

The A B C of Turf Culture

Lime in Sand, Soil or Water Often Overcomes Acidic Properties of Sulphate of Ammonia

By O. J. NOER

CLOVERS are lime-loving plants and do not grow well on acid soils. This fact makes it possible to rid greens of clover, because the bent grasses appear to thrive on soils sufficiently acid to discourage clover. Acid producing fertilizers, such as sulphate of ammonia, are commonly used on greens to create conditions unfavorable to clovers and weeds. Yet in many instances this treatment has not been effective.

Soils Become Acid Slowly

Soil acidity develops slowly. Soils have a remarkable power of resisting change and hence acidity is slow in asserting itself. Loam and clay soils possess this power of resistance to a marked degree and develop acidity more slowly than sandy soils. One application of sulphate of ammonia is not sufficient to create the conditions desired, and it is only when repeated applications are made that a neutral or alkaline soil develops the desired acidity.

Lime Often Added to Greens in Sand, Soil or Water

In many instances, particularly in limestone regions, the sand and soil used in top-dressing mixtures contain sufficient lime carbonate to entirely overcome the acid producing power of the small amount of sulphate of ammonia used. The local water supply in such regions may contain sufficient lime to produce the same result. Since it is not possible to increase the rate of application of sulphate of ammonia without danger of injuring the turf, care must be used in selecting sand and soil for top-dressing use if acid soils are desired.

Last fall, casual inspection of a sand used in top-dressing mixtures, showed the presence of lime rock particles. This sand came from a pit which supplies large quantities of sand to the Chicago district. Upon analysis it was found to contain 20 per cent lime carbonate. Each time a green received 500 pounds of this sand in the top-dressing mixture it was equivalent to applying 100 pounds of crushed agricultural limestone. The green chairman and greenkeeper on this particular course would commit murder rather than scatter a 100 pound bag of crushed limestone on the green. Yet the greens had received repeated applications of lime un-



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Editor's Note: For the past four years Mr. Noer has investigated the value of various fertilizers in relation to golf turf at the Soils Department, University of Wisconsin, under a fellowship established by the City of Milwaukee.

known to either of them. The same condition obtains on many courses in the Chicago district and undoubtedly in other districts also. Soils in limestone sections often contain 2-5 per cent lime carbonate and here again the greens receive a generous dose of lime whenever such soil is used in the top-dressing. If 2000 to 3000 pounds of this soil is applied to a green it receives about 100 pounds of lime carbonate which is capable of counteracting soil acids. At least 65 pounds of sulphate of ammonia must be applied for each 100 pounds of lime carbonate simply to overcome the alkaline properties of the lime. Additional sulphate must be applied to create acidity. Such heavy applications are never made, and as a result greens do not become acid even though sulphate of ammonia is used repeatedly. If acidity is desired any sand or soil used in top-dressing mixtures must be tested for lime carbonate.

In limestone regions it is often difficult to find local supplies of sand free from objectionable lime. If acid soils are desired it may be necessary to obtain sand from other areas. Acid soils, however, are often encountered even in limestone areas.

Rough Test for Lime in Sand and Soil

The presence of lime carbonate in sand or soil can be easily detected. Whenever an acid is poured onto lime carbonate a gas called carbon dioxide is liberated. The liquid froths and the gas escapes into the air. To test a sample of sand or soil procure some muriatic acid from a nearby drug store and pour it on the suspected material. If lime carbonate is present carbon dioxide gas will be liberated and escape. The amount of gas liberated serves as a rough measure of the amount of lime carbonate present. Often a few tiny bubbles emerge at the surface even though the sand or soil does not contain lime carbonate. This is escaping air which was trapped by the liquid. In case of doubt hold the dish to the ear. If a hissing sound is audible the material undoubtedly contains some lime carbonate.

Accurate determinations of the amount of lime carbonate present can be obtained by submitting samples to

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a chemist, or the State Agricultural college. Most state colleges test samples without charge. The samples should be carefully labelled and forwarded in good containers, together with a precise statement of what is wanted.

Very little can be done with water supplies containing lime, so far as removal of the objectionable lime carbonate is concerned. No more water should be used than is absolutely required by the turf. Larger amounts simply increases the quantity of lime carbonate in the soil, and makes the development of acidity more difficult.

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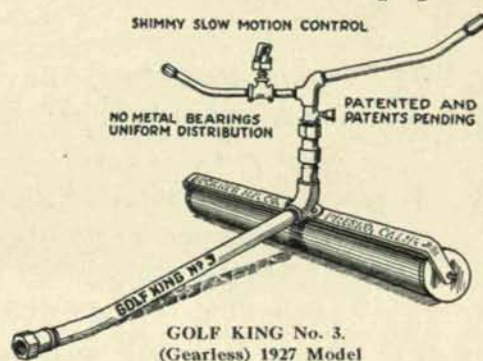
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