

fall, whereas, some are apt to be forgotten in the spring.

As I mentioned before, our plan contemplates an annual appropriation for fairway fertilization. We do not attempt to fertilize all fairways in any one year, but rather to cover a few each year, never overlooking any spot on the entire course that is not up to standard even though it is necessary to treat it each season.

And also we do not broadcast fertilizers with a prayer on our lips. The fairways are disced and re-disced and the fertilizers worked well into the soil.

The results which we have obtained have been very satisfactory. We have good fairways—no winter kill—our turf has a splendid root system—and our grasses are hardy. Our fairways are cut three times each week. Why shouldn't I believe in fall fertilization?

Fall in the Fertilizer Program

By M. E. FARNHAM, *Secretary and Greenkeeper*
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TO THE relief of most of us concerned with the maintenance of turf at present-day golf course standards, Summer with its excesses will soon be past. The advent of Fall offers the opportunity to repair the ravages of the Summer and, perhaps to start a program which may help to minimize the probability of past troubles recurring.

It is becoming universally recognized that, on

existing turf, reseeding is of doubtful value. The difficulty of preparing any suitable seed-bed and the fact that it is seldom practical to put golf turf out of play are factors which reseeded turf has to contend with. Logically then, practically the entire problem of turf improvement resolves itself into one of fertilization.

It is my opinion that the entire problem of turf fertilization is an open question at present. In fact it may and probably will continue as such. Each year sees more controlled experimental work being carried on. Some bemoan the seeming duplication of much of this work. However, we will never see the day when such work is being carried on under as diverse conditions of soil and climate as those represented by the golf courses of the country.

Nevertheless, it is essential to have some basic fertilizer program to insure the maintenance or improvement of turf as the case may be. This program may be varied as conditions, experience, or additional knowledge warrant.

At the Pennsylvania State College there are pasture fertilizer plots which are the oldest in the country. These plots were originally planted to a mixture of grasses and clovers including red top, Kentucky blue grass, and white clover. The fertilizer treatments have been the same during the life of the plots.

While it is granted that the conditions on these plots do not duplicate golf turf the results are very valuable. At this location, the plots which have received ground limestone, nitrogen, and an abundance of phosphoric acid now have fine stands of blue grass. As soon as potash is used, even in small



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amounts, the clovers become prominent. It is recognized, however, that even in some parts of Pennsylvania, some soils are deficient in potash and require the use of it.

Based on the above-mentioned plots, the Pennsylvania State College recommends as follows:

GREENS: Nitrogen, 2 lbs. per year in five applications per 1000 sq. ft. Phosphoric Acid, 32 lbs. per acre, early in Spring. Ground Limestone, 1½ tons per acre once in five years.

If Sulphate of Ammonia is used as the source of Nitrogen, every 100 lbs. used requires the use of 75 lbs. of ground limestone to neutralize the effects.

FAIRWAYS: Nitrogen, 60 lbs. per acre in two applications. Phosphoric Acid, 32 lbs. per acre in Spring. Ground Limestone, 1 ton per acre once in five years.

These recommendations are an excellent basis for a fertilizer program for similar conditions. They are not by any means the final solution of the problem. That is up to each individual to develop for his own conditions and perhaps to vary for different portions of a course, or in view of past treatments.

The seasonal nature of any fertilizer program may well vary under different conditions. Spring fertilization is undoubtedly important. However, I feel that where Summer conditions are severe and crab grass is a problem that Fall fertilization takes on added significance.

My program is to use inorganic materials mainly in the Spring cutting down amounts decidedly as July approaches. In this way the turf goes into the trying Summer season in a fairly hardy condition and is less susceptible to various ills. Also, there is no abundance of food available for weed food. As September approaches looks can again receive attention. I venture the opinion that too much concern about color of turf often results disastrously during trying Summers.

I shall not attempt to argue the question of organic vs. inorganic fertilizers for use in the Fall. I feel there is a place in the program for each. Consider how much of each food element is needed and make applications accordingly. Do not use "X" fertilizer and consider it cheap because only 200 pounds are recommended per acre when actually you should use 1000 pounds to get enough nitrogen.

It is probable that Calcium, Phosphorus, and any necessary Potash can well be applied in early Spring. That resolves the Fall fertilizer program to one largely of Nitrogen unless the other elements have been deficient in the earlier program.

Relatively few greens suffer from starvation. This can not be said of fairways. Having decided as to requirements by all means get to work on the Fall fertilization and do not forget the fairways, especially at this season.



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