

Bunker sand testing finds critical answers to life of traps

By James C. Thomas

At one time, any white sand was thought to suffice for bunker use because "sand is sand" and the bunker needed only to look nice. But not all sands are created equal.

Sands containing too much silt and clay form crusts or set up into a massive structure. Either of these conditions lowers playability and requires additional maintenance.

When excessively large particles are blasted onto the green they interfere with putting and dull mower blades. The shape of the individual particles also makes a big difference in sand behavior. Round sands are not stable on slopes and are more easily

displaced by balls. The resulting partial burial of balls in round sands has earned the name "fried egg lies."

So, it is clear the selection of a bunker sand — commonly taken for granted — should not be left to chance.

The first procedures for evaluating sands for use in bunkers were developed by K.W. Brown and J.C. Thomas and published in 1986.

By correlating the results of a battery of laboratory tests run on bunker sands with the results of a survey of the golf course superintendents who submitted the bunker sand samples, we established a set of criteria common to bunker sands that superinten-

dents judged to be of high quality.

While it may not always be possible to find a local sand that meets all criteria, by testing and ranking those available, you can choose the sand that has the greatest potential for providing acceptable playing conditions and best use construction funds.

Criteria that need to be evaluated include particle size and shape, crusting, the propensity to set-up into a massive structure, infiltration rate, color, and the tendency to form fried egg lies.

PARTICLES

Particle-size analysis gives a measure of

the amount of silt and clay present in the sand as well as a measure of the size of the sand particles. An ideal bunker sand should contain less than 3 percent total silt plus clay. Sands exceeding this amount of silt and clay are subject to forming surface crusts and are more likely to set-up.

Crusting is the formation of a thin hardened surface layer. Crusts on bunker sands usually form as a result of the impact of rain or irrigation water, which causes the silt and clay particles at the surface basically to cement the sand particles together.

Set up is a similar phenomenon. However, in this case, the cementation occurs throughout the sand and not just at the surface. This results in a sand that is lumpy when disturbed after rainfall or irrigation.

Both crusting and set-up require more frequent raking to maintain adequate playing conditions. The particle size distribution of the sand particles should be such that the majority of the particles are from 0.25 to 1.0 millimeter in diameter, with less than 3 percent of the particles greater than 2 mm in diameter and less than 25 percent of the particles less than 0.25 mm in diameter.

Angular-shaped sand particles are preferred over round particles, because the angular particles require a greater force to displace them when hit by a ball. This leads to a generally higher resistance to developing fried egg lies and less blasting of the bunker sand onto the green, where it may interfere with putting and mowing. In addition, angular sands tend to stay in place better on slopes.

Whatever sand is selected, it should be underdrained and must have an infiltration rate as great or greater than that of the root-zone mix of the adjacent putting green. An insufficient infiltration rate may result in bunkers that pond water and remain excessively wet.

COLOR

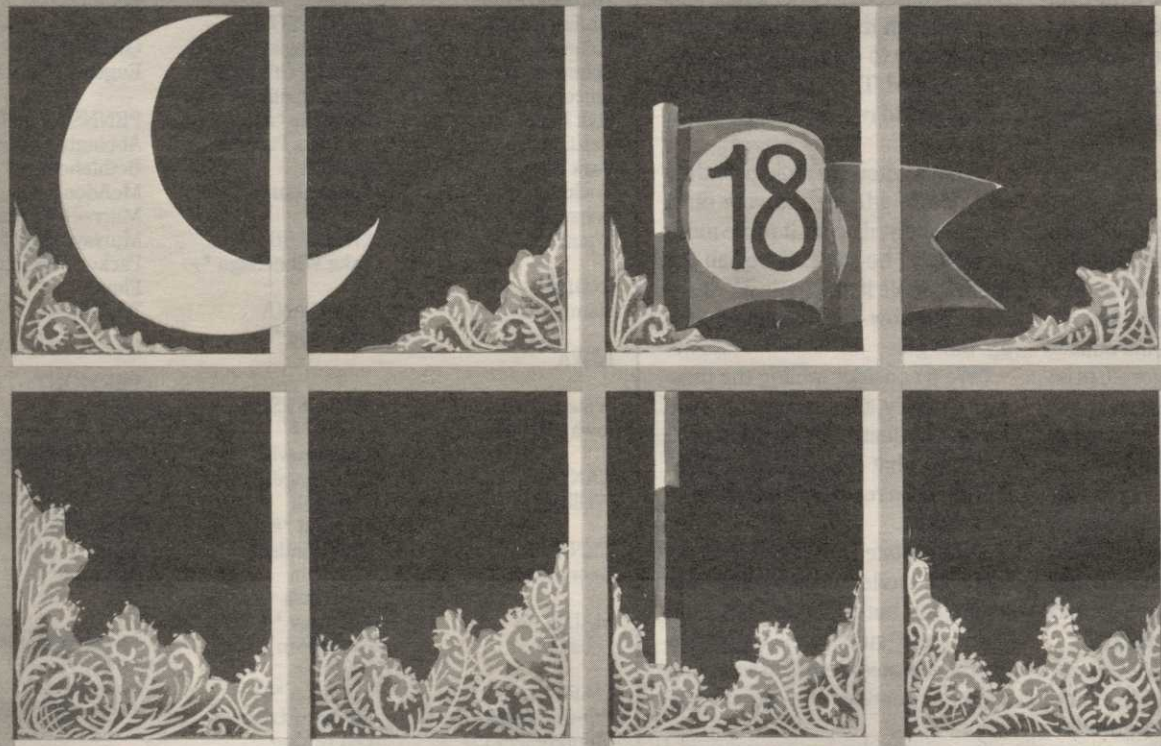
Sand color is determined by comparison to the Munsell color chart. In general, most courses and players prefer a white or light-colored sand. However, when the choice is between a white sand with poor playing characteristics and a darker sand with good playing characteristics, the darker sand may perform better in the long run.

BAD LIES

Probably the most frequent criticism of bunker sands is the tendency to form fried egg lies. Such lies make it difficult for the player to recover and require that the player dig the club into the sand and blast the ball and adjacent sand out of the bunker and onto the green. The fried egg lie development test evaluates this potential by measuring the force required to press a golf ball to a specified depth in a known volume of sand. Sands that score high on the fried egg lie development test are resistant to the formation of fried egg lies.

Whether renovating existing bunkers or adding new bunkers, testing of the possible bunker sands assures getting the best playing conditions per dollar invested in materials. Given an adequate amount of effort and proper testing, bunker sands can be found which require a minimum of maintenance and provide ideal playing conditions for those who are unfortunate enough to have their ball land in them. Several soil testing labs around the country test bunker sand.

James C. Thomas is a certified professional agronomist and turf services director at K.W. Brown and Associates in College Station, Texas.



Avoiding Frost At Any Cost

When vacationing linksters arrive at your course they want it to look just like it did in the brochures. They don't care how cold it gets at night, they came down to play some golf. They don't mind wearing a heavy sweater for an early morning round, but if frost and winter stress prevent your course from looking and playing up to par, they'll just keep going south.

You can't control the weather, but you can control the damage done to your course by those sub-freezing nights. NoburN™ natural wetting agent will help prevent winter stress damage, which will keep vacationing linksters coming back year after year.

NoburN™ will also provide other benefits:

- Improve the winter stress tolerance and vigor by loosening up hard soils so water and nutrients can flow to the roots.
- Morning dew is reduced, so there is less chance of frost damage to your bermudagrass. When the spring comes, the grass is ready and able to come out of dormancy and make a strong transition into spring growth.
- Unlike synthetic wetting agents, NoburN™ works by loosening hard, compacted soils for long-term relief. Your winter hardened tees, greens and fairways will benefit from the improvement in percolation.

Since NoburN™ is 90% organic, derived from the desert Yucca plant; there is no problem with burning or residual build up. Come spring time ... you'll be glad you used NoburN™.

roots inc.

A Division of LISA Products Corp.
25 Science Park, New Haven, CT 06511

NOBURN
NATURAL WETTING AGENT
AND SOIL PENETRANT

*NoburN is a trade mark of LISA Products Corporation