

## TIFFINE (TIFTON 127) TURF BERMUDAGRASS

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Golf-course superintendents continually search for a good, fine-textured bermudagrass. The establishment of experimental turf plots at the Georgia Coastal Plain Experiment Station, Tifton, Ga., in 1947 marked the first milestone for the selection, breeding and testing of bermudagrass types for turf purposes. During that time more than 136 types of bermudagrass were tested under both golf green and fairway management.

By 1949 and 1950 it was evident that a hybrid bermuda, Tiflawn (Tifton 57 bermudagrass), produced at the Experiment Station, was superior to common-seeded bermudagrass and several selections from golf courses in the Southeast. Tiflawn, however, still fell short of the exacting requirements of the golfers for a very fine-textured bermuda.

In an effort, therefore, to produce a finer-textured bermuda, while still retaining desirable qualities, Tiflawn, *Cynodon dactylon* and several other selections of common bermuda were hybridized with a very fine-leaved, disease-susceptible bermuda from South Africa, namely *Cynodon transvaalensis*.

Eighty-nine hybrid plants, obtained from crosses, were planted in the field for observation in 1949. Several of the plants appeared to be inferior turf types and were discarded. The most promising

hybrids, however, were planted in the experimental turf plots. Such comparative ratings as disease resistance, sod density, fineness, playing quality, weed resistance, aggressiveness and so forth over the last two years have indicated that the hybrid plant carrying the number 127 is a superior turf type. This bermuda, produced by crossing Tiflawn with South African bermudagrass, has become known as Tifton 127 turf bermuda, or Tiffine. Since it does not produce viable seed, Tiffine must be propagated vegetatively.

Tiffine has a distinctive medium-green color, is aggressive, disease resistant, not injured by overseeding with ryegrass and much finer in texture than Tiflawn, common-seeded bermuda or most other types of bermudagrass used on putting greens. Although small quantities of sprigs have been mailed to many clubs in the Southeast, a limited supply still is available to clubs on request. Sprigs from commercial sources are available also. Observations to date indicate that Tiffine is well adapted throughout the Southeast. It is being grown satisfactorily on new greens in the coastal area and as far north as the Ohio River Valley.

Although Tiffine is a great improvement over common bermudagrass for putting greens, the bermudagrass breeding work is being continued with the hope that even better bermudagrasses may be found.

## WHAT ABOUT MALEIC HYDRAZIDE?

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Recently we received several inquiries from clubs requesting information on the use of maleic hydrazide as a grass-growth retardant. This surge of inquiries is due undoubtedly to the recent adver-

tisements suggesting maleic hydrazide as a substitute for mowing. Few letters were received from golf-course superintendents, which we interpret as a sign of progress because it indicates that the superinten-

dent fast is becoming educated to the fact that in golf-course management and maintenance there is no panacea which is all inclusive, as some of the recent sensational forms of advertisements would have us believe.

Is maleic hydrazide application to turf a substitute for mowing? Let us look at the facts. Maleic hydrazide has had limited testing to date. Results from agricultural experiment stations agree generally that there is a possibility for limited use on rougher turf areas where the use of mowing equipment is difficult or impractical, but on specialized turf areas, including lawns, it appears that much more research work should be done before any blanket recommendations can be made.

Evidence to date indicates that maleic hydrazide reacts differently on different grasses. It appears also that height of cut is an important consideration in the use of this material. While there are favorable reports on the use of maleic hydrazide on roadside and highway turf, that does not mean necessarily that those results are applicable to closely cropped, special-purpose turf such as putting greens, tees and fairway areas.

From the Bureau of Plant Industry, United States Department of Agriculture, Physiologist Dr. Paul C. Marth states: "On the basis of results, the use of ma-

**TURF MANAGEMENT**

Worth-while discussions of the problems confronting Green Committee Chairmen are contained in **TURF MANAGEMENT**, a book sponsored by the United States Golf Association. This volume was edited by H. Burton Musser and published by the McGraw-Hill Book Co., Inc.

It is available through the USGA, 40 East 38th Street, New York 16, N. Y.; the USGA Green Section, Room 331, Administration Building, Plant Industry Station, Beltsville, Md., and bookstores generally. The price is \$7.

leic hydrazide for suppressing growth of lawns in the vicinity of Washington, D. C., seems questionable . . .

"A Kentucky bluegrass sod that was sprayed with the diethanolamine salt formulation of maleic hydrazide at spray concentrations of from 0.5 to 2.0 per cent on May 11, 1950 developed an objectionable browning and was stunted severely in growth for several weeks. Crabgrass invaded and developed more in the sprayed than in comparable unsprayed plots.

"*Zoysia japonica*, when sprayed on June 5 with maleic hydrazide at 0.5 per cent developed a yellow-green color but slowly recovered during a two-months' period thereafter. At 1.0 per cent and 2.0 per cent spray application, some of the *Zoysia* was killed and the remainder was off-color throughout the rest of the growing season."

Dr. Marth cites the following table:

**Effect of maleic hydrazide treatment on the invasion of Kentucky bluegrass sod by crabgrass. Data based on fresh clipping weights made on July 31, 1950 on sod that had been sprayed on May 11, clipped on May 23, and again on June 6, 1950, at Beltsville, Md.**

| Maleic hydrazide<br>spray concentration<br>(per cent) | lb/A** | Total fresh weight<br>(gm.) of clippings<br>(average of 4 plots) | Per cent *crabgrass<br>in clippings<br>(average of 4 plots) |
|---|--------|--|---|
| 0   | 0      | 1150   | 10.7  |
| 0.5   | 1.4    | 1925   | 23.0  |
| 1.0   | 2.8    | 2250   | 28.7  |
| 2.0   | 5.6    | 2325   | 46.2  |

\* The crabgrass was hand sorted and weighed for each plot.

\*\* Pounds per acre of maleic hydrazide.

Note that with an increase in rate of application of maleic hydrazide there was an *increase* in the amount of fresh clip-

pings removed. This increase in weight was due in considerable part to the heavy infestation of crabgrass. In every case

the amount of clippings approximately doubled on treated plots as compared with the untreated plots.

From the Oregon State College, Dr. Virgil H. Freed reports these findings:

| Material  | Rate/acre | June 21, 1950,<br>weights | July 5, 1950,<br>weights | Color rating |
|-----------|-----------|---------------------------|--------------------------|--------------|
| Maleic    | 2#        | 635.5                     | 55.0                     | Very poor    |
| Hydrazide | 2#        | 410.5                     | 67.5                     | Poor         |
|           | 2#        | 291.8                     | 47.1                     | Poor         |
|           | 4#        | 442.0                     | 42.5                     | Very poor    |
|           | 4#        | 489.0                     | 59.8                     | Very poor    |
|           | 4#        | 304.0                     | 65.0                     | Very poor    |

"From the table it can be seen that maleic hydrazide at both rates of two and four pounds per acre caused a severe reduction in the weight of the clippings and growth of grass. It also brought about a serious loss of the green color."

A letter from Dr. Fred V. Grau, Chairman of the Turf Committee, Crop Science Division, American Society of Agronomy, summarizes well the feeling of turf research workers at several stations:

"On January 23, 1953, a memorandum was sent to members of the Turf Committee requesting data and views on maleic hydrazide in order to formulate a statement for guidance of the public.

"Response to the request has been good, but documented evidence in the form of research data is scanty. Some of the data presented have not been approved for release. Considerable work is in progress.

"The attitude of the Turf Committee is reflected in these statements which represent virtual unanimity. These are not direct quotes:

Treated plots develop more crabgrass.

The mower industry will continue to flourish.

Much more experimental evidence is needed.

We do not feel that maleic hydrazide can be used as a substitute for the mower on special-purpose turf areas.

Treated plots developed more clover. Considerable permanent damage to turf resulted.

All indications to date are negative

because reduced vigor of grass permits weed invasion.

Maleic hydrazide might be useful where power-mowing equipment cannot be used."

In the light of these data we feel that much more work must be done with maleic hydrazide before it can be recommended on specialized turf areas. Any chemical which retards or interferes with the normal physiological processes within a plant must be used with caution. If it is tried on special-purpose turf areas, it should be on an experimental basis until more favorable documented evidence is available.

#### QUOTES

*Notes from a talk by P. V. Cardon, Director of the Graduate School and Research Administrator, Emeritus, U. S. Department of Agriculture, given at Open House, Texas Research Foundation, Renner, Texas, May 21, 1952. Dr. Cardon is President of the 6th International Grassland Congress.*

"Knowledge derives from fact.

"Fact is disclosed by research.

"Research is everybody's business.

"Whether or not you are consciously engaged in it, you are unmistakably affected by it.

"Research . . . is merely a systematic quest for truth.

"Whenever you set out to improve your way of doing something you conduct a type of research. . . . You simply determine the facts and then permit