

On The Research Front

A symposium dealing with the subject of turfgrass diseases was presented to scientists attending the meetings of the American Society of Agronomy in Columbus, Ohio in November 1965. Abstracts of papers are presented here. The full text of the five papers will be published by Virginia Polytechnic Institute. The USGA Green Section Record will announce the availability of these papers when they are published.

Fungicides in Disease Control

CHARLES J. GOULD, Western Washington Experiment Station

The increasing use of turfgrass fungicides is a natural result of increased acreage of turf, a growing appreciation of turf quality, and probably an actual increase in disease incidence. Mercurials dominated the market for many years and one of the oldest of these, a mixture of calomel and corrosive sublimate, is still widely used. Since the introduction of the dithiocarbamates in the 1940's, a flood of new materials has appeared and several have proven useful against certain pathogens.

Single pathogens are most economically controlled by specific fungicides. However, there is an increasing trend

toward broad spectrum mixtures containing two or more fungicides. These are particularly useful to homeowners, as well as golf course superintendents and other turf managers in areas where more than one pathogen may be active at the same time. Additional trends are new methods of application, for instance substituting one heavy drench for several sprays; improved formulations, for example by smaller particle size; and new types of equipment. Results indicate that in controlling turfgrass diseases the formulation and method of application may be almost as important as the type of fungicide used.

Salinity Tolerance of Creeping Bentgrass

VICTOR B. YOUNGER, FRANK NUJDE and O. R. LUNT, University of California

Seven varieties of creeping bentgrass were grown in solution cultures containing five salt concentrations (20, 60, 100, 140 and 180 meq/l) to determine their salinity tolerance. The experimental design was a complete randomized block with four replications. All grass cultures were clipped at weekly intervals. Total dry weight of the last five clippings served as the measure of salinity tolerance. Growth of all varieties decreased with increased salinity.

Arlington and Seaside varieties showed the greatest salt tolerance followed closely by Old Orchard and Pennlu. Penncross was the least salt tolerant of the varieties tested. Individual seedlings of Seaside showed great variation in amount of injury from the highest salt concentration. Results indicate that more highly salt tolerant strains may be obtained by screening seedlings of Seaside and other varieties in this way.

Influence of Nitrogen on Bermudagrass

C. Y. WARD and W. R. THOMPSON, JR., Mississippi Agricultural Experiment Station.

Six nitrogen sources were evaluated at four frequencies of application on Tifgreen bermudagrass (*Cynodon spp.*) sod managed as a golf putting green. Each source was applied so as to supply a total of 16 pounds of nitrogen per 1000 square feet per season. The frequencies of application were: three, four, eight, and 16 times per growing season (March 15 to November 1). Plots were scored for turf quality at frequent intervals by visual observation during 1964 and 1965. Clippings were taken for dry matter production and total nitrogen analysis

during 1965.

Nitrogen sources and intervals of application produced significant differences in turf quality. Ammonium nitrate and urea treated plots produced high quality turf throughout the entire season. Milorganite plots produced higher quality turf than those fertilized with other organic sources. Soluble nitrogen sources produced highest turf quality when applied eight and 16 times per season; whereas, insoluble nitrogen sources produced more uniform growth with less frequent applications.

Poa Annua Control

FELIX V. JUSKA and A. A. HANSON, USDA, Agricultural Research Service, Beltsville, Maryland

The interrelationship of herbicides and levels of phosphorus in controlling *Poa annua* was investigated in the greenhouse. Five herbicides were evaluated at seven phosphorus levels and at two planting dates — immediately following herbicide application and 48 days later. Surviving seedlings were counted and seedlings harvested at 21 and 35 days, respectively.

Trifluralin gave complete control at both planting dates while Zytron was

second among the herbicides tested. At both planting dates high levels of phosphorus reduced the effectiveness of calcium arsenate. At the second planting date the addition of phosphorus gave a slight increase in number of surviving seedlings in the Betasan, Zytron, and Dachthal treatments. Surviving plants in the Zytron and Dachthal treatments were more vigorous at higher levels of phosphorus.

Effect of Different Nitrogen Sources

A. J. POWELL and W. H. MCKEE, JR., Virginia Agricultural Experiment Station.

Experiments were conducted on a golf green and highway slopes to study the effect of fall and winter nitrogen fertilization. Slow release and soluble sources of N were applied periodically in fall and winter to bentgrass. Best color was maintained during the winter with biweekly applications of soluble N and ureaformaldehyde and with a urea-hydrocarbon wax product applied only in October.

The green color was related to availability of N. The high rates of N (10

pounds/1,000 square feet) gave better green color than the low rate (5 pounds/1,000 square feet). Analysis of the plant material indicates reduced hot water soluble carbohydrates with N.

Results with Kentucky 31 fescue on highway slopes showed better stand density and color with slow release forms of N; however, high rates of ureaformaldehyde were required because of slow N release.