

stops making food, the chlorophyll is gradually destroyed and other colors appear. Cold temperatures speed the process. These other colors are known as anthocynins (reds, scarlets, vermillions) and carotenoids (yellows, oranges, reds). In time these colorful components of leaf cells are also destroyed to reveal brown tannins which are most resistant to chemical destruction.

Not Frost Contrary to popular belief, a frost does not cause a change of leaf color. A light frost will often speed the destruction of the green chlorophyll. A heavy frost can destroy the chlorophyll and the other colorful pigments so that the leaves appear brown.

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DECEMBER 1, 1972 - CHRISTMAS PARTY - As you all know our annual Christmas Party is growing near. Again this year we are hoping that it will be as much of a success as it has been the last two years at Rancho Canada Golf Club. This year the Party will be held at the Walnut Creek Golf Course. We will be using the beautiful facilities provided by the Boundary Oak Restaurant. The agenda is as follows: Golf, both men and women - Starting times 9:00 AM to 10:43 AM. Please make up foursomes and call for starting times early to Area Code 415 934-6211, Walnut Creek Golf Course Pro Shop - Deadline date November 24th. The tournament will be Calloway scoring. Crab feed, dinner and dancing, etc. The cost of the entire package will be the same as last year. Golfers - \$16.50 - Non-golfers - \$11.50 - REMEMBER, Ladies and Guests are welcome. Please everyone plan to attend and make this the finest Christmas Party possible

Please send in the reservation card enclosed for the December 1 meeting as early as you can so that plans can be made.

THANK YOU - Larry Feliciano, Christmas Party Chairman

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WINTER DISEASES ----- By Dr. John H. Madison

It is always interesting to classify objects in different ways. Here is one way of classifying diseases that tells us some more about them.

Three common turfgrass diseases in California are obligate parasites; that is they can only live as parasitic diseases. These three are rust, smut, and mildew. Of these, only smut is systemic. A single spore of smut can cause an infection of an entire plant. Rust and mildew are localized. Each spot is a separate infection, and if you find a leaf of bluegrass with 20 rust spots on it, that means that the

leaf was separately infected 20 different times.

The remaining common diseases are facultative parasites which means they can live perfectly well on dead leaves and clippings; and normally they do except for limited periods when they are parasitic and cause disease.

Last time I talked about some facultative parasites and Dr. Endo's research into what causes them to become disease causing. One cause of disease that writers often list is too much water. Before I accept that I'd like to ask a couple of questions.

If we look at a rainfall map of the U. S. of our high disease areas they tend to correspond to our areas of high rainfall as for example coastal Washington state. But if we think about it, rain is associated with cloudiness. So we might ask is it the wet or the cloudiness that causes disease, or is it both together? We can make some progress in answering that question by thinking about our past experience. Sometimes we get long periods of overcast but it fails to rain. At other times we experience frequent showers but with lots of sunshine. Between these two we are likely to get turf disease with periods of overcast but not with showers. Since, however, we don't usually get periods of overcast without moist soils and lots of dew our answer is not clear. Overcast is simulated by shade and when we think about that it is the shady spots where Fusarium appears first and hangs on the longest.

With experiences of this kind I am, as I say, ready to question whether overirrigation is as important in disease as we have thought, but I am not ready to answer my question. If overcast is more important we can ask in what way overcast changes the turf. Immediately we see that without sunshine, the grass can't make foods, the turf runs low on sugar and other foods. If low sugar results in disease then let's look for other times when sugar is low. With temperate season grasses, sugars are low in hot weather. In the heat respiration is high, sugar production is low and the turf has reduced reserve food. Hot weather is also a time when we expect disease.

Another factor leading to low sugar is high nitrogen. We often find our worst disease on overfertilized turf, although the fertilized turf is also the fastest to recover.

Low mowing leads to low sugars. Short turf is more susceptible to disease. Shaded turf has low sugars. Grass in the shade fails or is thin and is subject to the greatest number of different kinds of disease.

Certainly it appears as if conditions leading to low food supplies are related to conditions when facultative diseases occur. During the overcast of the winter months there are four facultative diseases we are apt to see. The most common is Fusarium patch. In the open we don't

usually worry about this. All we need is one sunny day and the turf begins to pull out of it. There are some years when we don't get that sunny day for a long time and we have to spray. And sometimes the disease is in a shady spot and the sun doesn't get to it. The University Guide to Pest Control suggests benomyl or Daconil^R for Fusarium patch. I haven't had experience with benomyl, but on a recent trip back East my colleagues were concerned. Repeated use seemed to result in a weakening of grass though the evidence was not clear.

The second disease is most common along the coast. It is Corticium red thread. This occurs on red fescue and so is not often much of a threat. Again it clears up with a few sunny days. If you have to spray the Guide lists mancozeb. Along the far north coast of California there may be some Ophiobolus patch on bentgrass during the cold overcast of spring. Dusting sulfur may help, but the real cure is sunshine.

The fourth winter disease that members of the GCSANC may see is limited to those courses that get snow. That is Typhula grey snowmold. Typhula only grows in the dark under the snow. When the snow melts the ultraviolet rays of the sunshine cause the fungus to stop growing and to form fruiting bodies, or sclerotia. The trick for Typhula control is to spray just ahead of the snow. Now that the mercurics are out I have no recommendations for a spray. In the past Typhula has been controlled by the same sprays that controlled Fusarium and that will have to be our guide.

--- John H. Madison

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WALTER AND NINA BOYSEN are having a great trip, sort of a 42nd wedding anniversary treat. They have toured France and Spain. Paris has to be the most beautiful city in the world they state. They are seeing very different country. They've come through the Pyrenees Mts. to Madrid, on to Lisbon, Portugal and Seville and Malaga. Wonder if they ran into AUBREY AND MARTHA BABSON who are also in Spain seeing the sites.

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MEMBERSHIP CARDS WILL BE MAILED SHORTLY TO ALL WHO HAVE PAID THEIR 1973 DUES

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