

control of crabgrass and other for as little as \$15 an acre.*

On northern cool-season turfs, one yearly application provides effective control. On Southern warm-season turfs, where a heavier and a second application of Balan may be needed, the cost will be higher. Even so, Balan's economy makes it ideal for use on your fairways, roughs, and clubhouse grounds—areas you may have thought were too costly to treat.

All-season control: weatherproof Balan stays put. Many herbicides are very soluble in

water and subject to leaching. Rainfall or irrigation will quickly wash them out of the weed control zone. Not Balan. Balan's low solubility and unique ability to adhere to soil particles means that it stays put. Balan resists leaching, even under excessive rainfall or irrigation, to give you months of control. On warm-season turfs and in Southern areas where the growing season exceeds 4 to 6 months, an additional application may be necessary for continued control.



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I'd like to know more about Balan granular pre-emergence herbicide. Please send me complete technical information.

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Both drop-type and rotary-type spreaders, commonly employed to apply granular herbicides and insecticides, may be used to apply Balan. However, a spreader which provides a consistently uniform distribution of granules is recommended. Use a spreader which avoids any uneven distribution or concentration of the herbicide in narrow bands and spreads the granules evenly over the area.

Balan offers a good safety margin. Balan will not injure these established turf grasses when applied as directed: perennial bluegrasses, perennial ryegrass, fescue, centipedegrass, St. Augustinegrass, Bermudagrass, zoysiagrass, and bahiagrass.

And Balan contains no poisonous arsenic, mercury, or lead. Used properly, it attacks only your undesirable grasses by killing the seeds as they germinate. It does not control established problem grasses.

Dependable, long-lasting Balan—the turf herbicide formulated for professional use. Do you want technical information or assistance? It's yours for the asking. Then watch Balan go all out, all over, all season to give you even better looking turf.

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Answers to turf questions



by Fred V. Grau

All users and prospective users of Pennncross seed—hear this! After the 1968 harvest, the only Pennncross seed that will be available will be Blue Tag Certified. Anyone who buys "Affidavit Seed" or "So-called Pennncross" which does not carry the Blue Tag can expect to end up with inferior turf. He will have only himself to blame.

The last speaker at the 1968 Penn State Turfgrass Conference (Jan. 15-18) was Dr. Joseph Duich, who reported on progress in the Pennncross seed industry. He and Dr. Guy McKee of Penn State in 1967 inspected nearly every field in the Pacific Northwest that was producing Pennncross. Serious talks with the growers resulted in strict guidelines for growers to which they subscribed 100 per cent.

Seed from fields that fail to meet rigid specifications can not be sold under the name "Pennncross."

No field may produce Blue Tag Certified seed longer than three years. Then the field must be plowed and be put to other uses until certification inspectors declare it "free of bent."

Blue Tag Certified Pennncross bentgrass seed will be sold only in newly-designed bags that hold 5, 10 and 20 pounds. Bags will be sealed to prevent tampering and possible adulteration, thus protecting the contents and the consumer.

This writer sounded the alarm in *GOLFDOM* a few years ago when golf course superintendents began to complain that the "Pennncross" seed they had bought at a high price had failed to produce the high-quality putting green turf that they had expected from this Penn State developed grass. Some turf resembled nothing that anyone had ever seen before. Some of it was unspeakable. Dr. Duich logically and convincingly explained several ways in which this mass deterioration could have happened. Let us say only that the several loopholes in the system have been closed! Pennncross seed users confidently can look forward once more to buying nothing but Blue Tag Certified seed, which will produce the superior results that can be expected from this truly great grass.

Q.—We have heard about the Pennsylvania Turfgrass Survey. Is there a

report? How big is turfgrass? How was the survey accomplished?

(Maryland)

A.—The full report carried the number CRS-42. Turfgrass in Pennsylvania is over a half billion dollars, just below Dairy, the largest industry in agriculture. This first full-scale, accurate, authentic, state-wide survey will be summarized to be easily readable. The Summary can be obtained from

The Pennsylvania Turfgrass Council, Inc.

Office of the Executive Secretary
526 Sunset Road
State College, Pa. 16801

Be sure to send a stamped, self-addressed envelope.

The survey was sparked by the Pennsylvania Turfgrass Council, supported by the Secretary of Agriculture, Mr. Lee Bull, and conducted by the Pennsylvania Crop Reporting Service. The project is a notable first in the U.S. With reliable data such as this, there is a better chance that turf will receive the financial support it has deserved for so long.

Q.—What is the recommended rate for seeding Pennncross bent for putting greens?

(Indiana)

A.—From 3/4 to one (1) pound per 1,000 square feet.

Q.—At a recent turf conference we heard about the deterioration of putting green soil mixtures. Even the best mixtures showed decreased infiltration rates within a few years. What seems to be the best way to restore favorable infiltration rates?

(Ohio)

A.—The words are: aeration, cultivation and spiking. One could add dethatching. Small pores in the soil become clogged with "debris"—fine particles and products of biological decomposition. Compaction by men and machines expels air from the pores which then become "water-clogged." Thatch buildup reduces absorption. Preventive maintenance includes cultivation on a continuing basis to restore infiltration and gaseous exchange. Extreme cases may be helped by the combined use of lime and gypsum.

Continued on page 25



GROUND'S GROOMER

Keeps large turf areas in tip-top condition



Renovates, removes thatch, sweeps and flail mows in one operation

The Ryan GROUND'S GROOMER attaches to a tractor equipped with a 3-point hitch and PTO. The operator can adjust blade height or depth, as well as empty the 5-cubic-yard hopper without leaving the tractor seat.

The hopper has a double steel door. At the top of the hopper is a wire screen to prevent stones, etc., from being thrown out.

Its 5-foot-swath reel is equipped with four rows of combination mowing and slicing blades. The reel can also be easily changed to all mowing blades, making it a "flail" mower.

Blade cutting ranges are from 2" into the ground for vertical slicing — to 3" above ground for rough mowing. All blades are "free-swinging" and rotate in reverse. This design creates air turbulence which blows leaves, thatch, clippings, etc., into the hopper.



The GROUND'S GROOMER picks up thatch, clippings and debris in a 5-foot path.



The operator easily empties the 5-cubic-yard hopper from the tractor seat.



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Q.—Supplies of fresh pure water in our area seem to be disappearing. We've heard of experiments on use of effluent water from sewage-treatment plants for crops and, possibly, turf. Shall we look into this source?

(New York)

A.—By all means, investigate this and learn all you can about source, quality and future availability. For some, this may be the only water available for turf. Over a six-year period, Penn State experiments have provided solid data to indicate that this is an excellent potential, even though it is not yet recommended. Sewage effluent is rich in nutrients (N, P, K) needed for turf. Some chemical constituents (Boron) possibly could be harmful. Large storage (settling) basins have value. Keep in touch with developments—tomorrow may be here quicker than we think.

Q.—We plan to build an 18-hole golf course. We have considered hydraulic seeding as a practical and economical method of turf establishment. Do you favor this approach?

(Pennsylvania)

A.—Hydraulic seeding is included in many specifications as an alternate method. These factors are important. The operator must be skilled. Water supply must be adequate and close at hand. The combination (slurry) of seed-mulch-fertilizer must be applied uniformly. After application, it must be kept continually moist. Seeds become imbedded in the wood cellulose pulp. If this becomes dry it tends to lift off the soil. Seeds that have germinated in the moist mulch will be killed. Basic fertilizer and lime (if needed) should be incorporated into the seedbed by conventional methods. Starter fertilizer

Bear changes hands

Victor Comptometer Corporation chairman, A.C. Buehler, and Bear Archery Company president, Fred Bear, have announced the acquisition of Bear Archery by Victor on an exchange of stock basis.

with the seed in the tank is approved.

Q.—Recently we have heard of "winter fertilization" of turf. We were taught that we must cut off our fertilizer program early in the fall to let the grass "harden off" for the winter. We are puzzled—can you help us?

(West Virginia)

A.—Dr. Richard Schmidt, V.P.I., Blacksburg, Va., has conducted ex-

haustive experiments on feeding nitrogen to turf through the winter. Putting green and fairway turf exhibits better color, appearance and playing quality than "check" turf managed under the old regime. There seems to be no increase in diseases or other troubles—only greater acceptance by the public. There is no assurance that the program is recommended universally. Check with your own experiment station and let them consult with Dr. Schmidt. □



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Accent on management

by Ken Emerson *Executive Director, National Club Association*

When a member is elected to his club board or accepts a committee assignment he becomes a representative of the entire membership. His responsibilities are both legal and personal, and, while he can delegate many of them, he cannot avoid his ultimate responsibility of stewardship to his fellow members.

Whether he realizes it or not, when he accepts his appointment he also assumes a considerable workload. He must attend meetings regularly, be present at the social and athletic functions of the club—especially those with which he is directly involved—and spend a great deal of his personal time considering matters of policy and informing himself of club activities.

Most members begin their club service careers at the committee level. As a committeeman, he has his first real contact with the nitty-gritty of club operations. Though his efforts may go unheralded and unrecognized, his decision may well affect the future of his club for years to come.

Equally important, how he's allowed to conduct his club duties—and the guidance he receives while conducting them—will influence his opinion of clubdom for an even longer period. The following is offered to prepare you, the new appointee, for these duties.

PLANNING THE MEETING

Whether you are a member of a special or a standing committee, the problem of planning a meeting will always confront the chairman. Here are a few things to consider if you want a successful meeting.

THE ROOM

Too many committee chairmen seem to think that any kind of a

room is perfectly all right for a meeting. Such items as acoustics, seating, ventilation, lighting, telephones and accessibility usually occur to them after a meeting has been a complete flop due to inattention to these details.

Here are a few simple rules to follow in selecting your meeting room. Follow them and you'll find a good part of your job completed with a strong possibility of having a successful session.

1. Select a room easily reached by those attending. Be sure the time is convenient.
2. Avoid distractions. Interrupt your meeting with distracting street noises or a clear view out of the window into interesting scenes, and you'll have all the competition you can handle in trying to keep the group's thinking on the beam.
3. And please remember ventilation. A hot, smoke-filled room doesn't improve attention or tempers.
4. See that the place is well-lighted and that the lights are on before the meeting.
5. The ideal room is slightly longer than wide, should not be cut up with columns and other obstructions. Its size should be sufficient to comfortably accommodate the group, but not so large as to swallow them in a vast space.
6. If you are meeting around a table, see that the table is there beforehand and a sufficient number of chairs to meet requirements.

SPECIAL COMMITTEES

You can't have a successful meeting without proper individuals on your committee. If you are chair-

man and are requested to select your committee members, your club manager can help you tremendously with this task by pointing out individuals who will fit into your particular committee and have some knowledge of the subject you are to consider.

Put people on your committee who have sufficient experience and a working knowledge of the subject and of the club. Should you fail to do so, the entire burden of directing and leading your group will fall on you—an unnecessary load.

SPECIAL MEETINGS

In planning your meeting, develop an agenda and ask your club manager to issue it to the committee members well in advance of the meeting. Be sure your agenda plainly states the time and place of the meeting. Follow this with a carefully drawn list of subjects to be discussed and the goals you must reach.

The importance of having an agenda can't be overstressed. Attempting to hold a meeting without an agenda is like trying to find your way in a strange city without a map. To call a meeting with an attitude of, "Well, boys, here we are; what are we going to talk about?" will buy you a meeting that will accomplish nothing.

Be sure to have someone present at the meeting who is familiar with the various subjects to be discussed. Better yet, get an expert.

Notify these people well in advance of the role they are to play at the meeting and make certain that each comes prepared to discuss his particular subject.

After the presentations, when your group is somewhat familiar

Continued on page 80

**Forget the winter,
General. Get a good
start this spring
with NITROFORM®**



Like Napoleon, some superintendents had a rough winter. And with the spring, traffic becomes heavy.

A spring feeding with Nitroform restores turfgrass damaged during the winter and strengthens it for the heavy traffic. Spring feeding with Nitroform also gives turf a growing start ahead of weeds, and builds residual nitrogen to help turf through the summer.

Nitroform, Hercules' ureaform turf food, contains a whopping 38% nitrogen, but releases it slowly as the grass requires. Its use saves storage and handling. It is odorless and nonburning and is available as granular Blue Chip® and sprayable Powder Blue*.

Ask your Nitroform supplier about a spring fertilization program, or write: Turf & Horticultural Products, Synthetics Department, Hercules Incorporated, Wilmington, Delaware 19899.



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STH67-3

For more information circle number 152 on card



Turfgrass research review

By Dr. James B. Beard

Response of bentgrass turf to dicamba, mecoprop, and silvex herbicides.

R.E. Engel. 1966 Report on Turfgrass Research at Rutgers University. New Jersey Ag. Exp. Sta. Bull. 816:85-92. 1966 (Department of Soils and Crops, Rutgers, the State University, New Brunswick, New Jersey).

The relative selectivity of three herbicides were compared when used on a bentgrass fairway turf cut at 3/4 inch. The turf was composed of a mixture of seaside creeping bentgrass and colonial bentgrass. The three herbicides, (a) silvex (2-[2, 4, 5-trichlorophenoxy] propionic acid), (b) mecoprop (2-[2-methoxy-4-chlorophenoxy] propionic acid), and (c) dicamba (2-methoxy-3, 6-dichlorobenzoic acid) were applied at rates of 1, 1.5 and 0.5 lbs. per acre.

Three dates of application were compared: Sept. 15, 1964, Oct. 26, 1964, and May 6, 1965. The relative bentgrass selectivity was evaluated in terms of the effect on turfgrass color and growth which was measured by clipping yields.

All three herbicides may cause mild yellowing of bentgrass for a short duration after application. The spring application of dicamba caused more noticeable midsummer discoloration. Silvex caused a reduction in bentgrass growth of over 50 per cent for several weeks following the September and May applications.

In contrast, mecoprop and dicamba gave no significant reductions in bentgrass growth. These results indicate that mecoprop or dicamba would be the preferred herbicides for use where selectiv-

ity to bentgrass is of concern. *Comments*—Turfmen considering the use of dicamba should be cognizant that a number of ornamental shrubs and trees are quite sensitive to this herbicide. Serious injury or even kill of shrubs and trees has been observed during the past year when dicamba has been applied too close to certain ornamental plantings.

1966 Turfgrass survey

D.O. Boster. Pennsylvania Department of Agriculture, Crop Reporting Service, CRS-42. pp. 1-36. (2301 North Cameron Street, Harrisburg, Pennsylvania).

The report encompasses a detailed study and survey of the turfgrass industry in Pennsylvania. It was found that over 157 million dollars is expended each year in maintaining turfs in Pennsylvania. The replacement value of the turfgrass equipment in the state is approximately 334 million dollars. In 1966, the maintenance expenditure for golf course turf totalled \$18,464,752.

The maintenance expenditure was subdivided into five major categories: 56 per cent for labor, 9 per cent for fertilizer, 8.5 per cent for irrigation, 5 per cent for new equipment and 5 per cent for repair and maintenance of equipment. The turfgrass maintenance expenditure averaged \$50,152 per 18-hole course and \$17,252 per nine-hole course. The average equipment investment current inventory for 18-hole courses was \$32,578 and for nine-hole courses it was \$11,381.

The 18-hole golf courses average 4.1 full time turfgrass maintenance

employees per year and 5.3 part time employees. The average acreage for 18-hole golf courses was 107 acres while it was 44 acres for nine-hole courses. This average was composed of 2.4 acres of greens, 1.2 acres of trees, 59 acres of fairways and 35 acres of roughs per 18-hole golf course.

The grass species composition of fairways averaged as follows: (a) bluegrass-red fescue—26 per cent, (b) bluegrass—22 per cent, (c) bluegrass-red fescue-bentgrass—15 per cent, (d) bluegrass-bentgrass—13 per cent, and (e) bentgrass—10 per cent. Note that the bluegrass component included annual bluegrass. The 474 courses averaged 12.6 golf cars per golf course. There was an average of 22,540 rounds of golf played annually per 18-hole course and 13,255 per nine-hole course.

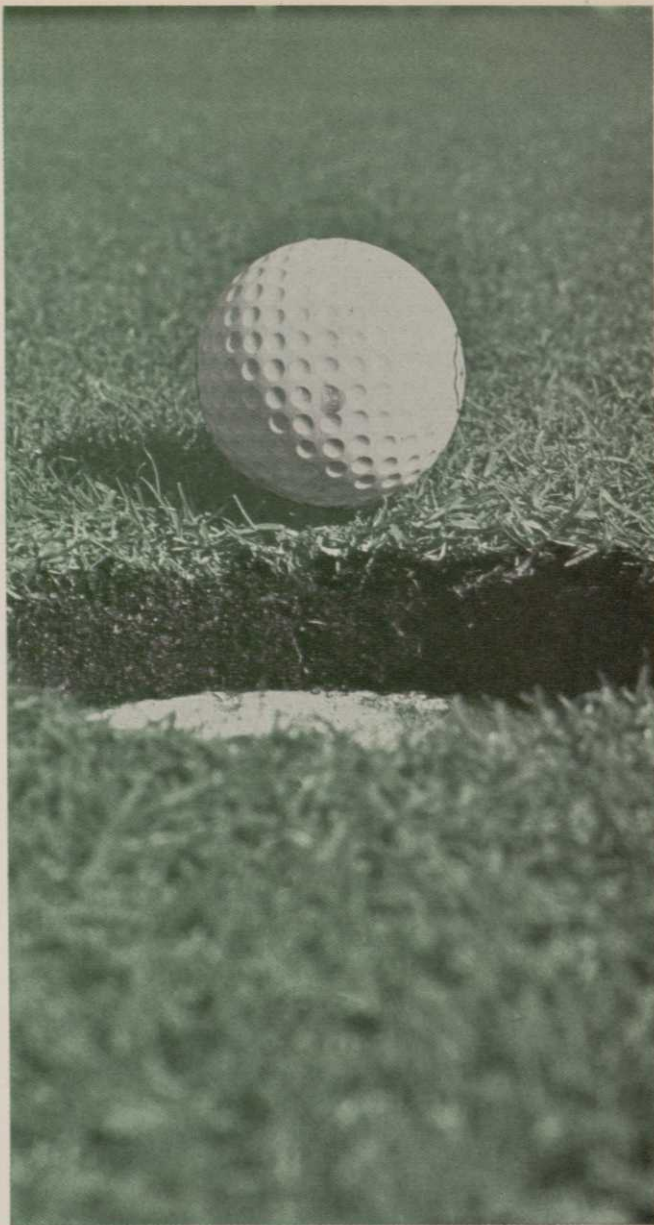
Comments—Keep in mind that these data are just averages. One should use these data with care in order to avoid improper interpretation.

Salinity tolerance of seven varieties of creeping bentgrass, *Agrostis palustris* Huds.

V.B. Youngner, O.R. Lunt, and F. Nudge. *Agronomy Journal* 59(4): 335-336. 1967. (Department of Agronomy, University of California at Riverside, Riverside, California, 92502).

The relative salinity tolerance of seven creeping bentgrass varieties was compared using solution culture techniques. Visible effects of salinity on bentgrasses included a stunting of leaf growth, a dark-green color, and rolling of the leaves. Top growth of all varieties

Continued on page 30



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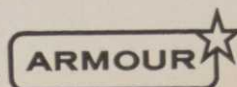


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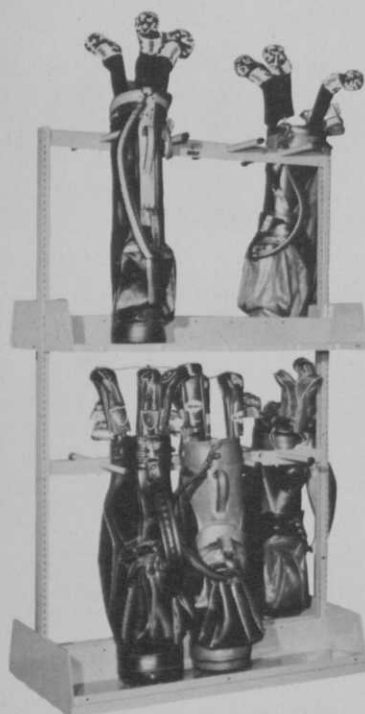
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WILSON scores again with vertical bag racks

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Available in either single or double tier form, their welded frame and sturdy 2' by 4' base provides essential rigidity. Sloping shelves are adjustable for maximum flexibility, and the lower shelf is removable for ease of cleaning.

Tubular rod dividers, with capped ends prevent damage to bags and allow arrangement of either 9" by 12" or 12" by 12" spaces to accommodate 20 bags.

Wood or steel panels are available to enclose ends of ranges for improved appearance, and a variety of colors provides for complete harmony with any decorative scheme.

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Beard *Continued from page 28*

increased with increased salinity.

When salinity tolerance was measured in terms of the relative yield of clippings, Seaside, Arlington, Pennlu and Old Orchard were the most salt tolerant, Congressional and Cohansey were intermediate, and Penncross, the least. Varieties having a high yielding ability under nonsaline conditions also gave the highest yields under high salinity.

When the salinity was increased to a lethal level, Seaside definitely exhibited superior tolerance to high salinity and also had more rapid and complete recovery when placed in a non-saline growth medium. Cohansey proved to be moderately tolerant to extreme salinity and also had good recovery. Congressional had the lowest survival rating at high salt levels and also had the poorest recovery capability.

The other four bentgrasses were intermediate in tolerance to extremes in salinity and ability to recover from the salt stress. Considerable variability in salt tolerance was observed among individual plants of Seaside. This would suggest that a bentgrass variety can be developed which has a salinity tolerance that is substantially greater than Seaside.

Comparison of nitrogen sources for 'Tif-green' bermudagrass under putting green conditions.

G.C. Horn. Florida Turf-Grass Association Bulletin 14(1):1-5. 1967. (Department of Ornamental Horticulture, University of Florida, Gainesville, Florida, 32603).

Twelve nitrogen fertilization programs were compared on Tifgreen bermudagrass maintained under putting green conditions. The treatments included various rates of ammonium nitrate, encapsulated ammonium sulfate, sewerage sludge, ureaformaldehyde, and selected blends of these nitrogen carriers. The soil type of the experimental area was a loamy fine sand. Thus, water soluble nitrogen forms would be subject to considerable leaching.

In comparing all treatments over an entire year, the results showed

Continued on page 74