

The Superiority of Humus Over Mushroom Soil

HUMUS is the most important of all the physical constituents of the soil, the others being broadly speaking rock powder, sand and clay. Humus is the black granular substance resulting from the decay of leaves, twigs, roots, grass and other vegetable remains. Without humus plants cannot survive and the productiveness of the soil is in direct proportion to the amount of humus present. The functions of humus are briefly as follows:

First, the gelatinous nature of humus has a marked influence on the tilth of the soil. It promotes the development of a crumbly, granular condition and lessens the tendency to puddle and bake. A soil rich in humus responds more readily to tillage than does a soil deficient in humus.

Secondly, soil ventilation is improved by humus. This is partially due to the open, granular tilth produced. The larger pore space permits better circulation of air. Good circulation favors deeper rooting and the deeper activity of the microorganisms in the soil.

Thirdly, the capacity of the soil to hold water is increased by humus. This increased capacity is due to the improved granulation of the soil and also to the large amount of water that humus will absorb. Calculated on the basis of dry material, this may exceed 500 percent as compared with 15 to 40 percent of water retained by the mineral soil particles of different sizes.

Fourthly, the average temperature of the soil is increased owing to the dark color imparted by the humus, for the dark color increases the absorption of the rays of the sun. When there are dark streaks of soil through the field, provided they are well drained, the seed germinates and begins growth much more quickly than on the light-colored soil. On a bright day the difference in temperature may readily be detected merely by the sense of touch.

Soils well supplied with humus:—

(1) Are more easily tilled. As the humus is burned out under cultivation many soils tend to compact. This is seen on clay soils that have been plowed

while wet. The purpose of humus helps to bring about a granular condition of the soil and to prevent the formation of clods.

(2) Have a better and more uniform water supply. A granular condition of the soil enables it to hold a larger amount of water and in a form available to plants, thereby giving the plants a larger reservoir of water, and enabling them to withstand longer periods of drought. Under these conditions artificial drainage is not so necessary.

(3) Have more plant food and in a more readily available condition than soils not so supplied. The humus contains all the nitrogen of the soil. There is no nitrogen in the rock particles of the soil. The nitrogen becomes available as food for growing plants as the humus decays. In the decay of humus there are acids formed which help to dissolve the rock particles and make their plant food available.

WHAT IS MUSHROOM SOIL?

Mushroom soil is inferior to humus for turf building purposes, due to the fact that the constituents that go to make up mushroom soil are nothing other than a mixture of clay, marl and horse manure. One might term it a dead compost lacking vitality and bacterial activity. The once high organic content has been eliminated to a large degree by fermentation and the heavy feeding mushrooms. Therefore, it is useless for any purposes other than a mulch or as a component part in the making of a compost for the topdressing of putting greens and other grass areas. It is exceedingly valuable where available at low cost as a mulch filler to aid in the conservation of moisture and due to its low cost in some districts it can be used in preference to local topsoil.

The heating process that mushroom soil usually goes through, in a great measure sterilizes the soil, consequently many of the live weed seeds that ordinary horse manure usually contains are killed, but at the same time the valuable bacterial material supplied by

horse manure is lost. Therefore mushroom soil is only fit to use in connection with humus for substructure or the topdressing of putting greens. For this reason humus will supply the necessary fibre, also the organic matter and the live nitrifying bacteria which is lacking in mushroom soil. These elements are absolutely essential to the soil to make it physically able to retain and sustain the necessary moisture and plant food required by the grasses that go in the making of first-class putting greens and fairways.

Mushroom soil used for the topdressing of greens has in many cases caused considerable trouble to old turf and more so to young grass plants on new greens. A considerable part of the horse manure that goes to make up mushroom soil is not clean, straw-

bedded manure, but has much manure mixed with it that has been taken from stables that bedded on saw dust, pine chips and shavings, resulting in a toxic or fungus condition, since this rosinous material is positively poisonous to the soil and affects the development of the turf. Often greens treated with mushroom soil are attacked with the "Brown Patch" disease or a mildew fungus.

When such conditions exist there is nothing else to do but to remedy these conditions, which means a copper sulphate and lime treatment, expensive to say the least, and time lost.

Mushroom soil mixed with humus and local topsoil can be used with good results on the fairways, but the danger of a toxic element is always to be feared.

Keep the "Rough" Cut Down

HELP REDUCE THE NUMBER OF LOST BALLS AND RELIEVE CONGESTION IN PLAY

THERE is nothing so aggravating in golf as looking for a lost ball in the "rough," especially when your shot has not been a very bad one. Often the penalty in playing out of heavy grass is too great as it is almost impossible sometimes for the average player to recover in one stroke. Of course rough grass must serve as a hazard for a hundred yards more or less in front of the tees as well as off the fairways, but one should carefully consider what it is composed of.

Usually these areas are left in their natural condition and if the ground is already in turf the grasses contained represent the natural growth of the fast growing tall varieties, which require frequent mowing and usually form a difficult and unsatisfactory turf for the "rough."

It is much better to plough under or lift the natural turf along the edges of a course and in front of the tees and sow Sheeps Fescue seed as this will form a slow growing tough bunch grass much more suitable for the purpose. During the summer season this turf requires

very little cutting and its thin bunchy growth makes it easier to find one's ball and at the same time it offers sufficient difficulty as a hazard.

If the old turf is plowed under, sooner or later the natural grasses will assert themselves and clover generally appears, but if the old turf is lifted, or better still, the top soil scraped off a few inches to impoverish the soil, the Fescue will grow more bunchy and there is less chance of any of the objectionable grasses appearing later on.

Only three or four bushels of the Fescue are necessary to sow per acre, and the seed is not usually so expensive as the other varieties.

Another point in favor of a dwarf bunch grass for the "rough" is that if the coarse and objectionable grasses and weeds are allowed to mature the seeds are blown over the fairways and greens and later on are an expense to eliminate.

Keep the "rough" cut down if the existing turf is too thick and give it a dose of rock salt or rip it up and sow Sheeps Fescue.