

## TURFGRASS DISEASE CONTROL

Dr. Malcolm C. Shurtleff  
University of Illinois

Turfgrass diseases vary in severity from year to year and from one locality to another depending on the environment (principally moisture, temperature, humidity, and grass nutrition), the relative resistance or susceptibility of the grass host, and the causal organism. All three actors must be present in "balance" for disease to develop. For example, if the environment is favorable for a disease and the disease-producing organism is present but the host plant is highly resistant, little or no disease will develop. Similarly, if the causal organism is present and the host is susceptible, but the environment is unfavorable, the disease usually does not appear.

We can put this in the form of a simple equation:  
Susceptible grass + Disease Organism  
+ + = Disease  
Proper environment + Method of distribution

No disease will develop if *any one* of the above ingredients is lacking. Effective disease control measures are aimed at "breaking" this equation in one of three basic ways: (1) the susceptible plant is made more resistant or immune; (2) the environment is made less favorable for causal organism and more favorable for the grass plant; and (3) the disease organism is killed or prevented from reaching the plant, penetrating it, and producing disease.

Let's discuss these three basic methods of control:

1. *Making the grass plant more resistant or immune.* This is the ideal method of control. All grass breeders, and everyone else concerned with turf, are hoping to develop more resistant grasses. Some progress has been made. We now have grass varieties somewhat resistant to dollar spot, snow mold, leaf spot, rust, powdery mildew, and other diseases. But this important control measure is still in its infancy. For some diseases like brown patch, where the causal fungus is composed of an infinite number of biotypes or strains, the development of highly resistant or immune grass varieties is remote and may never come about. Before such grasses can be developed and released, sources of resistance in wild or cultivated grasses must be found. Then comes the long, time-consuming process of working this resistance into otherwise desirable grasses. We

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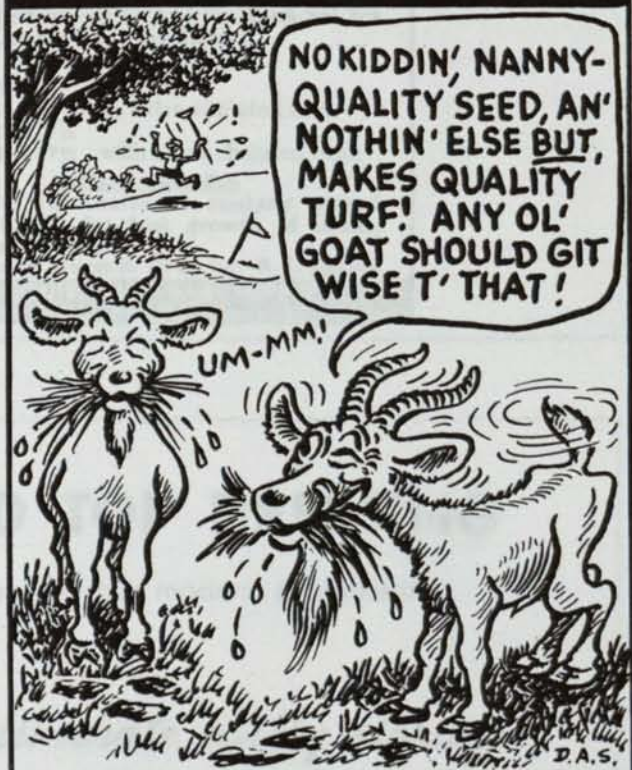
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will probably never have a lawn or fine turf grass which is resistant to all common diseases.

Another way to make the grass more resistant is through proper nutrition. Dollar spot, pink snow mold or Fusarium patch, powdery mildew, brown patch, and other diseases are less serious where a uniform level of soil nutrients is maintained in root zone. This may mean fewer and lighter applications of fertilizer plus keeping the three major nutrients, N, P, and K in balance. When nitrogen is high in relation to potash and phosphorus you may be heading for trouble, especially in hot weather.

Grass cut at the proper height also has more resistance than turf which is scalped. Without sufficient

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green leaves to manufacture food to produce new leaves, roots, and stolons, the grass is definitely weakened. Remember that the grasses in a lawn, park, fairway, or golf green are growing under artificial conditions and are more subject to attack by disease organisms than they would be in their natural environment. Healthy, vigorously growing, adapted turf grasses that are properly managed can best ward off disease attacks.

2. *The environment is made less favorable for the causal organism and more favorable for the grass plant.* Fungi which cause all turf diseases (except those produced by nematodes) require much the same sort of environment that turfgrass requires: food, moisture, oxygen, and a favorable temperature. The basic concept

here is to grow grass in an environment which will be unfavorable to the growth, multiplication, and spread of disease-producing fungi. This we can do by:

(Continued next month)

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