

Physical and Chemical Factors in Proper Topdressing

By J. F. FONDER

TOPDRESSING AT proper intervals is one of the most important cultural practices involved in the production of beautiful bent grass turf. On putting greens topdressing is necessary for two reasons: to maintain a perfectly true surface and to cover the stolons which otherwise would cause the turf to become too deep and spongy to be satisfactory. Much of the excellence of creeping bent greens depends upon the proper use of correct topdressing material.

Every greenkeeper knows what constitutes good topdressing material. The formula is always approximately the same: 3 parts loam soil, one part organic material, one part sharp sand—these ingredients being composted together or at least thoroughly mixed before being spread. But it is easy to tell what a good topdressing material should consist of and quite another to mix it to conform to the formula. One has only to examine the different topdressing materials used upon a number of courses to realize the truth of this.

The reason for so many putting greens being improperly topdressed is that those responsible for their care do not distinguish correctly between satisfactory and unsatisfactory ingredients for the topdressing material. Especially is this true of the soil fraction, which, it is admitted, should be a loam, but which may vary from a mass of raw peat to a mass of silt or clay. What appears to be necessary is a better knowledge of what constitutes a loam soil.

Loam Is Texture Index

The term "loam" refers to the texture of a soil, or the size of the particles entering into its composition, and has no bearing whatever upon the fertility of the soil. Most fertile soils consist of varying proportions of different sized soil particles, ranging from particles too small to be distinguished individually to those one-eighth inch in diameter. The different groups according to size which are recog-

nized by the Bureau of Chemistry and soils, U. S. dept. of agriculture, are: fine gravel, coarse sand, medium sand, fine sand, very fine sand, silt, and clay.

Each of these groups possesses definite physical properties which are reflected in any soil of which they may be a part. As a result, soils are classified according to the physical properties resulting from the presence of the different soil particles. Thus, there are clay soils, silty clay soils, clay loams, loams, sandy clay loams, sandy loams, sandy soils, and variations of these. A clay soil is one in which properties of the clay group entirely hide those of all the other groups; a clay loam is a soil in which properties of the clay group are still predominant but those of other groups are also apparent; loam soils exhibit properties of all groups in such a manner that those of no particular group are more evident; sandy loams are loams in which there is sufficient sand to make the properties of the sand group slightly more evident than those of the other groups.

Identify Soil by "Feel"

It is possible to determine to what class a soil belongs by examining it carefully by "feel." To do this rub a small quantity between the thumb and the index finger. It is well to examine the soil in a damp condition and again when fairly wet. A sandy soil so examined will produce a very gritty feeling as it is rubbed and there will be practically no evidence of any finer particles. A handful pressed tightly into a ball will not hold its shape but will crumble immediately when not supported. A clay soil when damp feels sticky and appears to resist rubbing between the thumb and finger. When wet it is very slick and there is a total absence of grittiness. If such a soil is pressed into a ball it retains its shape and can not readily be broken apart. A loam soil exhibits a moderately gritty feeling and yet there is apparent a noticeable stickiness and resistance to rubbing. When pressed

into a ball a loam soil retains its shape and yet crumbles readily when unequal pressure is brought to bear upon it.

A loam soil naturally possesses a physical condition favorable to growth of grass. At times this may have been altered by some force or combination of forces but it can very easily be re-established through proper cultural methods. As has been said, the term "loam" does not refer in any way to the fertility of the soil but as far as its value for topdressing is concerned this is of much less importance than its physical properties.

Organic Need

It is seldom that a loam by itself is exactly what is wanted in a topdressing material. Usually it does not contain sufficient organic material to give the most desirable moisture conditions. To overcome this, a quantity of desirable organic material should be mixed with it. A well-rotted manure which has composted for a number of years, some of the commercial peats, or certain local peats may be used satisfactorily. Any organic material should be sufficiently fibrous to prevent the loam from packing down to such an extent that a too hard playing surface is produced and yet should be finely divided to encourage desirable moisture conditions in the surface of the green. Any peat or other organic matter used should possess a neutral or acid reaction, or the combination of the organic material and the soil should possess such a reaction. As much care should be used in selecting the organic material as in selecting the loam soil.

Chemical Balance

Unless there is considerable coarse and sharp sand in the loam soil selected for use in the topdressing material, some should be provided. This ordinarily can

be done best by adding a proportion of torpedo sand, preferably that suitable for concrete construction. Many sands in the Middle West contain varying quantities of lime and this should be allowed for in the mixing. To overcome an alkaline reaction in a sand, the soil and the organic material should be more acid and the quantity of sand used should be reduced as low as is consistent with providing the proper physical conditions in the final top dressing material.

One further precaution should be advanced. There is available in every metropolitan area a quantity of black material sold under the name of black loam. Some of this is a true loam soil possessing sufficient organic material to give it a deep black color. But much of it is essentially a black muck soil possessing none of the desirable qualities of a loam. Such muck is almost entirely of organic origin and is not a mixture of the different sized soil groups described for a loam. Being largely organic material in fine state of decay it will retain a large amount of water but will retain it so tenaciously that the plants may not be able to get enough in times of drought. Upon becoming dry the muck may assume either a flinty or a powdery condition which repels water and is very difficult to moisten again. Such materials as this should be guarded against in the selection of a loam soil for topdressing purposes.

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