

at the Connecticut Agricultural Experiment Station, New Haven, cited the frit fly, clover weevil, and European chafer as newer insect problems for turf managers to contend with. Frit fly damage is already a fact; clover weevil damage has been noted on golf courses in New York; and the European chafer is posing a problem similar to other white grubs, such as that of the Japanese beetle.

Schread pointed to these controls: DDT seems to be lessening in its control of the frit fly, but lead arsenate has given satisfactory results; in two locations, dieldrin and Diazinon have controlled the clover weevil; and chlordane and dieldrin are now in common use against chafers.

Noting changes in insecticide recommendations because of pest resistances, Schread used frit flies and DDT as an example. Another is the chlordane-chinch bug relationship, which is often unsatisfactory nowadays from the turfman's standpoint. Diazinon, ethion, Sevin, Trithion, and Baygon have killed chinch bugs and are in wide use in place of chlordane, Schread stated.

GCSAA's '67 election produced the following officers for the coming year: president, Walter R. Boysen, Oakland, Calif.; vice president, James W. Brandt, Danville, Ill.; rechosen secretary-treasurer was John J. Spodnik, LeRoy, Ohio. Plans are already underway for 1968's "Greatest Show on Turf," due to convene in San Francisco, Calif.

(For a detailed report of sod producer activities, held in conjunction with this year's turf meeting, turn to *WTT's Sod Industry Section*, page 26).

VPI Turf Course Described

A new leaflet, describing opportunities in turf ecology and Virginia Polytechnic Institute's four-year Turf Option in the Department of Agronomy, has just been made available by the school. To obtain a copy or more information about the study program, contact Dr. H. L. Dunton, Head, Department of Agronomy, Virginia Polytechnic Institute, Blacksburg, Va. 24061.

Fertilizing Helps Turf Crowd Out Weeds

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improved turf vigor, not all of nitrogen's value going to benefit crabgrass.

Seedbed nitrogen was more help in combating crabgrass in Merion than was maintenance nitrogen. However, only when maintenance levels were low was seedbed nitrogen of value in suppressing crabgrass in Kentucky bluegrass-red fescue turf. It is apparent that grasses and grass mixtures vary so greatly in their response to fertilization that changes in the competitive nature of the grasses affect weed infestations.

Maintenance Nitrogen Combats Dandelions

Relations of seedbed and maintenance nitrogen treatments to dandelion infestation was also studied in this field experiment (see Table 6).

Maintenance nitrogen had a

pronounced effect on numbers of dandelion plants found in Merion bluegrass turf. Plots having high seedbed nitrogen produced fewer dandelions than those with low seedbed nitrogen except where Merion was maintained under high levels. In this case, there was no significant difference, and the value of maintenance nitrogen was so pronounced that it masked any effect of seedbed application. In general, maintenance nitrogen did more to reduce dandelion infestation than did seedbed treatments.

Thus, the perennial weed, dandelion, competes with turfgrasses differently from the annual weed, crabgrass. Getting new turf off to a fast start with plenty of nitrogen helps more to slow down and keep out crabgrass than dandelions. On the other hand, continued fertilization as a regular maintenance practice proves a greater asset in keeping dandelions out than in preventing crabgrass infestations.

Findings and Recommendations Summarized:

Crabgrass seedling vigor is influenced by watering and by competition from bluegrass. In turn, competitive nature of bluegrass varies with moisture availability, temperature changes, and fertilization practices. These weed-turfgrass growth relationships are important to predict the effectiveness of pre-emergence crabgrass killers. A crabgrass seedling that is growing well because of relatively moist soil or lack of competition from bluegrass will more likely escape the effects of a chemical weed killer than a slow-growing seedling.

With preemergence herbicides, fertilize turf well and so water it that a dense grass cover is produced prior to crabgrass germination. Adequate nitrogen in the seedbed of a newly established turf is good insurance against crabgrass. Use of extra nitrogen from ureaform sources has proved of value to get turf off to a faster start. In this way, bluegrass turf can help make a chemical crabgrass control treatment more effective.

Regular fertilization of established turf, particularly during late summer and early fall, will help cut down populations of dandelions and other weeds. Remember, the vigor of weed seedlings has an influence on how readily they are controlled by chemicals. The more vigorous the seedling, the harder it is to kill; the weaker the seedling, the easier it is to kill. Make chemical weed control most effective by keeping turf vigorous and competitive. Where this is done, frequent use of weed control chemicals should not be required.