(Lightning con't.d)

1. Read up on the subject and then pass this information along to your members in your club newsletter or post a warning statement in the clubhouse. Many injuries and deaths could be prevented if only the victims were aware of the danger lightning poses.

2. Inform the members of your staff about lightning. It should be written into your personnel policies that employees will stop work and seek shelter during a thunderstorm. Just as golfers are prime targets so are your crews on the golf course. Most machinery will attract lightning as well as uncovered utility vehicles. Designate those shelters which are properly protected by lightning rods.

3. Post instructional signs at rain shelters with safety procedures to follow if lightning should occur.

4. Be sure that your buildings and rain shelters have the required amount of lightning rods which are properly installed and grounded. Buildings which are used for equipment and chemical storage are rarely protected. While some irrigation controllers are protected in the field it is uncommon to see lightning rods on pumphouses. And once again it must be emphasized that a rain shelter or halfway house is not a safe place without adequate lightning rods.

5. If there are any irreplaceable trees on your golf course, lightning protection is a small price to pay to insure their existence. While there are no statistics on the actual number of trees struck by lightning each year the USDA Forest Service reports about 10,000 forest fires are ignited in the U.S. by lightning annually.

IS A LIGHTNING STRIKE ALWAYS FATAL?

About ⅔ of the people involved in lightning accidents make a complete recovery. Most are not victims of a direct hit but are in close proximity of a strike and receive a lesser shock. Many victims stop breathing and have no heartbeat. Through the use of CPR (cardio-pulminary resuscitation) and mouth to mouth resuscitation many victims can be revived and stabilized until a physician or paramedic is on the scene. This is another good reason to have as many crew members as possible trained in First Aid and CPR.

WHAT TO DO IS NO PROTECTED SHELTERS ARE AVAILABLE DURING A THUNDERSTORM

1. Never stand under a tall tree. If you must use trees as a shelter than choose a small tree in a wooded area that is not on a hill.

2. Do not touch any metal objects such as rakes, golf clubs, ball washers, etc.

3. Stay away from fences, overground pipes, and metal railings.

4. Avoid standing water and do not lay on moist ground.

5. As a last resort find a ravine or valley and crouch down in that area.

In summary, the danger of lightning has been shown in several different ways. The statistics speak for themselves in regard to the threat posed to use on golf courses. Educate yourself about lightning and pass the information on to players and staff. Install lightning rods for the protection of human lives, buildings and fixtures, pumphouses, rain shelters, irrigation controllers, and irreplaceable trees on the golf course. The next time a thunderstorm threatens your area - be prepared.

Development and Management of Gaeumannomyces Patch

by J. M. Vargas, Jr., Principal Investigator
Supporting Investigators: MSU Turfgrass Faculty

Gaeumannomyces patch or take-all patch formerly known as **Ophiobolus** patch, occurs in many regions of the United States, but has typically been associated with the Pacific Northwest. Monteith and Dahl in 1932 implicated the fungus as an occasional turfgrass pathogen. However, it was not until 1960 that the disease was actually confirmed on creeping bentgrass in western Washington. More recently, the disease has been reported on creeping bentgrass turf in Rhode Island and in the Washington, D.C., Maryland area. We have made similar observations on newly seeded "Penncross" greens in Michigan, although the disease has never been very serious.

Take-all patch has been reported to be most severe during wet years in poorly drained soil. In 1983, however, the Midwest had one of the warmest, driest summers on record. The disease is also most severe under conditions of high soil pH and low phosphorus levels. But many of the soils on which the disease occurred this summer has high phosphorus levels although the soil pH's were generally high which may have made the phosphorus unavailable. Sulfur has been reported to reduce the severity of take-all patch and is believed related to the effect of sulfur on the soil pH. The use of acidifying fertilizers, i.e. ammonium sulfate, has also reduced the severity of take-all patch, presumably by reducing the soil pH.

Symptoms: The symptoms initially appeared in patches of yellow turf. The grass in the center of these patches usually becomes bronze as it dies completely or becomes severely thinned. The bare or thin areas become filled with broadleaf weeds, creeping bentgrass or later on with annual bluegrass again. The initial spots may be 1 to 6 inches in diameter, but may grow to a diameter of several feet over a period of years. The plants in the disease patches had short and very poorly developed root systems. Examination of the roots under a dissecting microscope revealed dark cortical tissue inside the root and crowns from infection, and dark runner hyphae of a Gaeumannomyces-like fungus lengthwise on the exterior of the roots.

Recent Developments: In recent years, our laboratory has received occasional turf samples from midwestern states that were infected with Gaeumannomyces-like organisms. This August, numerous annual bluegrass samples were received from eastern, mid-central and midwestern states infected with this organism. Annual bluegrass is the major component of golf course fairways in the northern United States, whether it is desirable or not. A disease like "take-all patch" destroyed large areas on many annual bluegrass fairways this summer and since no known control was available many superintendents felt their jobs were in jeopardy. This research proposal is being submitted for funds to try and identify the organisms involved, predict the environmental conditions under which the disease occurs, and to find cultural or chemical means of managing it.

Proposal

Modeling: There is no real quantitative data concerning the environmental conditions leading to the development of "take-all patch". Does it start in the cool weather and remain a minor disease until the soil and/or air environment changes? Does it

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(Vargas cont'd)

infect and become a severe problem in a short time? What are the environmental conditions under which it occurs? In short, there are many questions to be answered. The best way to do this is to develop a mathematical prediction model for the occurrence of the disease. The air temperature, humidity and rainfall will be monitored along with the soil temperature and soil mostirue in developing the model. The positive identification of the organism or organisms involved in this disease will be determined as part of this study.

Cultural: Sulfur - While the addition of sulfur has been implicated in reducing the severity of the disease, no research has been done to determine if the effect is directly on the fungus or the soil pH or both. This will be determined both in the laboratory and in the greenhouse experiments.

Phosphorus — High phosphorus has been associated with disease reduction. The exact effect of phosphorus on disease development will be determined in the laboratory and in the field.

Chemical: The systemic fungicides may offer the best hope of chemical management because of their internal mode of action. The newer systemic fungicides will be screened in the laboratory, greenhouse and in the field in an attempt to identify those fungicides with the greatest efficacy. Fungicides may be economical to apply once the occurrences of "take-all patch" can be accurately predicted.

Credit — "Our Collaborator", 6/84

Here is one great way to help the ITF by buying any of the below listed seed.

Certified Seed Redemption Program

Turf Seed Inc. will donate $0.50 to the Illinois Turfgrass Foundation for each blue tag from a 50 lb. bag of certified seed of their varieties that the ITF collects. The purpose of this program is to encourage the use of certified seed and to promote turfgrass research. The varieties covered by the program are listed below. Please send your tags to the ITF office, P.O. Box 501, Urbana, Ill. 61801. Also, please let others know about this program so that their tags can be saved.

Kentucky bluegrass varieties
Challenger
Columbia
Midnight
Shasta

Perennial ryegrass varieties
Birdie
Birdie II
Citation
Citation II
CBS
CBS II
Manhattan
Manhattan II
Omega

Fine fescue varieties
Aurora
Waldina
Shadow
Flyer
Fortress

Tall fescue varieties
Apache
Penncross
Olympic

Creeping bentgrass varieties
Penneagle