

A Revival of Hand Raking?

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Careless use of the riding sand rake can eventually force sand over the bunker lip, requiring relocation of the sand and renovation of the lip.

IS THE HAND RAKING of sand bunkers and the elimination of the mechanical rake the coming trend among golf courses? Perhaps not for most courses, but many golf course superintendents are taking a close look at some of the dubious benefits of the mechanical sand rake and deciding that a little more hand raking and a little less mechanical raking might actually save some time, money, and disruption in the long run.

Not so long ago, mowing greens and tees with walk-behind units and raking sand bunkers by hand was standard procedure. Large maintenance crews were necessary for such work, and costs grew as the cost of labor increased. The advent of triplex greensmowers, mechanical sand rakes, and huge fairway mowers ushered in a period of mechanization and labor savings in the 1960s and 1970s, and some predicted that by the 1980s golf course maintenance would be completely mechanized, resulting in smaller crews.

As we all know, the prediction has not yet materialized. Many clubs have gone back to walk-behind mowers on greens and tees, and the monster fairway

mowers have been abandoned in favor of lightweight units. Though these programs are more labor intensive and costly day-to-day, savings can result from reduced pesticide and water use, and less overseeding and renovation work. The improvements in playability and consistency are additional benefits of these programs, which are important but difficult to value in dollar terms.

The mechanical sand rake has enjoyed the greatest success and longevity among those tools that once seemed destined to transform labor-intensive golf courses into masterpieces of labor efficiency. In addition to the obvious benefit of being able to maintain well-groomed sand with a minimum of time and labor, compared to hand raking, the use of a mechanical rake offers the added advantage of controlling most weeds in bunkers without having to rely on hand labor or herbicides. Also, the mechanical rake does an excellent job of grooming and scarifying, allowing hard, contaminated sand to be kept in reasonably good playing condition for many years more than one might expect.

While there is no denying the advantages of using this machine, the mechani-

cal rake is not without its detractors. In fact, superintendents and golfers alike have recognized for many years that the appearance and playability of many bunkers is being compromised by the use and misuse of the mechanical rake. Only recently, however, has the long-term cost of using this machine been determined to be great enough to consider limiting its use and returning at least to a certain extent to hand raking.

MANY OF THE negatives concerning the mechanical rake are inherent in its use, while others can best be attributed to its misuse.

The rake does an excellent job of grooming hard sand to keep it in good playing condition, but on the other hand, it can actually keep new sand too soft, and encourage fried-egg lies. Complaints from golfers are especially common after a course has just replaced its old contaminated sand with new material. One course of action in this instance is to keep the mechanical rake out of the bunkers as much as possible, or at least remove its scarifying teeth to prevent deep cultivation. This helps



to improve playability while the sand has an opportunity to settle in the months ahead.

The mechanical rake has other drawbacks in new or soft sand. It creates ridges of sand as it makes its turns. A golfer unfortunate enough to find his ball on the wrong side of one of these ridges may have a tricky shot, to say the least. The problem is most severe when the operator is going too fast, but even a good operator will have difficulty avoiding ridges when the sand is quite soft. The only way to deal with this problem is to slow down the operator and have him touch up the ridges with a hand rake.

By the nature of the turning action of mechanical rakes in sand bunkers, sand is constantly being moved around. As the machine makes its turns, a lateral, downward force is exerted, which pushes the sand outward — a process that occurs more quickly with operators who go too fast.

Over a period of weeks and months, a bunker that may have started out with a uniform six-inch layer of sand may be found to have pockets with only a two-inch layer, and other areas with from eight to 10 inches. When the machine passes through the shallow areas, the scarifying teeth or blades often dig into the sub-base and con-

taminate the sand with soil and stones. In bunkers where plastic or geotextile liners are used, the teeth sometimes catch and rip the liner, often leading to its removal. Though it is a time-consuming solution, some clubs combat this problem by routinely monitoring the depth of sand in various locations within their bunkers, and sending out crews to reestablish a uniform sand depth. Nevertheless, inconsistent playing conditions and an increased rate of sand contamination is almost assured.

Human nature being what it is, most would agree that if a person had a choice of riding a machine or doing the work by hand, he would choose to ride. Therein lies the biggest problem with the mechanical sand rake; many operators spend too much time on it, and try to do too much with it. For example, trying to rake the sand on a steep slope or face with the machine leads to nothing but problems. Sand is pulled down the slope, leaving a very thin layer on the face, and the machine ultimately digs into the sub-base and hastens the contamination of the bunker with soil and stones. Also, operators often rake too close to the edge of the bunker trying to avoid having to touch up the perimeter by hand. In the process, contamination occurs as the machine catches the lip, and excess sand is pushed closer and

closer to the edge, until the lip is lost in a wash of sand. At this point, when good bunker definition is lost, the appearance and playing qualities of the bunker are greatly diminished. Many clubs try to compensate for the deterioration of the lips by edging the bunkers more often, but this only results in the loss of their original size and shape.

ONE OF THE most blatant attacks on the integrity of sand bunkers is in the area where the mechanical rake enters and exits. Due to habit or sometimes to design considerations, many operators always enter and leave a bunker at the same location, causing a gradual deterioration and loss of definition of the lip in that area. Worse still, due to haste and a loathing for getting off the machine, operators tend to drag some sand out over the edge of the lip as they leave. Over a period of weeks and months, many bunkers grow appendages that ultimately become integral parts of the hazard. It is not surprising, then, that mechanical sand rakes are the bane of golf course architects, who take pride in the bunkers they create.

Thus, it is apparent how the long-term costs of relying completely on the mechanical sand rake can add up:

- Soil and stone contamination can occur significantly faster with a mechani-



(Opposite page) Hand raking is making a comeback at some courses that find the mechanical rake causes as many problems as it solves.

(Left) An appendage often grows at the entrance/exit site of the mechanical rake.

cal rake than with hand rakes. All things being equal, the sand will have to be replaced more frequently. An alternative is to place several inches more sand in the bunkers to reduce the chances that the mechanical rake's scarifying teeth will dig into the soil. Regular sand depth monitoring and sand redistribution work is another possibility. The use of geotextile liners to minimize contamination is a calculated risk, and more often than not is unsuccessful. All of these accommodations of the mechanical rake are costly.

- Bunker lip deterioration occurs much more quickly with the use of the mechanical rake, requiring more frequent edging to maintain good definition. The design of the bunker is then compromised, calling for the redesign and rebuilding of the bunker lips. Much of the extensive bunker renovation work going on at hundreds of golf courses now and in recent years is in good part due to the effects of the mechanical rake.

So what's the solution? Some would argue that the mechanical rake should be abandoned and that hand raking be reinstated. Certain courses, such as those with small bunkers and limited numbers of bunkers, would be wise to consider such a move. Courses with many large bunkers, however, would be hard pressed to give up the time saving,

weed control, and grooming benefits of the mechanical rake.

Perhaps the best way to enjoy the advantages of the mechanical rake while minimizing its long-term negative impact is to develop a strong program of training the operators to use the machine properly. Unless the design of the bunker limits its accessibility, operators should be directed to alter their entrance and exit points regularly to avoid excessive wear on the lips in any single location. The speed of the machine should be kept at a reasonably slow pace while raking the sand and should be allowed to move no closer than 12 to 18 inches from the bunker lip. The rake should be limited to the flat or mildly sloping ground within the bunker, avoiding the faces at all costs. To prevent sand from being dragged over the lip when leaving the bunker, the scarifying bar should be raised well ahead of time, preferably 12 to 18 inches before reaching the lip. Finally, the inside perimeter of the bunker and any unraked faces should be touched up with a hand rake, and weeds in this perimeter area should be pulled by hand or periodically treated with a non-selective herbicide.

HAND RAKING the edges of the bunkers according to these guidelines would greatly reduce the lips' rate

of deterioration. It would also minimize or eliminate the need to routinely power edge the bunkers (at least in areas of cool-season grasses), a practice that gradually destroys the original size, shape, and design of the bunker.

Another way to limit injury to bunkers by the mechanical rake is simply to use the machine less often. A club that normally rakes bunkers four times a week with the mechanical rake might instead send a small crew to touch up the bunkers by hand on two or three occasions, for example. If golfers would learn to accept this approach, the long-term appearance and playability of the bunkers would be enhanced in many instances.

It seems straightforward enough that workers can be taught how to operate a mechanical sand rake properly, but this is the exception rather than the rule. Only in recent years, though, have superintendents and course officials begun to recognize the sand replacement and renovation costs involved with the use and misuse of the mechanical sand rake. With this expensive work behind them, perhaps there will now be more emphasis on worker training, along with a renewed respect for and greater utilization of hand raking in the maintenance of sand bunkers.