IT TAKES THE RIGHT KIND OF

By O. J.

WHEN appraising soil, the average man thinks about color. He prizes black soil, and most commercial sellers always advertise "black soil". That doesn't mean a thing. This term includes anything from a peat to a heavy, black, sticky clay. In other words, the textural range—which means physical condition, is from one extreme to the other, so color is a secondary factor in the choice of soil. However, when given a choice of two—one light and one dark, and both otherwise the same, choose the darker colored one because it has more organic matter.

Loams Are Best

From the physical standpoint, a soil ranging from a sandy loam to a silt loam is most desirable for grass. It has enough pore space to insure good drainage, yet contains enough fine material to improve water-holding capacity. Some organic matter or humus is important too. But if physical condition is satisfactory, organic matter content becomes less important provided surface soil contains some and is not excavated subsoil. However, if the soil is heavy, organic matter is needed to help break up the clay clods and make the soil more friable. Selection of soil for turf from the physical standpoint is far more important than from its chemical or plant food content. Needed fertilizer can be added quickly even after the area is in turf, but after grass becomes established, it is hard to modify physical condition of that soil. The farmer can do so because he mechanically works the soil by plowing and cultivating, but with a golf course that is impossible once seed is in.

Good surface drainage as well as efficient sub-soil drainage is important.

Soil reaction affects growth of all plants. By "reaction" is meant whether the soil is acid, neutral, or alkaline. The figure "7" means neutral soil; below 7 increased acidity and those above 7 increased alkalinity. It is a geometric progression; which means pH 6 is 10 times; pH 5 is 100 times; pH 4 is 1,000 times, etc., more acid than neutral soil (pH 7). So when soil is below pH 5.5 it is pretty strongly acid. Most plants grow best between pH 6 to pH 8. Bluegrass does best somewhere around pH 6 or above. So there is no need to worry much about using lime when soil reaction is pH 6 or above. Fescue and bent will tolerate more acidity than Kentucky bluegrass. The critical point for them is somewhere around pH 5.0 to 5.5.

Pre-Seeding Feeding

It is necessary to distinguish between pre-seeding fertilization on new seedings, and the feeding of established turf. On established turf, nitrogen is the first necessity. It is responsible for the green color and for the vegetative growth and, therefore, also helpful in increasing turf density, and that means curbing weeds. Phosphorus (phosphoric acid) is second in importance, and potash least, because it is seldom needed on loam or heavier soils. Hence a good turf fertilizer is comparatively high in nitrogen, contains about one-half as much phosphorus, and has little or no potash. As the clippings begin to decay, the phosphorus and potash contained in them are restored to the soil. These elements do not leach out, losses being confined to nitrogen and calcium in the main.

Seedlings Need Phosphorus

On new seedings the picture is different. Almost as soon as the young rootlet emerges from the embryo in the seed, the newly formed seedling is thrown upon its own resources and must search for needed mineral food. With grass it is necessary to develop a root system quickly to act as a foraging system for needed food. To accomplish this, a generous supply of phosphorus is required because phosphorus, more than any other element, seems to stimulate root formation and growth. But some nitrogen is needed too. Hence best practice on new seedlings is to use phosphorus quite generously along with some nitrogen. If funds are not sufficient to do both, build up the phosphorus first to get a uniform stand of grass, after that it is simple to put on the nitrogen needed to get density. After entailing considerable expense in preparing soil and buying seed, it is only good sense to see that plant food is there so the work of preparing the land and seeding is not wasted.

In the old days manure was the standby, insofar as most turf areas were con-

cerned. By producing a scarcity of manure, the automobile compelled the use of other substitutes. So far as turf is concerned, manure is not very efficient. On old green section fertilizer plots, manure was third from the bottom. It ranked next to the 'lime" and "no fertilizer" plots.

Chemical weed control is a comparatively new development, yet we must not lose sight of the fact that fertilization and other practices go to make a good dense turf. By a sensible feeding program, we can eliminate weeds, too.

All Grasses Spread

All permanent grasses spread by themselves; some by underground rhizomes, and others by surface runners called stolons. Provided needed food and enough moisture are available, grass will spread and develop dense turf. On the other hand, on some areas weed population is so heavy that it is a slow process to eliminate them by feeding alone. In the old days, such turf was plowed or spaded and the area seeded.

In England the old standby for weed control is lawn sand, made up in this fashion: Approximately 35 lbs. of ammonium sulphate, 15 lbs. of iron sulphate (calcined), and about 50 pounds of sand. It was used at the rate of 2 to 4 lbs. per 1,000 sq. ft. The iron sulphate and ammonium sulphate have a direct toxic effect on the leaves and the nitrogen of the ammonium sulphate encourages growth of the grass. These mixtures have worked quite well over there, where it is comparatively cool throughout the entire growing season. Temperatures around 76 degrees are considered high in Britain. So they can use these materials during the summer months when we have to be rather careful because damage to grass is apt to be severe in hot weather.

Recently there has been a flare for the use of arsenicals—arsenic acid, sodium arsenate, and for sodium chlorate also. With these materials, the principles underlying their use is to defoliate the plants and then there is some toxic effect as well. The arsenicals work through the leaves; sodium chlorate through the soil. This latter is explosive, so it must be handled carefully and must not come in contact with organic materials, such as clothing. Slight friction is sufficient to ignite this explosive mixture.

The arsenicals are especially good in spring and fall, whereas the chlorate is looked upon as a hot weather weedicide to be used when temperatures are somewhat higher. Chlorate, when used properly, seems to do a very fine job on crab grass, but probably is not as good for other weeds. Usual rates of application are from 1 to 2 lbs. per 1,000 sq. ft. It can be used as a spray or applied dry. Arsenicals—sodium arsenite and arsenic acid—are applied at 1 to 8 oz. per 1,000 sq. ft. With either, discoloration of grass is more severe with the spray method than with the dry method. Since arsenic acid is a liquid, it can be used only as a spray. Sodium arsenite can be used by dry, or as a liquid spray. The dry method calls for 4 or 5 oz. per 1,000 sq. ft. Both materials are effective against clover, buckhorn, chickweed, plantain, and even dandelion, although dandelion is the hardest weed to kill. On all these weeds plants are defoliated within 24 to 72 hours, depending upon outside temperatures and humidity. It is more rapid when temperatures approach 80 degrees, and slower when below that. Within a week the leaves dry up. Then new ones begin to form from latent buds. After these new leaves attain a length of from 1 to 3 inches, it is necessary to treat again and to continue enough times to exhaust the tap root or other storage organs of stored food. The plant eventually dies from starvation. With dandelions it takes from 3 to 4 treatments, whereas with plantain and buckhorn two treatments are often enough. For clover 2 treatments are enough, provided too much water is not used, then it may take 3 to 4 treatments to effect a complete kill.

'43 Is Better—Hinsdale (Ill.) GC has a net profit of $7,567 this year against $2,397 for same period last year. Course maintenance is $4,000 less than last year and the dining room is making a record by breaking even. Pool and tennis income is approximately three times the 1942 figure.