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DR. FRED V. GRAU

ANSWERS TO TURF QUESTIONS

CHANGE

The interesting thing about progress is that it is brought about by changes. A huge, international oil company spent millions of dollars to change its name to Exxon. First, the change had to be cleared with Governor Exon of Nebraska, then all it took was money.

Highway departments change their names to departments of transportation. Why? Because the new term better describes their functions.

Some names hold steady, because they adequately describe functions; but even such stalwarts as ASA (American Society of Agronomy) and AAAS (American Assn. for the Advancement of Science) are more international than the names imply. Both have members all over the world.

Even the Pennsylvania Turfgrass Council has members in many states other than Pennsylvania. The name is not likely to change because the sites of the main activities lie within state boundaries. Other turfgrass councils are similar. Out-of-state members belong because they receive many benefits from the research and educational work, and they want these bounties to continue.

When the "greenkeepers" in Great Britain, Scotland and the United States began to organize, they called themselves "greenkeepers associations." The history of the National Greenkeepers Assn. has been well documented. As progress was made, changes were made. Greenkeepers became superintendents. The NGA became the GCSAA (Golf Course Superintendents Assn. of America). Along with these changes went different names for the official magazine—now the Golf Superintendent.

My membership in GCSAA covers many years, and, I feel, qualifies me to discuss openly some changes that are being talked about in "bull sessions." "A rose by any other name . . ." you know the rest. But isn't the man in charge of a multi-million dollar establishment something more than a superintendent? Isn't he more of a manager? He has many skills; he has executive capacity and responsibilities; he handles men, money and machines, and he manages turfgrass areas to please the members and other players. Manager describes his functions well.

Is he a golf course manager? It would seem so! He has jurisdiction over all the areas within the boundaries of the club property. The clubhouse manager is confined within the walls of the clubhouse.

Other turfgrass managers variously may be called according to their responsibilities. These can be 1) athletic field manager; 2) cemetery manager, 3) estate manager, and so on. In each case, the word "manager" implies a responsibility going beyond the turf itself.

The next step, and I approach it cautiously, is the name for the larger organization. When there are members scattered around the globe, isn't the natural term "international?" The new name that will be discussed in many groups for many months (sometimes heatedly) might be "Golf Course Managers, International" or GCMI. The word "association" has been eliminated, which is good, because it is a cumbersome, un-pretty, nondescript word.

I must credit C. William Black, GCM, of Fountain Head CC, Hagerstown, Md., for sharing some of his thoughts with me on which this editorial is based. Bill is first vice president of the Pennsylvania Turfgrass Council and the turf council's representative on the Penn State Agricultural Advisory Council.

Now, let the fur fly.

Q—*Our course is located below the area usually considered the "bent belt." We mow our Penncross greens daily at three-sixteenths inch to prepare them for a major amateur golf championship. We think that this management helps prevent thatch. We have had advice that specifies one-quarter inch mowing to help the grass withstand the heat and humidity common to this area. We would appreciate your reaction. (Virginia)*

A—I can't agree that you are located below the "bent belt." Penncross bent does well far south of Virginia. The three-sixteenths inch mowing will minimize thatch buildup and will give golfers a faster green with a true roll. I would keep the mowers at that height, but during heat stress, would "rest" the grass by skipping a mowing now and then. Keep the grass as dry as possible. Hand mowers are gentle on grass. Power mowers may be "rested" during periods of high temperatures and humidity. Yes, one-fourth inch cut will help the grass get through heat and humidity somewhat better, but the greens will be slower, putts will not roll as true, and there will be more thatch accumulation. I lean toward the golfer, so that he will be pleased. I believe that we have the management skills to bring Penncross through the summer when mowed at three-sixteenth inches.

Q—*Someone mentioned that on occasion you have written about the use of hydrated lime and its role in relieving heat and humidity stress on bent greens in summer. We must have missed that item. Would you mind repeating it for our benefit? (Virginia)*

continued on page 15

PENNCROSS

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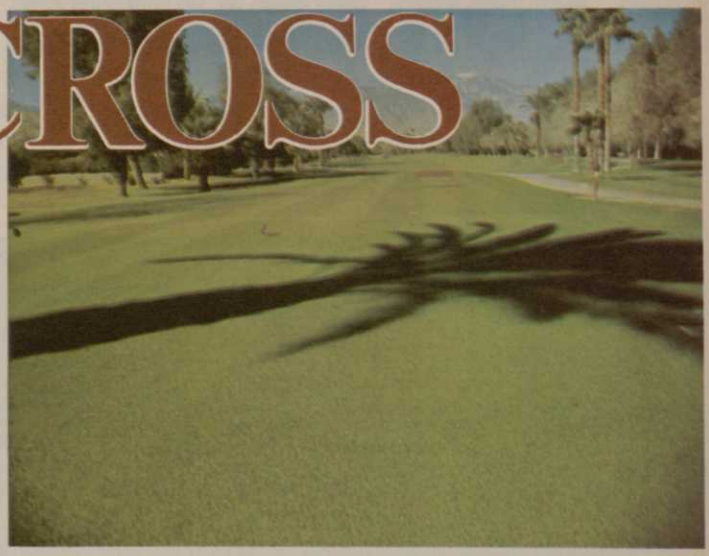
Tamarisk Country Club, Palm Springs, California. Common Rye overseeding on tees and fairways. Penncross used on some greens. →



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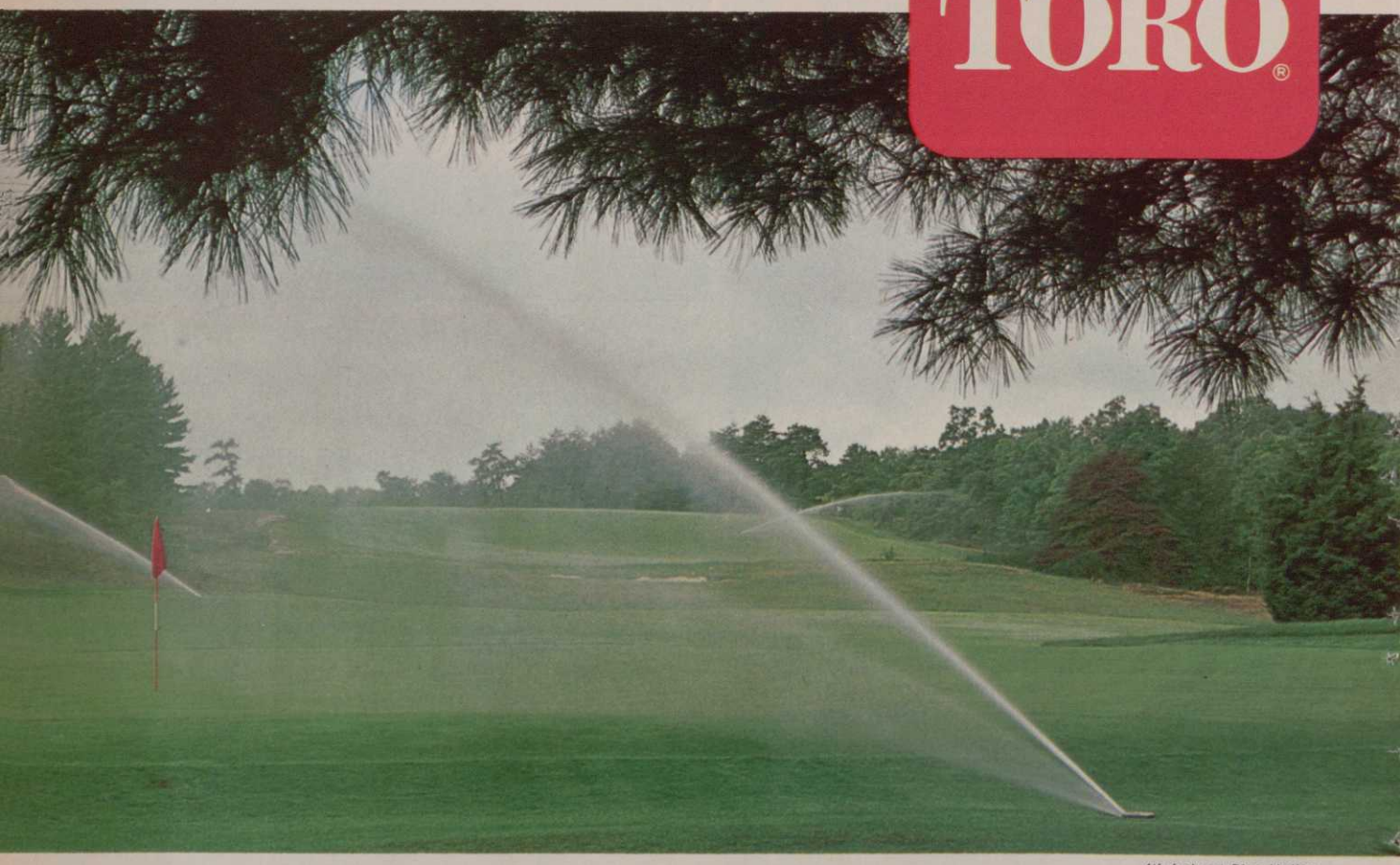

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GRAU *from page 12*

A—I don't mind in the least, because I believe in the treatment. Please be warned that not everyone in the turfgrass industry shares my view.

The application is one-half pound of hydrated (spray) lime (227 grams) to 1,000 square feet, suspended in enough water to cover thoroughly. Spray on the grass in the evening after play has stopped. Leave the material on the turf overnight and rinse it off the blades the next morning before mowing. Repeat in a few days or as needed.

The effect of the spray lime is to freshen the grass. It seems to have a "cooling" effect. Caution: Do *not* use hydrated lime in connection with any fertilizer that contains soluble N. It is okay to use it in combination with powdered ureaform. It is okay to use one pound per 1,000 of sprayable sulfate of potash in combination with the lime if K is needed. K stiffens the grass blades and aids in translocation of nutrients and sugars. A bonus effect of the hydrated lime is that it checks algae and discourages some grass diseases. Note that I do not claim that the material is a fungicide. The small quantity of lime used will have no appreciable effect on the pH levels. If you are skeptical, try it out first on a portion of the nursery or on the practice putting green.

Q—*We have been told that Penncross creeping bent has been developed from three grasses, one of which is indigenous to South Africa. Is it the South African grass that gives Penncross its resistance to heat and humidity and contributes to its all-around hardiness?*

We see no way of reducing the thatch (built up by high cutting) except by topdressing. Do you have any suggestions? *(Virginia)*

A—Whoever told you that Penncross has a parent that is indigenous to South Africa has been grossly misinformed. The three parents of Penncross are vegetative creeping bentgrasses. One is Pennlu from a green at Lulu Temple CC, near Philadelphia. The other two are selections from numbered seedlings, which developed from Washington-Metropolitan crosses. Penncross does well in South Africa, but none of the parents originated there.

Before Dr. Joe Duich at Penn State convinced Penncross growers (Bill Rose is one of the leaders) to produce only Certified seed under strict control, much of Penncross seed was adulterated. The thatch and puffiness wrongly attributed to Penncross developed mostly from the adulterants.

De-thatching by weekly vertical mowing is good management during the spring period of lush growth when healing is rapid. It can greatly reduce the need for topdressing. Don't neglect limestone, which stimulates biological reduction of thatch. Keep the grass on the "hungry" side and avoid stimulating of top growth with soluble (quickly-available) nitrogen.

Q—*I am a senior at Western Michigan University majoring in agriculture and am interested in becoming a golf course superintendent. What are some of the best schools in the United States for undergraduate work, Masters, specialists and Ph.D. programs?* *(Michigan)*

A—Because I know nothing of your background, nor of your scholastic achievements, my advice is to write to each of several schools and request their brochures. There are the two-year courses and the academic four-year curriculum. Give the schools as much information about yourself as you can and request application forms. Some courses are oversubscribed.

Here is a pratical list of schools and top men:

Michigan State University, East Lansing, Mich. 48824, Dr. James B. Beard;

Penn State University, University Park, Pa. 16802, Dr. Joseph Duich;

Purdue University, West Lafayette, Ind. 47907, Dr. William H. Daniel;

Georgia Coastal Plain Experiment Station, Tifton, Ga. 31794, Dr. Glenn Burton;

University of Massachusetts, Amherst, Mass. 01002, Dr. Joseph Troll;

University of Maryland, College Park, Md. 20742, Dr. Douglas Hawes;

Virginia Polytechnic Institute, Blacksburg, Va. 24060, Dr. Richard Schmidt.

Without a doubt, I will hear from the schools I did not name, so that I can update you later. These will give you a good start.

Q—*Please let us have your opinion on zoysia for tees.* *(Missouri)*

A—The success of zoysia on tees will depend largely on 1) the kind of zoysia, 2) your management and 3) winter play.

There have been some good examples of zoysia Matrella (Manilagrass) tees in Missouri, but they seem to have declined over the years. A bad winter may have had something to do with it.

Meyer (Z-52) zoysiagrass has been used on tees, but its thick, dense growth largely precludes overseeding with cool season grasses for winter play. I lean now toward the coarser types of zoysia (Midwest and common from seed), which are more open and more receptive to overseeding.

Slow growth and slow healing of divots are two negative factors. Billbug has ruined much zoysia turf. It is quite expensive to establish, but is economical of maintenance. If you go into zoysia for tees, I recommend growing it in a nursery for solid sodding. Plan to overseed each fall season using a blend of elite ryegrasses and bluegrasses. □

DR. JAMES B. BEARD

TURFGRASS RESEARCH REVIEW

ALTERNATE FUNGICIDES TO CONTROL TURFGRASS DISEASES

***A benzimidazole resistant strain of* Erysiphe graminis.** *J. M. Vargas Jr. 1973. Phytopathology. 63 (11): 1366-1368. (from the Department of Botany and Plant Pathology, Michigan State University, East Lansing, Mich. 48824).*

The objective of this study was (a) to determine whether strains of powdery mildew *(Erysiphe graminis)* existed that are resistant to benomyl and (b) to determine whether the benomyl resistant strains of powdery mildew are also resistant to other benzimidazole systemic fungicides, a thiophanate systemic fungicide and a pryimidine systemic fungicide.

The experiments were conducted on Merion Kentucky bluegrass turfs maintained in 10-inch diameter pots. One set of Merion Kentucky bluegrass plugs was collected from benomyl treated plots suspected of containing a benzimidazole resistant strain of powdery mildew. These plugs were placed in a growth chamber along with additional pots of unaffected turf. A similar set of Merion Kentucky bluegrass pots was established in a second growth chamber. This set was infected with a common strain of powdery mildew, which was susceptible to benzimidazole control. The two strains of powdery mildew were allowed to increase in each of the respective chambers at temperatures of 70 degrees F. A similar set of Merion Kentucky bluegrass pots was also established and then treated with the following fungicides, each at four concentrations. Included were (a) two benzimidazole systemics (benomyl and thiabendazole), (b) a thiophanate systemic (thiophanate-methyl) and (c) a pyrimidine systemic (triarimol). Six pots of each treatment were exposed to a benzimidazole resistant strain in one chamber, and another six pots were exposed to a benzimidazole susceptible strain in the second chamber.

Results after six weeks of treatment showed that benomyl, thiabendazole, thiophanate-methyl and triarimol effectively inhibited the development of the benzimidazole susceptible strain of powdery mildew. In contrast, benomyl, thiabendazole and thiophanatemethyl treated turfs exposed to the benzimidazole resistant strain proved ineffective in controlling this powdery mildew. The one systemic fungicide that did prove effective in controlling the benzimidazole resistant strain of powdery mildew was triarimol.

The data indicate that the two benzimidazole and the thiophanate systemic fungicides have similar cross resistance to the benzimidazole resistant strain of powdery mildew. The author points out that this interrelationship is not surprising, because earlier work showed that there are certain conversions of these systemic fungicides into a common compound in terms of fungicidal activity. Because there was no cross resistance to triarimol, the author suggests that the mode of action for this systemic fungicide differs from that for the benzimidazole and thiophanate systemic fungicides.

The benzimidazole resistant strain of powdery mildew utilized in these experiments developed in only one and one-half growing seasons after use of the benzimidazole fungicide was initiated. Similar rapid development of benzimidazole resistant strains of dollar spot have also been observed by the author. For this reason it is recommended that the benzimidazole and thiophanate fungicides should not be used on an exclusive basis in order to protect against development of resistance to these systemic fungicides. A preferred approach would be to use the benzimidazole and thiophanate fungicides on an alternating basis with either (a) an effective nonsystemic or (b)

continued on page 18

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BEARD *from page 16*

a different type of chemically active systemic fungicide such as triarimol.

Comments: Certain of the common turfgrass diseases have sexual reproductive capabilities such that continued use of a fungicide or similar (related activity) group of fungicides will enhance the potential for development of resistant strains of the disease-causing organism. If steps are not taken to avoid this by varying the type of fungicide utilized throughout the growing season, there is a great likelihood of resistant strains of the organism occurring. Possibly a strain might develop that could not be controlled by any of the currently available fungicides. This is a potentially serious threat to golf course turfs, particularly the bentgrasses and annual bluegrasses. Accordingly, all golf course superintendents should seriously consider a program of alternating a group of two or three effective fungicides for the particular disease or diseases being controlled. The importance of this practice should not underestimated. □

COMING EVENTS

RHODE ISLAND TURFGRASS FIELD DAY, University of Rhode Island, Kingston, R.I., August 21.

NORTHERN MICHIGAN TURFGRASS FIELD DAY, Michigan State University Experimental Area, Traverse City CC, Traverse City, Mich., September 10.

TURF AND LANDSCAPE DAY, Ohio Agricultural Research and Development Center, Wooster, Ohio, September 10.

FLORIDA TURFGRASS ASSN. CONFERENCE AND SHOW, Riverside Hilton, Curtis Hixon Convention Center, Tampa, Fla., September 16-19.

SOUTHERN ILLINOIS TURFGRASS FIELD DAY, Southern Illinois University Agricultural Research Station, Belleville, Ill., September 24.

NORTHWEST TURFGRASS CONFERENCE, Sun River Lodge, Sun River, Ore., September 24-27.

MIDWEST TURF FIELD DAY, Purdue University Agronomy Farm, West Lafayette, Ind., September 30.

SOUTHWEST TURFGRASS CONFERENCE, New Mexico State University, Las Cruces, N.M., October 10-11.

CENTRAL PLAINS TURFGRASS CONFERENCE, K-State Union, Manhattan, Kan., October 23-25.

WISCONSIN GOLF TURF SEMINAR, Pfister Hotel, Milwaukee, Wis., October 30-31.

FIFTH ANNUAL GEORGIA GCSA/-UNIVERSITY OF GEORGIA TURF-GRASS SHORT COURSE, Center for Continuing Education, University of Georgia, Athens, Ga., November 3-5.

TEXAS TURFGRASS CONFERENCE, Texas A & M University, College Station, Tex., December 1-4.

OHIO TURFGRASS CONFERENCE AND SHOW, Ohio State University, Columbus, Ohio, December 3-5.

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