

# EASY ON HIGH-POWER NITROGEN

By O.J. Noer

**GOLF CLUBS** in the South are confronted with turf maintenance problems which are peculiar to that section. These are accentuated in Florida, where the preponderance of light sandy soils account for plant food deficiencies not encountered in other sections. Heavy annual precipitation and porous sandy soil results in rapid loss of plant food by leaching. Favorable air temperatures and abundant rainfall produce luxuriant vegetation, but this advantage is partially offset by the greater variety and abundance of insect pests.

Nowhere are insects a more serious threat than in Florida. The greener grass on golf courses attract these pests from adjoining waste lands with almost devastating results. Their control is a problem deserving of special attention to simplify and safeguard turf maintenance, but that concerns the entomologist, and is beyond the scope of the present discussion.

It is universal practice to use Bermuda as the basal grass on southern greens. This constitutes the putting surface for summer usage, but it is accepted practice to seed rye or other suitable grass for winter play. Bermuda is also the principal fairway grass, although carpet grass is favored by many particularly on the moister low-lying areas. It is said that where conditions are favorable for its growth, carpet grass will crowd out many objectionable weeds.

## BERMUDA DORMANT IN WINTER

In Southern Florida, Bermuda continues growth throughout the winter, but from central Florida north it turns brown in the late fall, and remains dormant throughout the winter season. Due to this climatic difference, courses in south Florida can maintain green fairways throughout the important winter season, and several courses south of Palm Beach have continued with Bermuda greens without resorting to supplementary seedings of winter grass. Whether the prejudices against Bermuda can be overcome only time will tell.

The customary fall seeding does not interfere with play on courses open during the winter only, but where play continues throughout the year, surfaces are poor for a period in the fall until the new grass becomes established, and for an even longer period

in the spring, extending from the time winter grass starts to disappear until the Bermuda reestablishes itself.

Golfers accustomed to the bent greens of the North object to Bermuda greens because it develops stubbly hard surface stems and coarse broad leaves. This is not so noticeable on new turf developed from seed, but even this turf gradually becomes coarse.

To overcome these objections, there has been considerable agitation lately in favor of bent to provide grass for all year play. Its successful use in southern California and western Kansas are cited as proof that it will survive far south of the present limits. Unquestionably, bent will grow in the southeastern states during the winter, but it is not apt to withstand severe summer weather.

Southern California has a hot dry climate, and this is also true of western Kansas during the summer. Consequently, grass is free from dew during the most difficult summer season, and the supply of water can be controlled absolutely by artificial means. In the southwestern states, bent is apt to go out quickly during humid hot weather following heavy rains. Even partial success must depend upon exceptional surface drainage to remove surplus water rapidly, and a soil sufficiently porous to accelerate downward movement of any superfluous water absorbed by the soil.

## DOUBTS BENT'S SUCCESS IN SOUTH

Careful watering, correct feeding, and constant control of fungous diseases and insect pests obviously are also very essential. Even the best of care may fail during an unusually wet, hot summer. The abominable surfaces following even partial loss of bent turf and probable high cost of maintenance will deter general use of bent in the South. Bermuda has no equal as a hot weather grass, and for the present will continue as the most suitable grass for summer play. Search for finer-leaved strains and better methods of maintenance offers more promise for better summer putting surfaces than general adoption of bent. Two sets of greens, one for summer and the other for winter play is one solution for inconveniences incident to fall seeding and Bermuda revival in the spring.

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## WHEN TO SEED WINTER GRASS

Winter grass is seeded when temperatures are moderate during October in the Carolinas, and late in November in Florida. Prior to seeding, the greens are raked thoroughly and cut close. This removes many superfluous runners, and serves to prepare a seed bed for the young seedlings. Fertilizer is then applied, seed is sowed and covered with a moderate topdressing. The soil is kept moist by frequent watering to promote germination and obtain a stand of grass quickly. Once a good stand of well-rooted grass is obtained, few difficulties confront subsequent maintenance.

The most serious trouble occurs during the first few weeks following seeding. New leaf growth is often soft and tender, but with age, leaf structures tend to become more sturdy. If hot humid weather follows seeding and leaf structures are especially succulent, the young grass succumbs. In extreme cases reseeded becomes necessary. The affliction resembles the "damping off" which occurs in the greenhouse in the winter when grasses are grown for experimental purposes. Greenhouse temperatures of 80° Fahrenheit or more, and heavy watering usually induce a "damping off" of new seedlings. It can be prevented by maintaining temperatures approximating 60° F., watering carefully, and avoiding excessive initial nitrogen feeding.

Obviously, outdoor temperatures cannot be controlled, so the only hope of minimizing trouble lies in cultural methods which tend to produce a sturdier initial growth. Practices which promote early root development and production of sturdier leaves will surely lessen the severity of injury, and make control possible.

Failure to recognize and apply these fundamental underlying principles are in a measure responsible for the troubles immediately following seeding.

Methods followed during the summer are not suitable for winter grass. Bermuda must be kept vegetative to offset its tendency to mature, and thus produce stiff leaves and stubby stems. This necessitates generous watering and heavier nitrogen feeding with only sufficient phosphoric acid and potash to satisfy growth requirements.

## GO EASY ON NITROGEN

In many instances the fertilizers used before seeding have aggravated troubles. The tendency has been to use nitrogen, which is the growth producing element, too generously. Rapid growth, no matter how produced, is always associated with more tender leaf structures; so nitrogen by forcing initial growth unduly may accentuate the young seedlings' natural tendency to produce weak leaves. On new seedlings phosphoric acid excites a marked stimulating effect on initial root development, and potash tends to produce somewhat sturdier leaves. Hence, it would seem logical to withhold nitrogen prior to seeding, and confine fertilization to applications of phosphor-

ic acid, and possibly potash on the sandier soils. After a good root system is obtained, nitrogen feeding can begin, and its use continued throughout the playing season as turf condition warrants.

Generous use of nitrogen on Bermuda in early fall should be avoided, for residual nitrogen in the soil may force the new seedlings. This danger can be overcome by having the Bermuda just a little nitrogen hungry at the time of seeding.

Water plays a very important role in its effect upon amount and character of growth. In the presence of a limited moisture supply, growth is restricted and tissues become harder. Where water is plentiful, rapid growth occurs and plant tissues are softer. These effects are often overlooked, and the possibilities of influencing the amount and character of growth by partial control of the water supply is seldom considered.

Proportionately more water is used on Bermuda greens than is customary on bent greens in the North. This is undoubtedly, sound practice, provided excesses which saturate the soil are avoided, because it encourages more active vegetative growth. On winter grass a minimum of water, just sufficient to satisfy growth requirements, will tend to produce stronger turf.

## THIS PROGRAM SUCCEEDED IN 1930

For those who desire a concrete example, the program followed by several greenkeepers in Florida last fall may be of interest. Whether it deserves general adoption and will prove equally successful during a severe season remains to be seen.

Fertilizer applications consisted of 2 to 4 lbs. of 45 per cent super-phosphate (4 to 10 lbs. of 16 or 20 per cent phosphate) and 2 to 3 lbs. of 50 per cent muriate of potash per 1,000 sq. ft. of surface. Applications were made 7 to 10 days prior to seeding to avoid all danger of retarding germination, or injury to the young seedling. No nitrogen was used, and fall feeding of Bermuda was previously curtailed.

After seeding, the greens were topdressed with a soil devoid of plant food. It consisted of a mixture of marl and sand in proportions such as to make a good sandy loam. Humus, muck, peat, and rich compost were purposely omitted from this one topdressing mixture. Watering was watched closely. Just enough to permit growth was supplied, and excesses avoided. An excellent stand of grass was obtained, and nitrogen feeding was not started until a good root system had developed. Nitrogen feeding was continued during the playing season, frequency and rate of application depended upon turf condition, using color, amount of growth, and sturdiness as a guide.

EDITOR'S NOTE: This article was taken from the October 1931 issue of Golfdom Magazine. It could just as easily apply to the bentgrass controversy in Florida today. ■