

## MOWING HEIGHT AND FREQUENCY

ANYONE WHO HAS read much concerning the maintenance of turfgrasses has been subjected to discussions of the importance of mowing heights. We have been told that bluegrass, fescue and other types of turfgrasses which do not form runners or stolons will not withstand heights much less than  $1\frac{1}{4}$  inches. We know on the other hand that grasses such as bermudagrass, the bentgrasses and Zoysias, which do form stolons, are able to withstand much closer mowing and can be cut almost as low as the mower can be set. One important fact about mowing that has not been brought out adequately is the importance of frequency of mowing. Actually, mowing frequency is closely related to mowing height.

The leaf of the grass plant is that portion of the plant which manufactures food. The food is then translocated to the storage organs of the plant, which are the rhizomes, stolons and the crown. To a considerable extent the leaf itself serves in a storage capacity. Therefore, when a large part of the leaf is cut off, the plant is shocked rather severely.

We are told that we should allow grasses to grow longer so that there will be more leaf surface for manufacturing food. We are told that close clipping removes this food factory and that the grass plant is then unable to maintain its vigor. These admonitions are backed by sound reasoning and seem plausible enough.

On the other hand, grass has the ability to form new shoots or to stool out from the crown of the plant. The creeping grasses have the ability to put up new shoots from each one of the nodes from the stolons and rhizomes. It is, therefore, possible for the grass to send out more leaves below the height at which it is clipped and to form its food factory below this point.

If the mowing height is kept constant, we will find that the grass develops a sufficient number of leaves below the regular mowing height so that it will be able to manufacture sufficient food to maintain

itself. This is most readily apparent in bermudagrasses or the bents. Observers of turfgrasses will have noticed that bermudagrass, for instance, will stay green only near the turf surface. A heavy turf cut at a two-inch height will have only about one inch of green grass on the tips of the leaves and that portion of the stem below this top inch will be brown and will not have chlorophyll present in very large amounts. Therefore, that portion of the stem is unable to manufacture food; it is only the green part of the leaf that carries on the process of photosynthesis. On the other hand, if a bermudagrass turf is kept clipped to one inch, it will be found that the grass remains green almost to the surface of the soil. Therefore, it will be seen that the closely clipped bermudagrass will have nearly as much food manufacturing areas as that grass which is clipped at two inches.

### *Longer Turf, Fewer Mowings*

If the two-inch turf is clipped back to a height of one inch, almost all the leaf surface capable of manufacturing food will have been removed. If the grass cut at two inches is clipped frequently so that no more than  $\frac{1}{2}$  inch of leaf surface is removed at a time, it will still maintain a substantial part of the leaf area capable of manufacturing food.

Now, let's consider the turf clipped at one inch. If it is to be maintained at one inch, it must be mowed frequently enough so that not more than half of the food manufacturing portion of the plant is removed at a time. This means that the grass should not be clipped much closer than one half inch. If we assume that the two-inch turf and the one-inch turf are making new growth at the same rate, the one-inch turf must be mowed twice as often as the two-inch turf in order to maintain the same relative amount of active leaf surface.

To summarize this discussion, grass should be mowed frequently enough that only a small portion of the total leaf sur-

face is removed at each time. Grasses that are allowed to grow taller, that is two inches or more, may be allowed to go for a considerable length of time between mowings. No more than one inch of leaf surface may be removed from a two-inch turf without severe damage. On the other hand, a one-inch turf will make about as much growth as a two-inch turf but in the case of a one-inch turf not more than about 1/2 inch of leaf surface may be removed without shock to the plant. Therefore, on closely clipped turf it is necessary to mow more frequently than on turf that is allowed to grow taller.

This principle is illustrated in golf course maintenance by the frequency of mowing greens and fairways. The golf course may have either bentgrass or bermuda greens, and the fairways may be exactly the same grass but maintained by different standards. Everyone knows that the putting green must be mowed at least three times a week, and preferably every day. On the other hand, fairways are sel-

dom mowed oftener than three times a week, and on many golf courses they are mowed only once a week.

#### **For Frequent Mowing**

It is believed that frequent mowing adds to the quality of the turf. It causes the grass to stool more readily and, therefore, there is a denser population of grass leaves making up the turf. In turn, there is a greater amount of leaf surface available for the manufacture of food. If a turf is mowed less frequently, the grass has a tendency to grow taller before branching to form more leaves, and when it is cut, a relatively large portion of these leaves is removed. Only stems with relatively few leaves remain, the turf is thinned out, and is not so dense nor compact. Height of mowing is important, but if one speaks of height without taking into consideration the frequency of mowing, then his reasoning is apt to be in error because the two factors go together in the formation of a good, healthy turf.

## **Nematodes in Greens in Rhode Island**

J. Troll and Dr. A. C. Tarjan reported on the presence of root parasitic nematodes in golf-course greens in Rhode Island in the May 15, 1954, issue of *Plant Disease Reporter*. They have found that a number of samples of turf submitted to the Rhode Island Experiment Station for disease diagnosis during the last two years contained large populations of nematodes considered to be plant parasites.

Following these findings, they made a survey of forty-one putting greens from seventeen golf courses in Rhode Island. Both root and soil samples were selected from sections of greens where definite symptoms of chlorosis and/or dieback of grass blades occurred. Some of the patches contained bare areas where plants had died, while others were not dead but were somewhat chlorotic. Close examination showed that there were dead blades of grass interspersed with living, healthy blades. This condition could not be attributed to any

of the known fungi which attack grasses in the New England area.

#### ***Tylenchorhinchus***

Thirty-one genera of nematodes were found in the samples from these forty-one greens; ten of these genera are known plant parasites, while eight more of the genera are suspected plant parasites. The most widely distributed plant parasitic nematodes which were found in this survey were the stunt nematodes of the genus *Tylenchorhinchus*.

This survey is significant in that it demonstrates that many plant parasitic nematodes do exist in golf greens, and the conclusion may be drawn that they are responsible for many of the unhealthy symptoms frequently observed on golf greens and which cannot be attributed to diseases. It has been assumed that nematodes were of no great importance on grasses. The results of this survey indicate that this assumption may be false.