve consistency from bunkers including:

- Architecture
- Construction
- Sand selection
- Maintenance practices
- Etiquette

Architectural design is crucial to the success of any bunker and should be consistent throughout the entire course. In the design stage, I have frequently come across problems with inadequate drainage and bunker steepness issues which, without doubt lead to bunker failure over time.

The construction process is interlinked with the design stage. Issues with internal and surface drainage, and fabric liner are commonly faced by greenkeepers. Internal drainage is usually achieved by drainage lines which run through the underlying rootzone of the bunker. A herringbone system is commonly employed. Some courses rely on natural drainage through the rootzone without any internal drainage system. This approach will work when no excessive rainfall events occur, although in recent winters this has not been the case. In the vast majority of situations, some form of internal drainage system was fitted at the construction stage.

Over time many of these drains begin to perform poorly because of migration of sand particles through the rootzone and into the drainage lines. Flushing dye water through the drain line and watching the drain line exit is very useful. In many cases, replacing clogged lines with new drainage pipe is the only option.

Among the most time consuming jobs on the course is the repair of bunker faces that are continuously washed out. This problem is related directly to the amount of water that is entering the bunker from the surrounding area. In many situations, low-lying areas of the bunker are most affected.This is particularly true around golf greens, where the bunker area in close proximity to the green and apron are badly washed out during heavy rainfall, which is often due to the natural fall from the apron edge into the bunker.

Channelling of water before it reaches the bunker is a commonly used approach to rectify washout issues, but this technique requires careful channel placement and the collected water must have somewhere to drain to.

Many in the industry believe that building sand bunkers with flat bases will help to reduce the incidence and severity of washouts. The option of eliminating steep edges in the bunkers, will likely reduce washout problems, but will also change how the course plays.

New types of fabric liners have been introduced to some success, which may help to hold sand in place in steep edges. Much uncertainty exists among turfgrass managers over the use of these materials. Such liners have been used to cover drainage pipes on both golf courses and athletic fields in the past. Some feel that these liners may prevent migration of fine particles into drainage lines, thus reducing drainage pipe blockages, while others believe that such liners may themselves block over time, leading to a reduction in water percolation. Fabric liners are often placed across the entire bunker prior to sand application. This method may aid in reducing stones from the bunker rootzone contaminating the bunker sand. This system will likely prevent machine raking and this should be taken into account.

New fabrics are available that are designed to attach to the sides of steep bunkers and hold sand in place, although if high rates of watering are entering these bunker sides, it may be difficult for the sand to stay in place. It is very important to realise that washouts will also reduce the quality of the sand within the bunker, through introducing debris from grassed areas and clay and stones from the bunker sides. This is a big problem on many courses, giving greenkeepers no option but to frequently top up the bunker with fresh sand in order to keep the bunker looking clean and playable.

Sand selection is critical to the success of the bunker. Greenkeepers need to remember that the sand used, should give golfers a fair lie if their ball lands on it. Coupled with this, the sand should hold up to daily maintenance, resist forming plugged lines upon ball impact, withstand rain and wind and allow free drainage.

Selection of sand for bunkers can vary slightly depending on course location, with coarser types of sand frequently used in situations where high winds are a factor. Finer, lighter particles would be more easily blown away and lost under high winds.

Angular sand is usually chosen in bunkers because it can withstand shifting and the 'sinking' effect which on some courses can almost feel like playing in quick sand. Limestone and silica sands are often used as sources of bunker sand, although problems with surface crusting of limestone can occur. This is usually due to the fact that limestone

is a soft stone and easily weathered, which can consequently lead to an increase in the number of fines in the sand. This may cause the sand surface to almost stick together and become impenetrable.

In recent years, numerous new bunker sand types have come onto the market, which vary greatly in price.

The use of crushed, recycled glass has gained much attention, particularly in the UK, although the colour of this material has been questionable to many. Bunker sand selection is usually influenced by the type of golfers using the facility. Higher handicap players often prefer softer sands more so than harder bunker surfaces which are frequently favoured by lower handicap players.

Maintenance practices on golf course bunkers usually consist of raking, edging, debris removal and ensuring that the bunker contains about 4in of sand. Sand bunkers located next to greens are often designed to have a sharp lip of up to 4in on the green side. This lip is used to add to the difficulty of such bunker shots. In many situations, the backside of bunkers beside greens and many fairway bunkers do not have such aggressive and sharp lines in order to give golfers a chance to get a shot in when their ball is located near such edges. However, over time in many situations these less aggressive lips are deepened and sharpened through edging the bunkers and it is important to keep an eye on how your bunker edges are, compared to how they looked when they were originally constructed.

Edging bunkers is a very time-consuming job that is carried out on numerous occasions on the majority of courses each year. This task can be done physically or mechanically and in many instances leads to large chunks of poorly performing grass on bunker edges being removed in order to maintain the healthy grass that most golfers want to see. In reality, over time this practice can lead to severe changes in the shape of bunkers, coupled with issues such as clay movement into the bunkers from the fresh clay bunker faces.

It is very important that the grass surrounding bunkers is managed in order to resist thinning out as much as possible. This is particularly true in locations near greens, which receive a lot of play. Many golf courses have specific bunker areas near the green which receive high levels of play, which ultimately means that sand from the bunker is moved onto the surrounding grass surface. This can lead to numerous agronomic problems and deep-rooted grasses are needed to resist serious damage.

Re-soding and deep aeration are often used in these locations. Some bunker edges must be rebuilt after several years of aggressive edging in order to establish a definition between the bunker face and the surrounding grass and also to reshape the bunkers into their original design.

The issue of hand raking versus machine raking is often asked and in my opinion both have their merits and faults.

Etiquette refers to the treatment of the bunker area by golfers on the course and usually entails the raking of foot prints when finished playing from the bunker. This practice is essential if bunkers on your course are to be maintained in good standing on a daily basis. It is often useful to inform greens committees of this step and to repeat this message on a frequent basis. Entering and exiting of the bunker should also take place on fairly low areas without steep banks, as this aids in preventing sand on steep banks from collapsing.

Long gone are the days when the green was solely of crucial importance on the golf course. Expectations of all aspects of the course from greens to fairways and out-of-play areas have dramatically changed in recent years and bunkers are no exception to this. Careful design and management are crucial in ensuring that your bunkers are, and continue to be, accepted by golfers on your course.

About the author

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	Positives	Negatives
Hand Raking	Less underlying soil disruption	Time consuming
	All areas of bunker raked	More weeds
	Eye appeal	Bunker edge damage from trafficking
Machine Raking	Fast	Bunker edge damage from entering and exiting
	Less weeds	Introduce clay and debris from underlying rootzone and edges
	Bunkers can be raked more frequently	Expensive machine
		Compaction on the underlying rootzone