Recordbreaking International Turf Show Attracts 3,000-Plus to Washington, D. C.

More than 3,000 golf course superintendents, wives, and guests crowded Washington, D.C.'s new Hilton Hotel for the 38th International Turfgrass Conference and Show, February 5 to 10. It was the largest show since the sponsoring organization, Golf Course Superintendents Association of America, was formed 40 years ago to serve as the national voice for golf's turfmen.

Registered delegates found ample time allotted them in the schedule to visit equipment and chemical displays, which packed the Hilton's more than 40,000 sq. ft. of exhibit space. And there was plenty of time to iron out association affairs and attend the numerous social functions. But, the excellent attendance at educational sessions underlined the pressing importance of turf problems and the search for better techniques.

Turf specialists who addressed GCSAA's educational session on "Advancements in Research" line up for WTT's camera. From left to right are Dr. Noel Jackson, University of Rhode Island; Dr. A. A. Hanson, USDA, Beltsville; Dr. M. H. Ferguson, session chairman, from Texas A&M University; Dr. Eliot Roberts, Iowa State University; Dr. Joseph Duich, Pennsylvania State University; and Dr. James Beard, Michigan State University.

Disease Comparisons And Nitrogen Effects

Dr. Noel Jackson, Assistant Professor of Plant Pathology, University of Rhode Island, Kingston, led off technical reports with a comparison of disease problems in the United States and Great Britain. Examining the two countries in perspective, Jackson noted that, as standards of turf management improve, problems—notably turf diseases — increase correspondingly. He generalized that British turf management practices "tend toward the necessary minimum, while in the U.S. they tend toward the maximum." Hence, more disease problems in this country.

Terming nitrogen fertilization "one of the most important factors in maintaining turf quality," Dr. Eliot Roberts, Professor of Agronomy and Horticulture, Iowa State University, Ames, stressed that temperature is a qualifier of nitrogen efficiency. Comparing applications of nitrogen to bluegrass in the cool weather of June and the higher temperatures of August, Roberts pointed out that the turf-stimulating quality of June nitrogen, while leveling off above a certain point, is quite different from the effect of summer applications, which actually decrease grass quality when nitrogen content of foliage becomes about 4%.

Relating nitrogen to other factors, he cautioned against too-heavy fall fertilization, particularly with organic fertilizers. Though N boosts winter root development and spring recovery, an excess is apt to cause spring succulence and unreliable response to varying spring weather conditions. When it comes to severe moisture stress, Roberts indicated that lower N may stimulate root growth, though at the temporary cost of turf quality. Nitrogen should not be considered alone; in all cases, the value of nutrients depends directly on a proper relationship between the different elements, and an imbalance can cause a hard-to-correct situation.

Turning to disease problems, Roberts noted that overwatering and high available nitrogen increase common Kentucky bluegrass susceptibility to Helminthosporium leaf spot, while Merion, which has good resistance to this disease, is better able to resist rust when it receives extra midsummer nitrogen and frequent watering. Iowa tests have also correlated incidence of dollar spot in highly susceptible Washington bentgrass to the amount of nitrogen fertilization; more N equals less disease. However, Roberts said, the source of N is a most important factor in this case, with activated sewage sludge giving best results.

Also on the subject of turf fertilization, Dr. A. A. Hanson, USDA, Beltsville, Md., reported results of greenhouse experiments conducted with Dr. F. V. Juska on the upper limits of turf tolerance to phosphorus. Red fescue, Merion, and common Kentucky all proved to have a high phosphorus tolerance, with no harmful effects noted even at extreme levels. However, there was an indication that high phosphorus may have an effect on some preemergence herbicides, a factor said to need further evaluation under actual conditions.

Soil Modification Report

Dr. Joseph M. Duich, Associate Professor of Agronomy at Pennsylvania State University University Park, reported preliminary results of tests with 81 soil mixtures studied under putting green management.

Water infiltration rate was considered the most reliable index of what was occurring in the plot, Duich said, but he cautioned that desirable rates cannot be standardized but must depend on grasses, climate, irrigation system, and other local factors. In Penn State plots, heavy compaction was applied to various combinations of sand, peat, and soil, with a substantial reduction of infiltration rates. The definite trend toward decreasing infiltration over a four-year test period spotlights the need for long-range research, Duich commented.

Coarse sand (5-Q) proved best in easing compaction, with a rapid increase in effectiveness as sand content was increased from 40% to 80%. However, infiltration in these plots also decreased greatly over the test period. Fine sand increased infiltration the least but showed a less drastic decrease. Concrete sand proved intermediate. With sand-modified plots (as with calcined clay and slags also tested), Duich concluded that "the effectiveness of sand type over a period of years is primarily determined by size and range of particle sizes and the gap between silt and the most predominant sand size."

Growing Grasses in Shade

Estimating that about 20% of the turfgrass area in the U.S. comes under the influence of shade, Dr. James B. Beard, Assistant Professor in Crop Science at Michigan State University, East Lansing, cited several shade factors that alter grass growth and cause management problems.

Shade will be the greatest problem where there is a dense stand of trees, forming a thick canopy able to screen out as much as 95% of radiation. This causes reduced light intensity, altered light quality, moderation of temperature extremes, restricted wind movement, increased relative humidity, increased intensity and duration of dews, decreased carbon dioxide in the air, and tree root competition for water and nutrients.

Trees respond to these conditions with reduced root and shoot growth, and reduced rhizome or stolon growth. In general, root growth decreases more rapidly than topgrowth, lowering the ratio between the two. Turf density is reduced and a more upright growing habit is noticeable. At Michigan State, test plots were established under a dense sugar maple canopy to study the effect of shade on different grasses.

Beard's conclusion: grass responses are primarily to diseases rather than to such factors as moisture, etc. While shade-planted Merion and common Kentucky bluegrasses never recovered from disease attacks, Pennlawn red fescue grew stronger and was the only individual grass to increase in density over a three-year period, though a mixture of 33% each of Pennlawn, common Kentucky, and roughstalk bluegrass showed highest density at the end of the test period. Mixed stands moderated the severity of disease attack on any species.

Beard offered these suggestions for growing grass successfully in shade: use adapted grass species, such as Pennlawn, St. Augustine, and improved Bermudas; raise mowing height; avoid excessive nitrogen; use deep but infrequent irrigation; and avoid excessive traffic. Managing trees will also help: prune limbs up to 8 to 10 ft.; thin limbs in crown area; remove surplus shrubs and brush; pick up fallen leaves immediately; and avoid surface tree feedings under dense shade.

Of Crabgrass and Insects

"Of course crabgrass is here to stay," Dr. Ralph Engel, Professor of Turf Management, Rutgers University, New Brunswick, N. J., told turfmen. But even so, it's not the problem it was 20 years ago. Giving much of the credit to preemergence herbicides, the Rutgers expert advised turf managers not to be frightened from their use by an unsuccessful experience.

Choose the correct chemical. On the basis of his research experience, Engel singled out DCPA, DMPA, and siduron. Apply most preemergents in dry form for best results, and apply at the right time of year. Respect the tolerances of a given grass, and use extreme care to get an even application at the correct rate.

John C. Schread, Entomologist

New officers of the Golf Course Superintendents Association of America. From left to right: Walter Boysen, superintendent, Sequoyah Country Club, Oakland, Calif., president; Director Robert Mitchell of Sunset Country Club, St. Louis, Mo.; James Brandt, vice president, from Danville, Illinois Country Club; Keith Nisbet, director, from Westview Golf Club, Aurora, Ontario, Canada; and Herman Johnson, director, from Quail Creek Golf and Country Club, Oklahoma City, Okla.

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 nowdays 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

(from page 14)

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 preemergence 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.