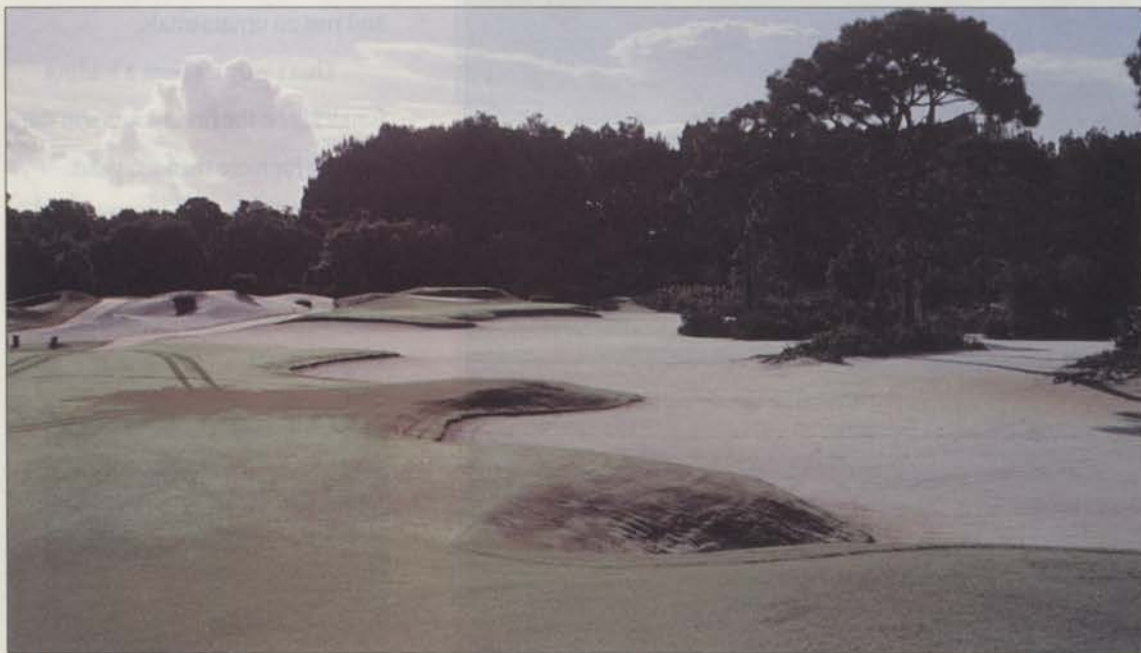


STRICTLY GOLF

The art of bunker maintenance



Sand bunkers come in all shapes and sizes: large and small, regular and irregular. But they are generally areas of special maintenance attention, if you want your course looking sharp.

Nothing shows your course off better than clean, sharp lines in a well-raked bunker.

■ A "hazard" is any bunker, water hazard or lateral water hazard, say the Rules of Golf.

By definition, a bunker is an area of bare ground, often a depression, which is usually covered with sand. Grass-covered ground bordering or within a bunker is not part of the hazard. So that settles the issue of "TV grass bunkers." TV announcers and architects take note: no such animal exists.

Since bunkers have no stakes or lines, the margin must be defined by the separation of turf and sand. That's why bunkers require so much edging and raking. Sand and turf must be kept separate. Sand raked onto the turf makes it impossible for the

player to determine if the ball lies in or out of the hazard.

Those maintaining bunkers must (1) provide the golfer with a consistent playing surface, and (2) allow the golfer to make a fair ruling in playing the shot.

Raking—Various methods and intervals are employed for raking bunkers, depending on budget, time and labor constraints.

(1) Hand—This is the best way to get a consistent surface and lie but it's labor- and time-intensive. Courses that hand rake are usually on a continuous schedule.

(2) Machine—This procedure is the quickest and cheapest. One or two persons can do the average 18-hole course in a day. The trade-off is a bumpier surface with tool marks that may trap a ball. Also, maneuvering the machine too close to the edges can break down the banks and spill sand onto the turf. Budgets may only allow this procedure

three times per week—but always on Friday. Use a hand rake to clean up behind the machine.

(3) Combination—A combination of machine and hand seems to be an effective alternative. The machine loosens the surface so it can be quickly raked. Hand-rake the edges. Let the operator continue around the course with a two-man crew following with hand rakes. This procedure may be restricted to twice a week and after each heavy rain.

Edging—No bunker looks maintained without some regular edging. Otherwise, the turf will close in and shrink the bunker, leaving an unsightly and unplayable margin. Your budget will tell you how much you can do.

How you edge and how much you edge will, again, depend on time and budget:

(1) Rotary edger—This is a quick and easy way to maintain the margins followed

ELSEWHERE

**Bio-tech
for golf,
page 38**

**\$100 for your
observations,
page 40**

**A 'menacing
threat' to golf,
page 42**

continued from page 36

by hand-raking the trash left in the bunker. However, this method leaves the raw edge exposed unless the sand is brought to turf level, eliminating the desired lip. Require the operator to wear goggles.

(2) **String trimmer**—It does a fair job in the hands of a good operator, but it's difficult to maintain a clean and straight edge. It also leaves the turf with ragged edges. Hand rakes are needed to remove the trash in the bunker after this operation. Require your string trimmer operator to wear goggles.

(3) **Hand edging**—The preferred method, by far, because pulling the runners that protrude leaves the turf with a groomed look and lets it drape over the edge. Also, it's easier to draw the sand under this drape and leave a good margin. This procedure is also labor-intensive and adapted to higher-budgeted courses. Normally, this is done at each raking to maintain the groomed look.

Regardless of the method, rhizomes

growing into the sand must be removed periodically. This takes the time-honored method of reaching into the sand four to six inches and pulling out the rhizomes. Left unattended, the bunker will close in and be unsightly. How often this needs attention depends on the species and season.

Drainage—The most vexing problem facing the superintendent in bunker maintenance is drainage. The three types of drainage designed into a bunker are: (1) internal; (2) surface; and (3) no drainage. The first, installed properly, gives the most lasting results. The second method starts out as a problem and gets progressively worse. The third requires your attention, today.

Drains must be kept open at all times; you never know when the next rain will hit. Following a heavy rain, water will percolate through the sand slowly, leaving a film of silt on the surface. The most important part of restoring your bunker is removing this layer. Skim it into piles and get it out before

any raking, as you will contaminate the entire bunker.

Surface-drained bunkers will wash the sand onto the turf at the lower end (usually in front of the green) following a rain. This means shoveling the material off the surface and brushing the residual into the turf. The only permanent solution is to install drains in the bunker and carry the water away from the playing ground.

Not having any drainage may or may not present an immediate problem, particularly if you have no sand in the bunker. That is not uncommon on many restricted budget courses. However, if you wish to provide a better playing surface in your bunkers, they will need some form of drainage. We shall discuss this next month.

—The author of this article, Al Frenette, CGCS, passed away in September, 1992. It originally appeared in "Through the Green," the publication of the Georgia Golf Course Superintendents Association, and is used with their permission.

On the cutting edge of bio-tech

New biological concepts and technologies will help golf course superintendents meet the future demand for quality trees, shrubs and herbaceous plants.

by Douglas J. Chapman,
Dow Gardens

■ Trees, shrubs and bedding plants provide interest and color, often the difference between an average and an exciting golf course. To better develop the course while not increasing maintenance, a superintendent should be aware of biological concepts that affect the type of tree, shrub and herbaceous perennial to be planted.

Some of these concepts are:

- native plant adaption to high and/or low temperature,
- photo-period's impact on vegetative and reproductive growth,
- disease-resistant cultivars, and
- unique pheno types (growth habits).

Provenance is adaptation of plants to regional environmental conditions. As many golf course superintendents know, *Acer rubrum* is native from northern Michigan to



Spirea blumalda

northern Florida. But northern Michigan red maples will not survive high temperatures south of Kentucky. Conversely, southern ecotypes will not survive low northern temperatures.

Further, as one moves north, native trees within the same species (plants in general) exhibit provenance by being more photo-periodic responsive (responsive to day length). Two results of this photo-periodic response are the beginning of abscission (dormancy) and hardening off (low temperature tolerance).

Photo-periodism was first discovered by Garnard and Allard in the late 1920s. Their basic research showed that some plants initiate a reproduction cycle by virtue of day length—like chrysanthemum, short days. As photo period was more extensively researched, it was shown that juvenile



Acer rubrum 'Northwoods.'

plants native to northern latitudes are more day-length responsive. When grown under continuous light, the plants remain vegetative. Some plants, like Japanese maple, Blumalda spirea, and paper birch can grow to at least three times their normal annual height in 12 months. The plant remains continually vegetative until it is allowed to go dormant by shutting off the supplemental light.

Using this technique, one can accelerate growth of many northern plants propagated by tissue culture, cuttage and/or seedage which dramatically reduces the time needed to produce landscape-effective conifers, birch and northern woody ornamentals.

Northern genotypes can be selected for unique habits of growth, fall color, etc. while being extremely low temperature hardy. Ecologists have shown that native



Forsythia tetragold

maples in continental climates like Minnesota, North Dakota and South Dakota are taxonomically the same species as found in the Great Lakes region, but more xerophytic (can survive in droughty conditions).

These regional cultivars will be selected for local environmental tolerances, disease resistance, or adaption to extreme temperature variation found in the Dakotas and downtown sites. These regional cultivars should result in better plants with decreased maintenance requirements.

The University of Minnesota has embarked on a selection and hybridization program to introduce northern continental hardy trees, shrubs and herbaceous perennials.



Malus sugartyme

Some products of this program are 'Northern Lights' azaleas, 'Northwoods' red maple, and early-flowering hardy chrysanthemums.

Golf course superintendents will have the opportunity to landscape their courses with plants that are resistant to disease (such as apple scab), cold temperature hardy trees like *Acer rubrum* 'Northwoods,' salt tolerant sugar maples like 'Green Mountain,' and adapted shrubs like 'Dakota Sunrise' potentilla. Further, these tailored plants will assist management of the course and improve the overall ambience.

—Douglas J. Chapman is horticulturist-director of Dow Gardens, Midland, Mich.

\$100 for your opinions, observations

■ Do you have an observation on the art/science/profession of being a golf course superintendent?

We are soliciting the opinions/observations of golf course superintendents. Topics can range from employee relations to greensmower selection to treating turf diseases. If you have such an idea you wish to express, type it, double-spaced, on plain white paper, 750 words or less. Send it, along with your Social Security number and a recent photo, to:

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WHAT'S NEW IN COURSE MAINTENANCE

Supers' contributions requested

CHELSEA, Mich.—Dr. Trey Rogers of Michigan State University is soliciting contributions from golf course superintendents for his "Superintendents' Handbook for Golf Course Maintenance and Construction."

The book will be edited by Rogers and be published by Lewis Publishers. It will consist of a "cookbook" format with chapters divided into putting greens, fairways, roughs, wildlife management, equipment, IPM and more.

Each chapter will consist of contributions detailing techniques that superintendents have successfully used at their courses. Contributions should be one to five pages in length, and include photos.

For more information and/or to receive a contribution packet, please write: "Handbook for Superintendents," P.O. Box 799, Okemos, MI 48805.

'Menacing threat' to golf courses?

SAN FRANCISCO—Golf course architect Robert Trent Jones Jr. sees the nation's financial instability as playing a large role in

the downturn in golf course development. But, according to his "Reading the Green" newsletter, Jones sees a much larger "menacing threat" to golf development in the U.S.

"The major concern to our industry is the so-called 'environmental movement,' which has targeted golf courses for capital punishment," he writes.

"These folks...have become a part of the golf course permit approval process at every level of government, from the local planning commission to the Supreme Court.

"Their familiar refrain is that the golf course is a good idea, it is just in the wrong place. The fact is, they don't like golf courses anywhere...they just don't like the game. They see it as an elitist pastime. It occupies too much space; it takes too long to play; it is not the people's game."

Jones feels the answer to these people is for those who love the game to step forward and "shout loudly that golf is the absolute preservation of open space" and has more environmental benefits than drawbacks.

"Let's join together and actually sell the game to those who make land use decisions. Loud and clear, let's let them know that our vote is for open space, greenbelts, wetlands, animals...birds...and wholesome fun and exercise."



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