

of deep personal involvement in almost every facet of turfgrass, all I can say is, "We've come a long, long way!" The finest development of all is the host of friends I've made around the globe—all of whom are dedicated to developing better turf.

Q—The soil-less mixture for our new greens is 80 per cent sand, 20 per cent peat. The pH value is 7.6. In preparing to seed the greens to Penncross

shouldn't we omit limestone altogether? We don't want to see the pH get too high. (Wisconsin)

A—I would reserve judgement on the decision to use (or not to use) limestone in the seedbed until "soil" tests are completed for Ca and Mg levels. The buffering capacity (ability to resist change due to added materials) of sand-peat mixtures tends to be low. We need Ca and Mg for good nutrition. With low buffering capacity rather large changes in soil pH can be produced with rather small additions of materials; pH values do not tell the whole story as

related to the need for limestone. Do you know if the sand you used carries calcium?

Q—Our club has an application blank from the Pennsylvania Turfgrass Council wherein golf clubs are invited to join as Sustaining Members at \$100 a year. Would you consider this to be a good investment? What might we expect in return for our membership? Isn't this something new? (Pennsylvania)

A—Yes this is something new, and I consider it a good investment. In return for \$100 a year, each Sustaining Member club will have the privilege of: 1) receiving periodic news releases in the Keynote, the official publication of the P.T.C.; 2) supporting scholarships at Penn State wherein top-notch students are rewarded for their scholastic proficiency in their efforts to become turfgrass managers; 3) compensating in part for years of free advice and service from the staff at Penn State; 4) insuring the continuance of high-quality programs of research, teaching and extension and the training of replacement golf course superintendents and 5) making possible another authentic Turfgrass Survey to assess the true scope and value of the turfgrass industry.

These are a few of the important elements that can be accomplished with money from a one-year Sustaining Membership in P.T.C. Already 15 commercial firms have indicated their support of the goals by joining the council. Several hundred golf course superintendents have dug into their pockets for individual memberships to support its progress.

Q—How can I increase the cold tolerance of my bermudagrass turf? I have mostly Tifgreen on the greens and tees and Tifway on the fairways. (Alabama)

A—Without getting into specific recommendations on quantities, there have been some excellent studies on N-P-K ratios with respect to cold tolerance and killing of grass. A 4-1-5 ratio resulted in increased winter hardiness in Texas. High levels of P reduced cold hardiness as did high levels of N. Potash seems to hold the key to improving cold tolerance; N and K in equal quantities, with low P, seems to be a sound policy.

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