



*The results of Ray Knapp's
"Sand Bunker Survey" are in!*

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SAND BUNKERS

By Ray Knapp

Before starting to write this article, I would like to acknowledge the series of events that led me to start a bunker survey. One Saturday last fall, a member of Tuckaway's Board mentioned to me that he thought that Tuckaway has the poorest traps in the Milwaukee district. I did not make much of this, but it got me to thinking of what I could do in the long run to change his mind.

In January the North Central Turfgrass Association had the final day of its program devoted to bunkers. One of the speakers, Fred Opperman from the Glenn Oak Country Club, gave a presentation based on a survey of 17 clubs in the Chicago area on bunker maintenance and construction cost.

With the notes that I took at Peoria, I made up a similar survey of Wisconsin golf courses. The results noted in this article are based on a return of 14 surveys of the 20 that were sent to Milwaukee area Golf Course Superintendents, my assistant and Jim Latham of the USGA Green Section. The survey and its results are printed at the end of this article.

I'm going to give my opinion of the maintenance part of the survey. Everyone could interpret the results differently. I will skip some of the questions because they did not appear to be significant. Carl Grassl of Bluemound Country Club will interpret the results of bunker construction.

Responses to the square footage questions were similar to

my own. Only 50% of the Superintendents that responded knew the area of traps on their golf course. Frankly, nearly everyone admitted that they either hadn't recently or hadn't ever measured the bunker area. I had assumed, based on construction blue prints, that we had 112,000 sq. ft. of sand at Tuckaway. After going out and measuring the traps, I came up with 187,000 sq. ft.! Thus the results of this question may have limited value. It is interesting to note that Fred Opperman's results from the Chicago clubs were similar to those of Wisconsin's.

The next question dealt with the number of times per week that the traps were raked. It was surprising to me that many excellent clubs were raking only 3 to 4 times per week. I had been raking traps 6 or 7 times each week and just assumed this was a common practice. Now I have some good points of discussion for my Grounds Committee on Tuckaway's raking practices.

I was surprised by the range of average labor cost per hour. The range was \$3.35 to \$5.25 per hour. Many clubs start out their seasonal employees in the \$3.35 to \$3.75 per hour range. Apparently many clubs are able to retain their workers and give them yearly advances. In nearly all cases, the second and the third year worker will do a better job when properly supervised.

At Tuckaway, for a 10 to 12 year period, we knife-edged our sand bunkers more than once per year. More than 5 man-hours were spent

per trap. Suddenly I realized that our traps have increased nearly two feet around the entire edge. We are now back to a more conservative edging.

On the question of how frequently sand is added to bunkers, there were some interesting answers. Most clubs added sand on a yearly basis or as needed; however, a few clubs didn't add any sand. For the clubs that have added sand for an extended period, a key to making this possible is having flat traps, proper drainage and the right sand particle size. (Continued on page 35)

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There was quite a range in cost of bunker sand. The cost, in most cases, reflects the hauling cost. If the proper sand cannot be found in the near area, hauling greatly increases the cost. The key point is, I feel, that transportation costs are well worth the investment in getting proper size particles.

For the clubs surveyed, the number of mechanical rakes varied from none to three. Tuckaway started using three mechanical rakes three years ago. With this number of machines we can keep ahead of the golfer and not interfere very much with play on weekends or on busy days.

Only two companies manufactured raking machines of the clubs covered in the survey. Toro commanded a 3 to 1 market share compared to Smithco. An amazing thing about the Toro Sand Trap Rake is that many of them have been in service for 10 — 15 years. The hydraulic components for the machine can be rebuilt or replaced and the machine can be kept in service.

The clubs in the survey were fairly well divided between hard sand conditions and soft sand conditions. There are many factors that cause the condition of the sand in the bunkers. For soft sand we would be talking about new sand or dry sand; likewise, for hard sand we would be describing wet or old sand that was not properly loosened.

As Fred Opperman pointed out many times in his talk, you can have both conditions on the same course the same year. The example he used was that before much irrigation water had been applied in the spring the complaints were of soft sand. Later in the season, with irrigation water and rain, the condition switched to hard sand.

Getting away from the survey, let's cover some of the general things concerning sand bunkers. Jim Latham, Director of the USGA Great Lakes Region of the Green Section, pointed out that "sand was the biggest complaint I heard in 1985. Whether it was in Indianapolis or Fargo, the complaints were the same. For fairway traps the complaint was commonly that the ball does not sit up. For greenside bunkers, the ball sat down and could be best described

as a fried egg lie."

Who's doing the complaining? From our discussion, both medium and high handicap golfers are complaining. Probably the high handicap golfer does the most complaining about bunker conditions. This, of course, would be natural for someone looking for the ultimate.

It also seems fairly common for Board member(s) to think that his club has the poorest bunker conditions in the area. Best and poorest in your area can certainly exist for your course for the same year. One of the problems we have with bunkers is inconsistency. Some traps are too hard or firm and some are too soft. Bob Musbach of North Hills Country Club made the statement, "consistency is not going to happen and cannot be obtained." He pointed out that it is impossible to get all the traps to drain in the same way, and this causes some of the inconsistencies. Furthermore, non-uniform irrigation of

bunkers will cause some of the problems. It was pointed out that it is much easier to maintain consistently hard or firm than soft conditions.

Many of the problems with traps are the results of architect design. Reconstruction can lessen the problem but it is very expensive. In defense of the architects, it is difficult to design traps when there is a lot of topographic change without having a problem.

Some of the complaints we have control over, by virtue of our management decisions, are listed here:

1. Grooves left in the trap by raking machine.
2. Sand dragged out of trap causing an unclear line of where trap starts.
3. Wheel tracks still visible in traps.
4. Trap rakes not arranged properly.
5. A two-inch lip is not maintained on greenside bunkers.

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6. Leaves not cleaned out of traps before raking.
7. Rocks, sticks and other impediments removed on a daily basis.

There are many arguments about where trap rakes should be placed. The USGA rule permits rakes to be placed either in or out of the trap. For PGA or USGA events, "rakes should be placed outside the bunkers away from play," according to PGA Tour Agronomist Billy Buchanon in a recent telephone conversation I had with him. For most Milwaukee area clubs, the rakes are placed in the trap. A helpful hint that Wayne Otto, Golf Course Superintendent at Ozaukee Country Club, mentioned was the attachment of a decal to the handle of each rake with the following message: **Please leave in trap perpendicular to edge.**

At Tuckaway we have been cutting the spike off of the rakes so the golfer cannot stand the rakes up. Billy Buchanon suggested doing this for a reason that I hadn't thought of before. He said that by removing the spike, you may help prevent the membership from an accidental penalty. He pointed out that it is a two stroke penalty if a player tests the condition of the sand before striking the ball.

The survey showed that for the clubs with large number of traps it takes more than 300 labor hours to knife-edge the bunkers. For a crew of 3 to 4, it can take weeks to get the job done. The job quickly turns into drudgery. Jerry Kershasky of Westmoor Country Club developed a procedure to help take some of the drudgery out of this important work. He divides his crew into 4 teams of 4 people. Each team edges for 2 days at a time. A contest is set up among the teams to see who can do a fast and efficient job. Jerry is the sole judge. The winning team members each get a \$25 bonus. Second and third place teams get \$10 and \$5 respectively. The last place team gets to do the next undesirable job that comes along during the season.

I'm not supposed to cover the anything on construction, but a statement made by Carl Grassl is worth covering twice. For his crew it takes about twice as many hours for a unit of construction as it does a private contractor. However, the cost totals are approximately one-

half. I am assuming his crew is probably doing a somewhat better job.

One problem with sand bunkers is the attitude of the golfer toward them. They want them perfect so they don't suffer any unfair handicap. What they sometimes forget is that **they are supposed to be a hazard.** There is no way that we can change this attitude, however. So we will have to do as good a job as possible with the labor available to keep them perfect.

Bob Vanscoy, PGA Professional at Tuckaway, things we can, to a certain extent, change the attitude of the golfer. His idea is that basically some of the complaints the golfer has towards the trap are because of his inability to play the sand shot. Through proper lessons and practice, his ability to handle the shot will increase. As his confidence increases, his complaining will decrease.

In conclusion, the bunker survey can be used by one in many ways

to help support a given point. Most clubs think they have problem bunkers. Some bunker problems are ones under our control and some of them are not.

I have included the "Sand Bunker Survey" and the results I received. Also, I am including an instruction sheet given to our mechanical sand trap rake operators.

SAND BUNKERS SURVEY

- 1) *How many sand bunkers do you have on your course?*
Average 49, Range 20-77
- 2) *What is the total square footage of sand bunkers?*
Average 114,000, Range 50,000-187,000 (50% response)
- 3) *How often per week are your bunkers raked?*

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