UNITED STATES GOLF ASSOCIATION
GREEN SECTION EASTERN REGION

NORTHEASTERN DISTRICT
RUTGERS UNIVERSITY
NEW BRUNSWICK, NEW JERSEY

MID-ATLANTIC DISTRICT
PLANT INDUSTRY STATION
BELTSVILLE, MARYLAND

EASTERN TURFLETTER

ALEXANDER M. RADKO
EASTERN DIRECTOR

CHARLES K. HALLOWELL
MID-ATLANTIC DIRECTOR

T. T. TAYLOR
NORTHEASTERN AGRONOMIST

No. 3 June, 1958

DRAINAGE AND THE GOLF COURSE

Adequate drainage is one of the prime requisites of good turf production. This wet '58 season has accentuated drainage problems as waterlogged soils have hampered superintendents in course grooming in the usual fine early season manner. As of now, many are weeks behind the normal schedule in mowing, fertilizing, weed treatments, and aeration. What a difference compared with the '57 season! It seems such a short while since grasses were severely set back by drought, and everyone was wondering when "Old Pluvius" would favor us with a frown, gray skies, and some rainfall. Apparently the message got through, though belatedly, and heavy, wet snows, followed by abnormal rainfall through May, have filled soil reservoirs to overflowing. Low or poorly drained areas have, at this writing, been too wet for equipment or traffic. Traffic over wet soil adversely affects soil structure; uncut grass interferes with golfing pleasure; and if the water remains too long, desirable grass cover is replaced by vegetation that prefers this environment ... Weeds!

Standing surface water and outbreaks of underground water have been most serious problems this year. Standing water is objectionable on any golf turf areas, but fortunately in many cases the water may be removed by swales or open ditches. Shallow, wide sweeping swales do not interfere with golf or maintenance.

Seepage water also presents drainage problems. A good example of such a problem is a green built into a hillside. Rainwater enters and percolates through the soil until it reaches hardpan, a vein, some shale, or slate. Then under tension, the water follows a path of least resistance, and may show up as a spring or seep hole anywhere on the slope below. Unless provision is made for an intercepting drain line around the high side of the green, seepage water may keep the putting surface and soil excessively wet. Interceptor tile lines and a swale generally best suit here, as surface water as well as seepage water is intercepted before it begins to be a problem. Fairway and tee seepage problems may also be corrected in this manner. The drain lines should be tied into one of the main drainage lines and runoff into a stream or permanent ditch. If this is not possible, then some sort of catch basin should be constructed at some point away from critical playing areas.

Very often tile lines are placed through wet areas in the attempt to move excess water rapidly. The exact depth of placement of the tile is determined by digging test holes. Normally, tile laid to a depth of 18 to 30 inches is right. Generally 4 to 6 inches below the depth that water is found insures that all water will move off rapidly.

In past years, drainage systems have been made of board or stone, but today tile is used chiefly. Many of the stone or board systems worked well in the beginning, but as a whole, they failed to function after a few years. Once a tile system is installed, it is important to keep it functional. Sometimes tree roots will enter and clog the system; sometimes the outlet will become clogged. It is best to finish out the end of a tile line with metal soil pipe or welded casing. The outlet should be protected so that it will not be crushed by machinery or clogged by small animals. In some cases, a small concrete or stone retaining wall is necessary at the outlet, with a removable cover of grating of iron rods or heavy wire with large openings for ease of cleaning.

To check whether drainage lines are functional, place some dye material into the line at some point of question, and check the outlet to see if the dye material moves through satisfactorily. At vantage points an occasional check box would be desirable, as it allows for ease of flushing clogged lines.

The best time to install or improve drainage systems on golf courses is in the off-season when course maintenance is reduced. However, it is important to determine the pattern of the system to be installed when soils are saturated; this is the proper time to stake out the area and make a diagram for use at the time of actual installation. Once installed, a blueprint of the drainage system should be made up immediately and filed for permanent club record.

Digging ditches for tile lines may be done by hand or by modern ditching machines. For large areas, the latter is usually more economical. Whether done by hand or by ditcher, the grade must be correctly established; a hand level may be used for simpler problems, but for difficult grades, a transit should be used. Once the grade or level is established, and the ditch dug, the tile should be laid as soon as possible and backfilled as otherwise cave-ins occur which are costly in time and labor. Backfill should be gravel material over tile, then topsoil -- or topsoil alone.

Properly drained soils increase efficiency of grass plants, soil organisms, plant foods, increases air pore space, and balances water pore space. Too, soil temperatures and general root environment become much improved through drainage improvement.

WHILE ON THE SUBJECT --

Have you improved <u>air</u> drainage about that green which normally gives you trouble in summer ... the green situated in a "pocket" where summer temperatures soar far above readings on other greens? Have you cleaned out the underbrush as completely as is possible? Have you pruned branches of trees that hamper air movement? Have you cut a path through to the direction of the prevailing summer winds? If not, chances are you will have difficulties again this summer. So mark this project as one of the first off-season jobs to complete for healthier turf and fewer headaches in '59.

INSECT CONTROL ON ORNAMENTALS

Questions have been numerous concerning control of insects on trees and ornamentals on the clubhouse grounds. Tent caterpillars arrived in early May, and about the same time leaf miners were active on hollies and birch. Caterpillars, miners, and other insects, may be controlled by spraying with 2 pounds of DDT (50% wettable powder) and 4 pounds of Malathion (25% wettable powder) in 100 gallons of water. This spray may be applied once a month during May, June, and July on trees and shrubs attacked by insects. If mites are on evergreens during dry weather, add 2 pounds of a miticide such as Aramite (15% wettable powder).

At a recent meeting of the Connecticut Golf Course Superintendents Assn., Dr. John C. Schread, Entomologist, Connecticut Agricultural Experiment Station, cautioned that Malathion should not be used on Japanese Maple as it burns the leaves, but on all other plants, shrubs, and ornamentals, it is an excellent insecticide. In combination with DDT, as suggested above, a wide variety of insects are controlled.

Dr. Schread also mentioned a NEW approach to leaf miner control on birch, holly, boxwood, and arborvitae through the use of a systemic insecticide. Application of a systemic insecticide to the soil around the plant will be taken up by the roots and translocated to all parts to protect from within. We're surely going to have alot of momentarily surprised, and permanently dead insects when this technique (for which Dr. Schread has high hope) is perfected. The material is still in the experimental stage, it is a phosphate insecticide, and it is not yet available for trial in all areas.

A REMINDER

A long, long week end is coming up over July 4th. Are you adequately prepared to cope with weather and traffic problems at that time? Remember turf that wilts in July doesn't come back -- so have enough of a labor force available to cope with any situation that arises. Your summer season will be more pleasant for it.

FIELD DAY MEETINGS

August 26
Rutgers - The State University, New Brunswick, New Jersey
Dr. Ralph E. Engel

September 11, 12
Rhode Island University, Kingston, Rhode Island
Dr. Jesse A. DeFrance

Sept. 3 (Noon) to Sept. 4 (Noon)
Pennsylvania State University, University Park, Pa.
Prof. H. Burton Musser

Eastern Turfletter

USGA GREEN SECTION

BULK RATE
U. S. POSTAGE
PAID
PERMIT NO. 366
NEW BRUNSWICK, N. J.

MR. WILLIAM BENGEYFIELD
U. S. GOLF ASSN. GREEN SECT.
13267 VERANO ST.
GARDEN GROVE, CALIF.