

Mr. Ted Woehrle, Editor
8700 S. Western Ave.,
Chicago 20, Illinois

Dear Sir:

Recent editorials and discussions of turf problems have concerned with water amounts for irrigation and soil drainage. Fundamentally, it is the quality of the water used, that influences these factors. With ninety percent of a grass plant being water, the ability for ready absorption of soil moisture is a prime requisite to plant survival and growth rate. The kind and amounts of dissolved minerals, termed soluble salts, contained in the irrigation water can restrict grass moisture absorption and cause cemented hard-pans that limit water infiltration of soils.

With twenty years experience in analysis of well waters used for commercial greenhouse irrigations, our laboratory has found the amounts of soluble salts to be presently double what they were ten years ago. All waters vary in amounts of dissolved mineral salts according to the very location of the well. One thing is common to all waters of this region, all contain amounts of carbon dioxide, which effects the dissolved minerals adversely, by combining to form carbonates of the water contained minerals. Carbonates are insoluble and so accumulate as residues in the soil. Each watering adds to the amount and it is this degree of increase that should be concerned for suitability and management of the irrigation water. The statement is made, even with the best of irrigation waters, by the time of the twelfth watering a soluble salts problem exists.

Grasses vary in tolerance to soluble salts amounts. Retarding of growth rate is evident with other symptoms at amounts of 350 parts per million of soil extract solution, of all dissolved minerals contained. Research has determined the upper tolerance levels for certain grasses based on sodium carbonate. Soil analysis for sodium absorption ratio figure determines the plant loss figure. These are: Kentucky Blue Grass and Poa Annua "2" — Red Top, Fescue (Chewings), Highland and Astoria Bent "4" — Alta Fescue "6" — Seaside Bent "10". When grasses fail in this order as the watering season progresses, it can be assumed that soluble salts have accumulated beyond the tolerance of that particular grass type.

Only by amendment of the irrigation water can the carbonate "hardness" elements be made mobile in the soil profile and so drain away. Not by salt softeners which would be harmful or surface applications of such as sulphur or gypsum which could complicate the problem of soluble salt residue.

Any interested golf course superintendent can learn of the variation in amounts of soluble salts contained in well waters of municipalities of this state at no charge. Write for "Circular 90, Mineral Content of Public Ground Water Supplies in Illinois", by T. E. Larson. Address to Department of Registration and Education, Illinois State Water Survey, Urbana, Illinois. Although all water qualities differ according to actual well location this is a most informative book.

As water for irrigation is a subject of many factors, the writer welcomes any questions on the subject and can offer program for water improvement.

Sincerely yours,
(Signed) Art Smith

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