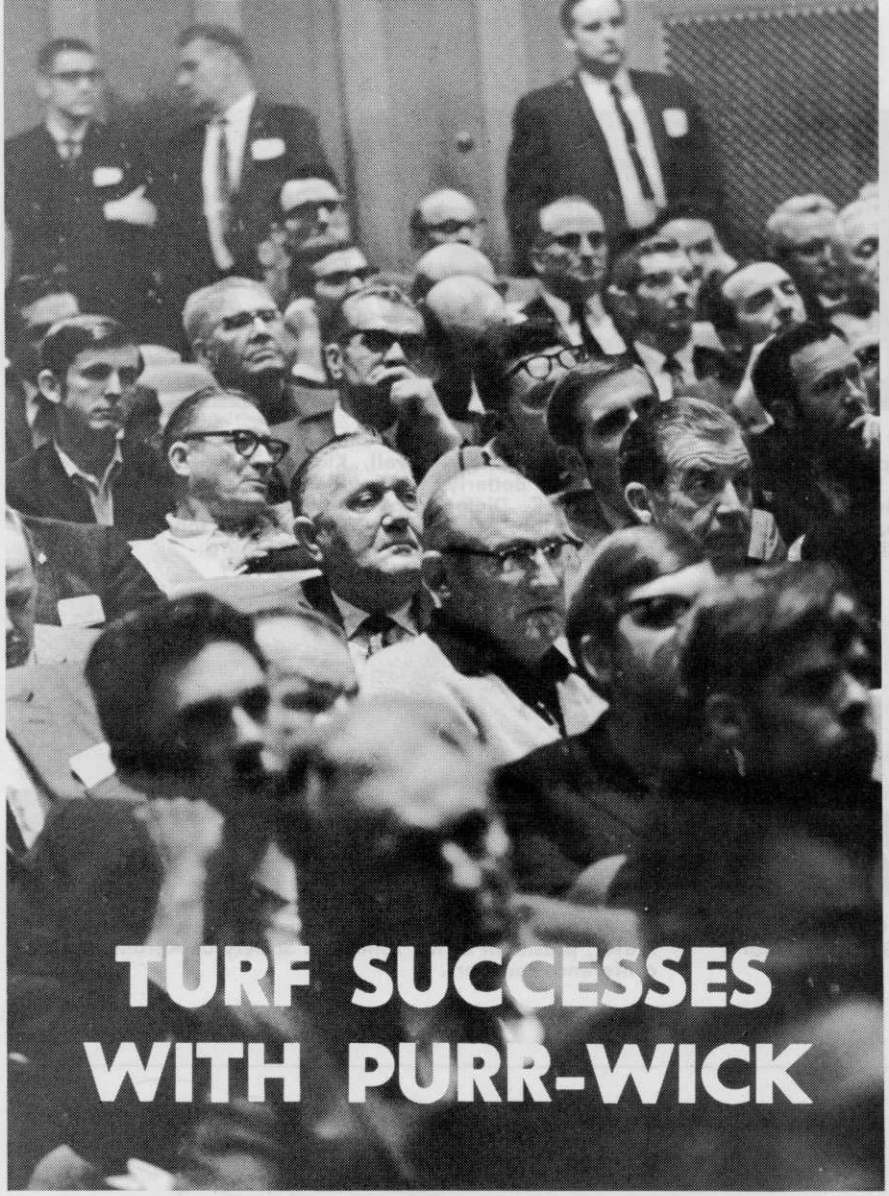


TURF SUCCESSES WITH PURR-WICK

Midwest Regional Turf Conference Report

GOLF COURSE superintendents must get a great deal of amusement upon seeing a well-manicured lawn posted with the sign: Keep Off the Grass." Athletic field managers and sod growers must snicker a bit, also, about the owner's concern over damage from a few people walking or a few youngsters romping on the grass.

For the commercial turf industry's greatest challenge and biggest headache, of course, is to build and maintain the best turf exactly where the heaviest traffic and worst punishment will occur. The problems aren't entirely solved, and that's why about 700 turf specialists came to Purdue University, Lafayette, Ind., March 2-4, for the Midwest Regional Turf Conference.

10 Ways to Build

A positive theme of "Success With Turf" carried the implication that at least some researchers and turf men in the industry had realized achievements worth talking about.

Purdue agronomist W. H. Daniel summarized 10 ways to build high use turf areas:

1. *Use any subsoil,* mud in and shape to grade (and leave the troubles as soon as paid, he quipped).

2. *Topsoil onto topsoil.* Avoid any subsoil, avoid working when wet. Conserving what's good can save funds. Most likely success comes with sandier soils.

3. *Subsoil under topsoil.* When a major fill is necessary, conserve and replace four to 10 inches of topsoil.

4. *Subsoil under topsoil plus drainage.* Add pea gravel backfill within six inches of surface. Tile 20 to 30 feet apart and 18 to 30 inches deep.

5. *Same as Number 4 plus sand (60%) and peat (20%) mixture,* or a variation of the ratio, mixed into the top two to four, even 10, inches of top soil in hopes of getting better water movement and less compaction.

Purdue students Carl Landgrebe, left, of Valparaiso, Ind., and Steven G. Lambert of Eaton are smiling about the $400 scholarships they've received to further their turf studies. Landgrebe received the Mueller Sod Farm grant; Lambert got his from the Golf Course Superintendents Association of America.

6. *Intimate topmix,* prepared offsite, based on USGA green section research. Ten to 14 inches of settle topmix over two inches of washed sand over four inches of pea gravel over field tile drainage.

7. *Thin rootzone* on contoured subgrade, place small plastic drains (1.5- to 2-inch pipe with frequent narrow slits) into shallow, narrow trenches (10 feet apart). Backfill with coarse sand to overflow trench, then place 4-6-inch washed fine sand over loosened subgrade. Cover with one inch of peat and one-half inch of calcined aggregates and fertilizer. Mix well into upper one-half of sand. Compact and plant. Can be five to eight inches in total depth.

8. *Impermeable layer,* giving zero tension as it isolates subgrade. Plastic sheet is spread over contoured subsoil. Slitted plastic drain pipe is laid onto plastic sheet 10 to 20 feet apart. Coarse sand is spread over drains, then selected available sand spread 10 to 20 inches deep, based on fineness. Add peat, fertilizer, calcined aggregates. Mix into surface one to three inches. Compact and plant, mulch and keep moist.

9. PURR-WICK (Plastic under sand reservoir rootzone) (Figs. 1 & 2) is essentially No. 8 plus reservoir pools that store water and feed root systems through wick action. Tiers of flat pools are formed as needed beneath the even or contoured surface. Three- to six-inch ledges are built around each pool and around the edge of the total area. Interior pool edges can be stabilized by using

Officers for the 1970-71 year of the Midwest Regional Turf Foundation are, from the left, James Kirchdorfer of Irrigation, Inc., Louisville, Ky., vice-president; Theodore Woehrle, superintendent of Oakland Hills Country Club, Birmingham, Mich., president; and W. H. Daniel, Purdue turf specialist, executive secretary. Daniel received a huge "birthday cake" at the conference banquet from outgoing officers. The cake, aglow with candles signified several things, said president Robert Meier, Jr., the 33rd year of the conference, 25th anniversary of the Foundation, and the 20th year of Daniel's service as executive secretary of the Foundation.

four-inch pipe, stake anchored. Eight- or 10-mil polyethylene sheeting is used to cover the entire pool area, overlapping one to three feet and taped for extra seal. A double thickness of six-mil sheeting is adequate. Add plastic drain pipe as indicated in No. 8 and drain plugs as shown in Fig. 2. Coarse sand or gravel can be used to cover drains. Laboratory analysis of sand particle size and uniformity determines depth. These factors determine how far moisture will rise by wick action to be utilized by turf roots.

It's important that the sand be uniform in size with most particles in the range of 0.25 to 0.50 mm (60-35 mesh).

Extend the drain pipes through the plastic by cutting an X somewhat smaller than the pipe. Ease pipe through, tape it generously then concrete. Another way is to use bolted, flanged, waterproof collars of plastic. Spread sand, compact and plant as in No. 8.

10. The PURR-WICK system can be refined one more step by incorporating sub-irrigation with a chamber and adjustable float valve for each tier, thus achieving desired wetness automatically. Soil sensing probes could be used to regulate the system.

The major advantages of the PURR-WICK system, developed at Purdue University, is that it gives the manager absolute water control, can be built on any subgrade material, allows long periods between irrigation, conserves water to the maximum, stores some nutrients as dilute solution (but may need more frequent fertilizer), and plays uniformly moist.

An ingredient table is shown in Fig. 3. Detailed specifications are available by writing the Midwest Regional Turf Foundation, Department of Agronomy, Purdue University, Lafayette, Ind. 49707.

Ask for MRTF leaflet No. 40, dated January, 1970. The leaflet describes the system and research done since 1960 by W. H. Daniel, David Ralston, David Bingaman, Mel Jansen, Robert Montgomery, H. Kohnke, Ed Monk, and others.

PURR-WICK in the Field

A panel of five men who have built or maintained PURR-WICK systems in golf courses discussed their experiences.

Costs can vary considerably, depending on the local price for suitable sand. William Story, superintendent of Carmi, Ill., Country Club, reported a 4,000 sq. ft. green for $2,280, with sand costing $2.60 per ton. Charles Tadge, superintendent of the Mayfield Country Club, South Euclid, Ohio, built a ladies' tee, 20x30 feet, for $642 with sand costing $4.20 per ton.

Morgan Boggs, golf course architect, Louisville, Ky., currently is building 19 PURR-WICK greens (12 are done) using sand on the site.

Particular care must be taken, the panel said, in dumping and spreading the sand to avoid tearing or moving the plastic sheeting. George Lumpkins, superintendent of the Owensboro, Ky., Country Club reported using plywood sheets at the edge of the green to permit truck dumping of sand nearer the center. Ready-mix concrete trucks were suggested also as a means of distributing the sand. Flotation tires at reduced pressure were also suggested by Lumpkins for tractor-dozer units.

Recommended seeding rates for PURR-WICK installations are one pound of Penncross or the equivalent, two pounds of bluegrass or equivalent, or three pounds of grass mixture per 1,000 sq. ft. Spread stolons at the rate of eight to 10 bushels per 1,000 sq. ft. Sod should be cut as thin as practical and be greens-aired once or more after laying, plus topdressed.

Story of Carmi Country Club re-

Figure 1. Idealized cross section of PURR-WICK construction.

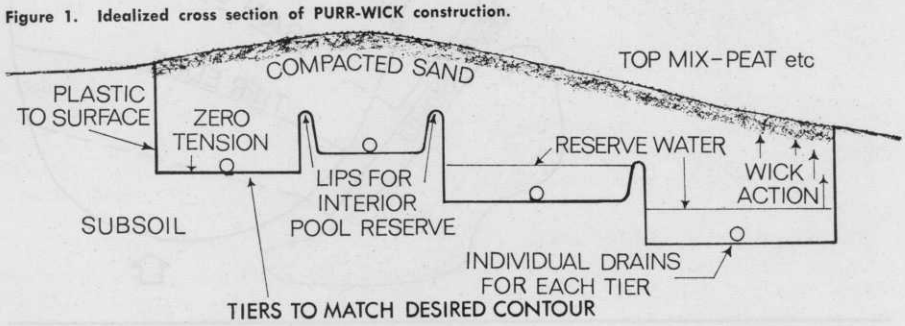
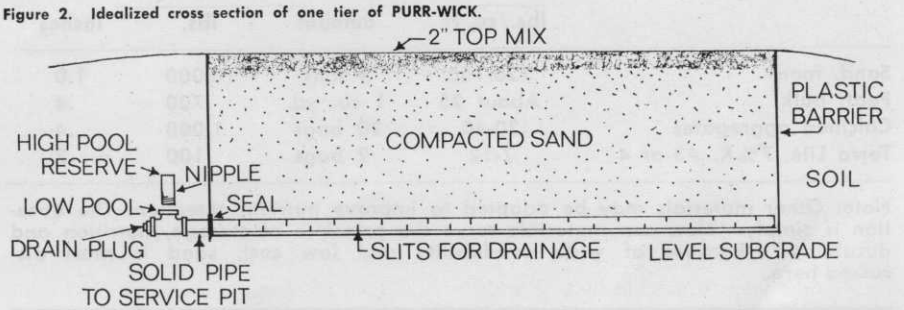


Figure 2. Idealized cross section of one tier of PURR-WICK.



Members of this panel discussed their experiences with PURR-WICK constructed greens or tees. From the left, they are William Story, superintendent of the Carmi, Ill., Country Club; Birdie Shelton, Superintendent of the L & N Golf Course at Brooks, Ky.; Charles Tadge, superintendent of the Mayfield Country Club, South Euclid, Ohio; George Lumpkins, superintendent of Owensboro Ky., Country Club; and Morgan Boggs, golf course architect of Louisville, Ky.

ported that "We seeded Penncross on Sept. 4, mowed it eight days later, and opened for play on Oct. 10."

Birdie Shelton, superintendent of the L & N Golf Course at Brooks, Ky., seeded half of a green and stolonized the other half as a check. "The seeded established first, but in four months the stolonized had caught up and was a darker green," he said. Charles Tadge sodded the ladies' tee with Warren's A20 bluegrass sod.

Landscaping Eases Stresses

The conference program was rounded out with reviews on turfgrass disease, athletic field maintenance, weed control methods, sod handling, fertilization, irrigation, and reports from the European tours of turfgrass areas taken as a part of last summer's International Turfgrass Society conference in England.

If properly planned and managed, landscaping can significantly alleviate human stresses caused by pollution, contended Dr. F. O. Lanphear, Purdue horticulturist. He said vegetation can reduce thermal pollution in urban areas by more than 10 degrees Fahrenheit.

"Air pollution can be reduced to some extent by large masses of vegetation, such as green belts and highway plantings," he continued. "Landscape plantings also reduce noise significantly, particularly high frequency noise," Lanphear added.

Speaking of Purdue's landscaping program, he emphasized it had grown from 10-15 students — its first year, 1964 — to more than 70 students today. More than 20 graduate students are now involved in the program and three full-time landscape architects are on the staff.

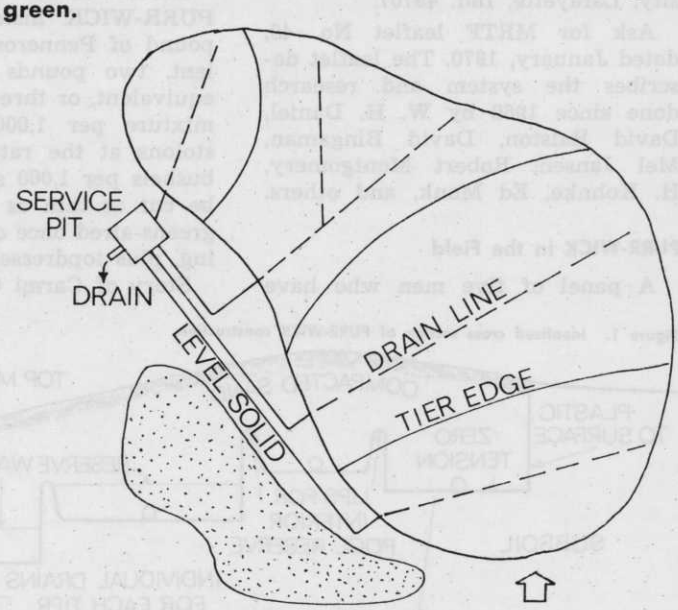
Scope of the landscape architectural program at Purdue includes regional land planning, institutional sites, parks, highways, industrial and commercial sites, and residences, he said.

New Officers

Officers of the Foundation, elected for 1970-71, are Theodore Woehrle, superintendent, Oakland Hills Country Club, Birmingham, Mich., president; James Kirchdorfer, Kirchdorfer Irrigation, Inc., Louisville, Ky., vice-president, and W. H. Daniel, Purdue turf specialist, executive secretary (re-elected).

New directors are John Fitzpatrick, Cincinnati, O.; Paul Morgan, Middletown, O., and John Dunlap, Cleveland, O.

Figure 3. Schematic of four tiers and drains in a golf green.



Some Materials	Estimated lbs./cu. ft.	Per 1,000 sq. ft. amount	lbs.	inches
Sand, moist	120-150	5 tons	10,000	1.0
Peat, bulk	About 25	1 cu. yd.	700	.4
Calcined aggregates	30-40	20 bags	1,000	.4
Terra Lite, 7%K, #3 or 4	7-12	2 bags	100	.2

Note: Other materials may be adapted to improve nutrient retention. The question is simply: "How can materials serve the principle of storage, nutrition and durability?" Because of wide availability and low cost, sand is most discussed here.