

Official Publication of the Michigan & Border Cities Golf Course Superintendents Association



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#### "A PATCH OF GREEN"

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## SPRAYERS: Nozzle Selection and Calibration

by Easley S. Smith Extension Agricultural Engineer Virginia Tech

Boom-type sprayers are versatile and awell adapted to turf spraying. When properly operated they can be used with almost any pesticide with minimum drift problems.

#### **Nozzle Selection**

Nozzles should be selected according to the rate and type of application. Fan, flooding or hollow-cone nozzles are commonly used by turfgrass managers. Fan-type nozzles are especially well suited for broadcast booms. When operated at the proper height and spacing they will provide uniform distribution across the swatch at 20 to 40 pounds per square inch (psi) pressure. Fan nozzles are available with spray angles ranging from 65 to 110 degrees, but 80 degrees is most common. When the 80 degree nozzles are spaced 20 inches apart on a boom, they should be CONTINUED PAGE 16





### TERSAN<sup>®</sup> 1991<sup>+</sup> Daconil 2787 Put the proven performers together for even better control of brown patch, dollar spot and other serious diseases.

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## A SUPERIOR PUTTING SURFACE

By BRAD G. KOCHER Inverrary Country Club

The one are of the course where over 50% of the game of golf is played is the green or putting surface. By "scorecard design," 50% of the strokes of a par round are supposed to be putts. Further, taking into consideration approach shots and chip and run shots, one can see that the putting surface is where a majority of golf is played.

A good putting surface is one that permits the ball to roll true. A good green will also "hold" a well hit shot. If I possessed a perfect putting stroke, I would not expect the putting surface to adversely affect the roll of the ball.

A perfect surface for putting might be a 5,000 square foot pool table. I would accurately predict that the ball would roll exactly where I hit it. It might be a little on the fast side, but it would be a true test of putting skill.

A turfgrass putting surface could not be nearly as perfect as a pool table because of some of the inherent consistencies of a growing plant. But a putting surface as near to those standards would exhibit perfection.

There are many superior putting surfaces in existence and there are certain agronomic and mechanical practices that contribute to a high quality putting green.

The variables that will be discussed are mowing, verticutting, topdressing and fertilization. There are certainly a multitude of other variables such as irrigation, pesticide programs, cup changing and a host of others. I do not wish to downplay these areas. These areas are very important, however, the items we will discuss make the major difference between a good and a superior putting surface.

## Hi TECK Enterprises LANDSCAPE CONTRACTOR Mechanical Tree Transplanters

A superior surface is generally one that is fast. All slow surfaces are not bad, nor are all fast surfaces good, but as a general rule the truest putting surfaces are the faster ones.

Fast greens are aby-product of a correct balance of mowing, verticutting, topdressing and fertilization. If any area gets out of balance, quality suffers.

Mowing at low heights is essential - on healthy turf. I do emphasize healthy because I would not want someone other than a Golf Course Superintendent to mandate low mowing on turf that is not healthy and not in a growing condition conducive to low mowing. Mowing heights from 3/16" to as low as 1/8" on a daily basis are not uncommon. "Tournament" courses sometimes mow as low as 5/64" for short periods of time.

Low mowing heights reduce the amount of friction the grass plant has on the golf ball, and allows the ball to roll faster and thereby truer. There must be enough leafblade density to keep the ball on course, but we will touch on CONTINUED PAGE 13



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## **COMING EVENTS**

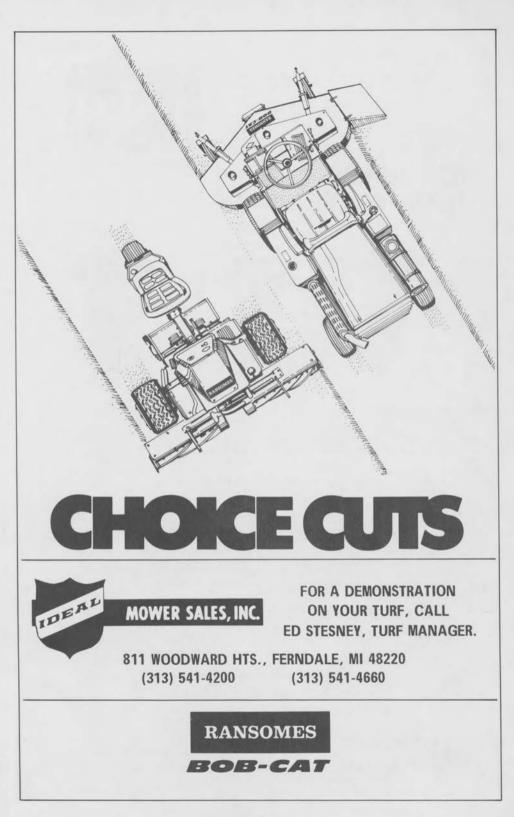
#### AUGUST 15-16,1984

Penn State Field Days, Joseph Valentine Memorial Turfgrass Research Center, University Park, PA. Time: August 15-2:00 P.M. to August 16-4:00 P.M. For further information contact: Dr. Joseph M. Duich, Department of Agronomy, 21 Tyson Building, University Park, PA, 16802 (814) 865-9853 OR Christine E. King, Pennsylvania Turfgrass Council, P. O. Box 417, Bellefonte, PA, 16823 (814) 355-8010.

#### DECEMBER 11-14,1984

Pennsylvania Turfgrass Conference & Trade Show, Hershey Lodge & Convention Center, West Chocolate Avenue & University Drive, Hershey, PA. Sponsored by The Pennsylvania State University and The Pennsylvania Turfgrass Council. For further information contact: Christine E. King, Pennsylvania Turfgrass Council, P.O.Box 417, Bellefonte, PA, 16823 (814) 355-8010 OR Dr. Thomas L. Watschke, Department of Agronomy, 16 Tyson Building, University Park, PA, 16802 (814) 863-1613.







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#### FOR MORE INFORMATION CALL: JOE BUMGARNER or JIM BARR



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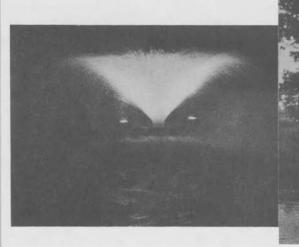


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#### Superior Putting Surface, cont.

that effect when we discuss verticutting. Mowing direction should be changed daily to prevent the leafblades from laying in one direction and cause more upright growth.

Mowers should be sharp, and lapped at least weekly. The height of cut, and reel to bedknife settings, should be checked daily. Dull, improperly set mowers can cause extensive leafblade damage that is both unsightly and unhealthy.

The use of grooved rollers is also encouraged. To quote the U.S.G.A. Green Section; "Grooved rollers encourage more upright growth habit of grass. The surface area of the grooved roller is tremendously reduced, thus they do not lay the grass down as much in front of the bedknife.

Some of the finest Bentgrass and Tifdwarf Bermuda Greens I have played have been maintained most of the season at 1/8". Tifgreen surfaces were maintained at slightly higher heights-5/32" through most of the growing season.

Vertical mowing or verticutting is also a beneficial mechanical process that removes and helps to control undesirable thatch in greens. A small amount of thatch is desirable between the grass plant and soil surface, however, excessive amounts provide for a spongy and undesirable putting surface. On a good, infrequent "maintenance levels" of verticutting keep out excessive thatch buildup.

Thatch is generally caused by one or all of the following practices; overwatering, over fertilizing, infrequent mowing or by mowing at excessively high mowing at heights. Putting green quality grasses are designed to withstand low mowing heights and will tend to build up thatch levels if not maintained at these levels. If these conditions exist, verticutting will be a necessity. Ideally, the fewer number of verticuttings we must do, the better. Fred Klauk, in several talks he has given on putting surfaces, stresses the importance of leaf-blade density. Excessive verticutting decreases leafblade density and adversely affects the roll of the ball. We desire dense leafblade coverage. It helps the golf ball roll true.

Another aid that helps to smooth a putting surface is topdressing. Light frequent topdressing do more to improve a putting surface than any one

CONTINUED PAGE 15



## Great Lakes Minerals Co. Trap & Topdressing Sands



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The technical section covers trouble shooting controllers, valves and rotary sprinklers, along with friction and pressure loss tables and typical hook-ups. For your copy call or write Faye Ramsey at Century Rain Aid, 31691 Dequindre, Madison Hts., Mi. 48071. 313-588-2990

Superior Putting Surface, cont.

single maintenance practice. Topdressing also aids in thatch decomposition and can thus help to reduce verticuttings.

There are courses with superior putting surfaces that topdress lightly and as frequently as every two to four weeks. Light topdressing after it is worked into the turf is hardly, noticeable, other than a smoother, faster putting surface. With the newer topdressers on the market eighteen greens can be topdressed in a matter of hours.



#### Sprayers, cont.

operated 17 to 19 inches above the ground for unigorm application with the proper overlap.

Flooding nozzles can also be used on broadcast booms but do not provide as uniform distribution as fan nozzles. They have a wider pattern of distribution and are usually spaced further apart - 30 to 80 inches. Flooding nozzles have larger orificies and are commonly used for fertilizer application at 15 to 30 psi operating pressure.

Hollow-cone nozzles are often used in foliar application of fungicides and in secticides. They use pressure of 30 to 60 psi to penetrate heavy foliage. The higher pressures reduce the spray into smaller droplets and in windy conditions may cause drift problems.

Nozzle tips made of brass are most frequently used, however, nylon, aluminum, stainless steel, and ceramic materials are sometimes recommended because of corrosion and abrasion from certain chemicals and wettable powders. Nylon tips are corrosive resistant but are subject to wear, especially with wettable powders. Aluminum tips are used for nitrogen solutions but are also subject to rapid wear. Stainless steel tips are more durable for most chemicals. Ceramic tips are the most highly resistant to abrasion and corrosion but also the most costly.

#### **Sprayer Calibration**

Frequent checks and calibration of sprayers are necessary for accurate and effective application of agricultural chemicals. Improper rates of application often result in poor control of pests, waste of materials, and in some cases, injury to plants, livestock and humans.

#### **Before Calibrating**

1. Check sprayer for proper mounting.

2. Use clean water and rinse sprayer. 3. Remove and clean nozzles. (An old toothbrush, toothpick, or wood match is useful for cleaning nozzles and screens without enlarging nozzle openings. Do not use pocket knives or wire for cleaning.)

4. Start sprayer and flush hoses and boom.

CONTINUED NEXT PAGE

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5. Replace nozzles.

6. Operate sprayer and adjust pressure regulator for desired pressure.

7. Check discharge of each nozzle for proper spray pattern and uniform discharge. (Discharge rate may be checked by placing quart cups under each nozzle. All nozzles of the same type and size should discharge into cups at the same rate. Worn or corroded nozzle tips may result in improper spray patterns and in more, or less, discharge in the respective cups.)

8. Worn and defective nozzle tips should be repalced.

9. Measure a course 163<sup>1</sup>/<sub>8</sub> feet long on field conditions similar to those where the sprayer will be used.

10. Fill sprayer with clean water.

**Calibrating, Broadcast Spraying** 1. Spray the 163<sup>1</sup>/<sub>8</sub> foot course, maintaining a constant nozzle pressure and travel speed, catching the discharge from one nozzle. (Note pressure, throttle, and gear setting and use these same settings for spraying.)

2. Measure discharge obtained in Step 1 with a standard measuring cup.

3. Rate of application (gals./acre)

number of cups x 200

nozzle spacing in inches

To make a spray solution, mix the amount of chemical recommended per acre to the amount of water sprayed per acre, as determined in the above calibration.

Rates of application may be changed by using a larger or smaller nozzle tip, changing the speed of travel, or changing the operating pressure. However, because of drift and other distribution problems, a change from the recommended pressures should be avoided. If the rate should be increased, the best method is to change to larger nozzle tips. Decreasing the travel speed may also help. Reducing the speed by onehalf doubles the rate of application.

#### A MESSAGE TO ALL DOG LOVERS

Of all dogs the hot dog is the noblest, it never bites the hand that feed it, but always feeds the hand that bites it. C.E. (Scotty) Stewart



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