

germination. To obtain a stand bluegrass seed must predominate in the mixture or else the two grasses must be seeded separately. The bluegrass should be seeded first, and the rye grass after its seedlings appear.

Some of the seeded bents should succeed. High cost of seed is the principal deterrent. On the other hand seed is exceedingly small so very little is needed, possibly  $\frac{3}{4}$  lb. per 1,000 sq. ft. *Poa annua* is another likely grass which would find wider use except for fact that seed is scarce and high priced. It should not be necessary to use more than 7 or 8 lbs. of its seed per 1,000 sq. ft.

### Remove Surplus Bermuda

Before seeding, surplus Bermuda beyond that needed to serve as a base for winter grass, should be removed. A thick surface layer of matted stems and leaves inhibits germination and may cause serious loss later. Occasionally on courses not used in summer, greens are mowed during that off-season with tractor-drawn fairway units. In that event bed knives should be lowered gradually in late summer to eliminate the objectionable mat. This is best achieved by removing back rollers a fortnight before seeding time and setting bed knives right down to the ground. During final seed bed preparation greens should be alternately cross raked and hand cut until stems not needed to protect winter grass are removed.

Topdressing used to cover seed, as well as any needed to level surfaces just before seeding, should be devoid of organic matter and low in plant food. A mixture of poor soil and sand is best for both purposes.

Sometimes newly seeded grass is killed by the first severe frost after seeding. Locally this is called honey-combing. By collecting and trapping surplus water, heavily matted Bermuda and high content of organic matter in topdressing, or both, accentuates loss.

In the far South where "damping-off" is a serious menace, pre-seeding fertilization should emphasize sturdiness and hardiness. That means using phosphate and potash generously before seeding, and withholding nitrogen until after grass is well established. Furthermore, weather is comparatively warm all winter so nitrogenous fertilizer can be used as needed.

Farther north in the cooler regions, the problem is quite different. A good stand

of grass must be obtained early so some nitrogen is indispensable in addition to phosphate and potash. The amount of nitrogen used should be just sufficient to establish the grass and carry it through early winter cold snaps, because benefits from fertilizer used during cold weather are negligible.

Preseeding fertilizer should be applied a week before seeding so it will not inhibit germination. The rate for 20% grade superphosphate should be 10 to 20 lbs. and for 50% grade muriate of potash 4-6 lbs. per 1,000 sq. ft. These alone suffice in the far South, but farther north, where nitrogen is often needed also, the rate for a high grade organic fertilizer should be 15 to 30 lbs. per 1,000 sq. ft., but if soluble fertilizer is substituted not more than 3 to 5 lbs. should be used because of possible damage to sprouting seed. When mixed fertilizer is substituted it should carry approximately the same amount of plant food as the straight materials suggested above.

The annoyance of poor putting in spring, during the transition from winter grass to Bermuda, is responsible for the decision by some to forego winter greens. When left to itself, winter grass goes out gradually, first in isolated spots, and after that in progressively larger areas until all is gone. Transition may extend over several months which makes for bad putting all that time. Winter grass can be eliminated quickly. The secret is to use nitrogen fertilizer and water generously at the first suspicion of warm weather, which is the time for Bermuda to begin activity. Then by withholding water, when leaves of winter grass become soft and tender, (from plentiful nitrogen and water), the temporary grass disappears quickly, almost overnight. Light seeding with scarified Bermuda seed, along with the nitrogen fertilizer, then speeds development of that grass for summer play.

## Iowa Greenkeepers Inspect Des Moines' Courses

IOWA Greenkeepers Assn. had a turnout of 30 greenkeepers for a tour of courses in and around Des Moines, September 18; several Nebraska greenkeepers also made the rounds with the Iowans. Minnesota and Missouri greenkeepers, who had originally planned to attend, were unable to be there because of greenkeeping field days held by their groups on that day. The boys

started the tour at the Wakonda course in Des Moines.

Jack Welch, Wakonda greenkeeper, pointed out how Metropolitan bent on his practice putting green had been practically ruined by excessive wear during the National Intercollegiate event held at Wakonda in August. He had replaced about three-fourths of the green with Washington, which had been in long enough for the greensmen to compare the two bents as to color, texture, etc. White grubs and their injurious effects were seen on the 18th fairway at Wakonda, as well as on the other golf courses visited.

At Waveland, Bert Rost showed the group how Zoysia metrella had grown this past summer without watering, after it was set in the nursery. Of special interest was the fact that it was very green and attractive in appearance on the 18th fairway, while the surrounding bluegrass was burnt badly. Probably one of the main reasons for this is that the Zoysia roots could be found down in the soil for at least 8 inches. A plot of this grass has been started at the garden in Ames, and it will be kept clipped 1 inch in height next summer to see if it can stand lawn conditions.

The greensmen next stopped at the Des Moines G&CC, where Bill Keating put on a demonstration showing the superiority of Metropolitan bent as compared to Virginia bent on his course. Keating also pointed out a stand of Bermuda, in a deep gulley, that is 16 years old—very unusual in Iowa temperatures.

## 200 Attend New Jersey Turf Field Day

**A**PPROXIMATELY 200 attended the annual Turf Field Day at the New Jersey Agricultural Experiment Station, New Brunswick, September 12. Three points of interest were specifically covered during the day. One was the great value of lime when used in conjunction with other soil improving materials; another was the display of new grasses, and third, the essentials of crab grass control.

The principal benefits derived from the proper use of lime include the great increase in the ability of the soil to take in moisture and maintain satisfactory growth in dry periods, the correction of sod-bound condition by stimulating the normal decay of the annual crop of grass

roots, thereby increasing soil humus, and the improvement in ability of grass to utilize nitrogen fertilizer present in the form of ammonia. In many of the strips where lime had been applied in contrast to adjoining areas with no lime, the turf covered was complete and thrifty in comparison with only 50 to 60% coverage. The difference was most striking where no artificial water had been given during the summer to off-set the effects of the severe drought.

Another feature of the day was the display of new species and strains of grasses, particularly those which had been claimed to be capable of producing turf without mowing. Although several species had required little or no mowing during the dry season, they were poorly adapted and suffered severely from the drought. The general conclusion was that standard species and strains were still preferable because of the better quality of turf produced, and mowing was not yet to be discarded.

## GSA Annual Show Rounding Into Shape

**P**LANS are well under way for the fourteenth annual educational conference and equipment show of the Greenkeeping Supts. Assn., to be held in New York City, February 6-9, according to GSA officials. All exhibits, lectures and entertainment will be held at the Hotel New Yorker, official convention headquarters.

The exhibition show will open Tuesday, February 6, and will close Thursday, thus giving the exhibitors three full days to make their contacts. The floor plans showing sizes and costs of booths are now available and may be obtained along with any additional information, by writing Don R. Boyd, Portage CC, Akron, Ohio. Boyd reports convention committees have been working on details for the pleasure and enlightenment of the greensmen in attendance, since last May, and the prediction is that the educational and entertainment programs will top those at any previous national greenkeeper convention.

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