Usefulness of Kentucky Bluegrass and Canada Bluegrass in Turfs as Affected by Their Habits of Growth

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There are two species of grass belonging to the genus Poa commonly known as bluegrasses, both natives of the Old World but now very widely disseminated in North America which have become of great economic importance here. One of them, Kentucky bluegrass (*Poa pratensis*), is very extensively used in lawns, on the fairways and tees of golf courses, and elsewhere for turfs. It is quite commonly regarded as the best grass for these purposes. The other, Canada bluegrass (*Poa compressa*), is rarely or never used on lawns or in similar situations.

Each of these grasses has its own peculiar soil requirements. Although both grow under the climatic conditions existing in the humid parts of the northern United States and southern Canada, sometimes even in the same vicinity, yet usually they do not grow in

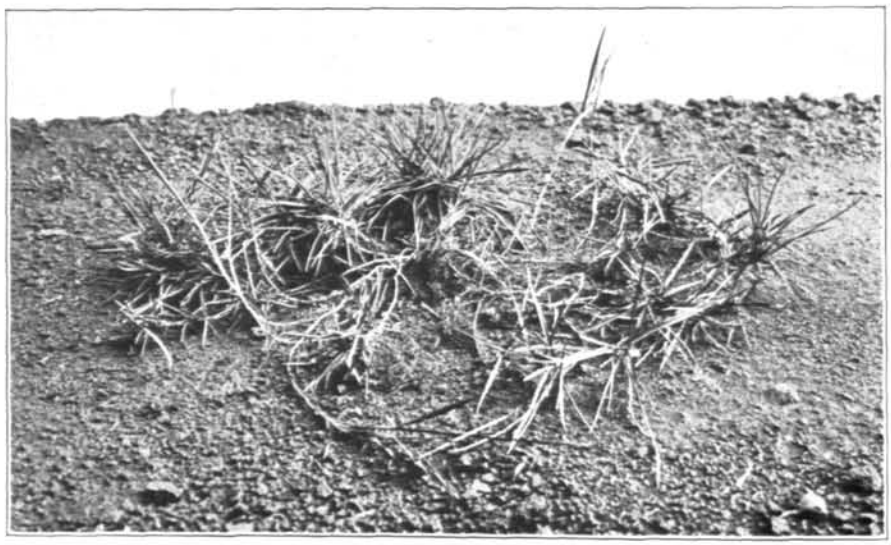

Figure 1.—A plant of Kentucky bluegrass. The soil has been removed so that the underground rooting stems are visible.

mixture. Generally, Kentucky bluegrass grows on comparatively fertile soils, Canada bluegrass on poorer soils. In some localities, its ability to thrive under conditions unfavorable to Kentucky bluegrass makes Canada bluegrass a valuable species for pastures or even for meadows. A striking illustration of the differences in adaptability of these grasses was observed, a number of years ago, along a roadside near New London, Ohio. Kentucky bluegrass was growing in an almost pure stand in the surface soil along the fence separating the roadway from the adjacent field. Near the roadbed there was a cut, on the sloping face of which the subsoil was exposed. On this subsoil there was a practically pure stand of Canada bluegrass. The line of demarcation between the areas occupied by the two grasses was as distinct as the differences between the soil and subsoil.

Canada bluegrass might have some value for turfs, if it did not have certain habits of growth which make it almost wholly unfitted for this purpose. Some of the differences in the habits of growth of Kentucky bluegrass and Canada bluegrass are illustrated in figures 1 and 2. These photographs were made on May 3, 1932. Each plant had developed from a single stem or shoot, like those illustrated in figure 4, which was transplanted about the middle of May, 1931. On the day when the photographs shown in figures 1 and 2 were made, each plant was dug up, and the soil was carefully washed away from the roots and the underground rooting stems. The plants are shown in the illustrations with about the same arrangement of their parts as they had when growing in the soil.

Both grasses grow and spread outwards in the same way—namely, by means of underground rooting stems, technically known as rhizomes. After one of these rhizomes has continued its growth, usually for several months, and has extended outwards for a distance of perhaps several inches from the point of its origin, it turns upwards to the surface of the soil. From the bud or growing point at its tip, an above-ground shoot forms.

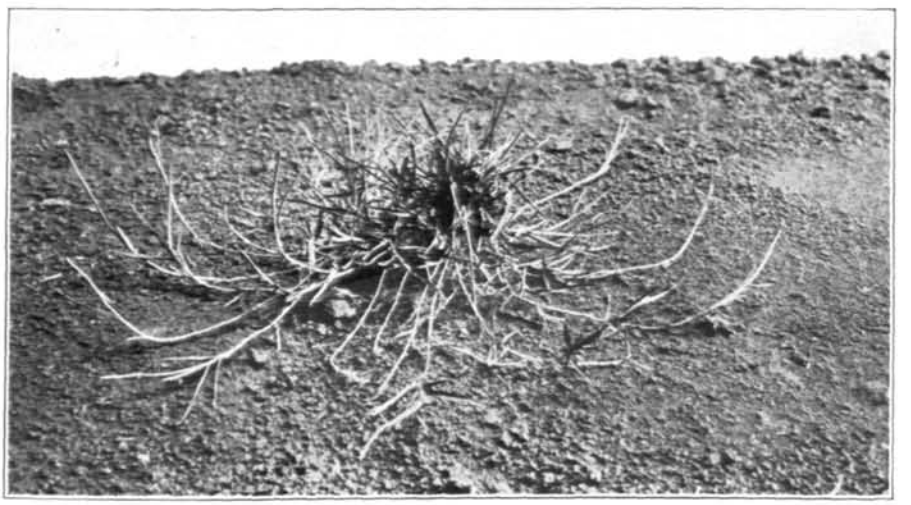

Figure 2.—A plant of Canada bluegrass, with the rooting stems exposed to view. Canada bluegrass plants are less leafy than those of Kentucky bluegrass.

At this stage of their development, an important difference occurs in the growing habits of the two species. On the plants of Kentucky bluegrass, at all times during the spring, summer, and fall, new branch shoots continue to form on older ones. On the plants of Canada bluegrass, on the other hand, during the spring and summer relatively few branches grow on the shoots which terminate the rooting stems. Although during the fall, on the stems of Canada bluegrass, branches do develop in large numbers, even then the leaves do not create the appearance of leafiness characteristic of the plants of Kentucky bluegrass.

The tendency of the plants of Kentucky bluegrass to produce numerous branch shoots and leaves, and the opposite tendency in the plants of Canada bluegrass, are indicated in figures 1 and 2.

The stems also of Kentucky bluegrass and of Canada bluegrass differ in the manner in which they grow in length. This difference largely explains the adaptability in the one, and the lack of it in the other, for use on closely mown turfs.

Except in the spring, on those shoots which produce seed heads, the stems of Kentucky bluegrass make a hardly perceptible growth in length. The growing point from which new leaves arise on each stem consequently remains near the surface of the soil. If the grass is cut with a lawn mower, the bases of the older leaves remain attached to the shoot, and new leaves continue to be produced from the growing point.

In the stems of Canada bluegrass, on the other hand, at all or nearly all seasons of the year when active growth takes place, the internodes of which they are composed become elongated, usually to at least a considerable fraction of an inch in length. As a result of this elongation, the growing point from which new leaves form gradually becomes elevated above the surface of the soil, where it is likely to be cut off, if the turf of which the stem is a part is mowed at the usual height with a lawn mower. The newly mown turf of Canada bluegrass, because of the large number of stubble of stems and relatively few leaves, has an appearance somewhat suggestive of a scrubbing brush. The sparsely leafed Canada bluegrass turfs which are mowed at frequent intervals make a thin covering of the soil. Experience has shown that other grasses and weeds encroach into a Canada bluegrass lawn to a much greater extent than in lawns of grasses which maintain a more dense soil cover of leaves, such as there is in a good lawn of Kentucky bluegrass.

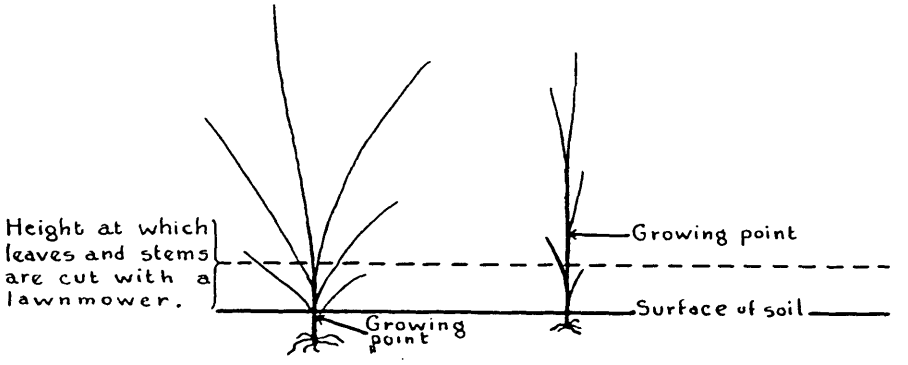

Figure 3.—Kentucky bluegrass (left), Canada bluegrass (right). The approximate positions of the growing points of the shoots are here shown with reference to height of cut and height of growing point.

The difference in the way in which the stems of Kentucky bluegrass and Canada bluegrass grow in length is illustrated diagramatically in Figure 3. The lower horizontal line represents the surface of the soil, and the upper one represents the altitude at which grass leaves and stems are cut with a lawn mower. In the Kentucky bluegrass plant at the left, which is composed of a single shoot with its leaves and roots, the position of the growing point is somewhere

near the surface of the soil. In the plant of Canada bluegrass at the right, likewise composed of a single shoot, the growing point is above the elevation where the stem would be cut off by a lawn mower, consequently no further growth could take place from it after the lawn is mowed. In order that a shoot of this kind may resume its growth, enough time must elapse for buds near its base to expand and produce new branch shoots.

In figure 4, an actual specimen of a shoot of Kentucky bluegrass is shown at the left, and one of Canada bluegrass at the right. If these specimens had been dissected, their growing points could have been found, probably at positions corresponding approximately to those indicated in the diagrams in figure 3. In a younger shoot of Canada bluegrass the growing point might be lower, where it would not be cut off by the lawn mower. As the shoot would become older, however, the stem eventually would become longer, and the growing point would become high enough to be cut off when the lawn is mowed at a later time.

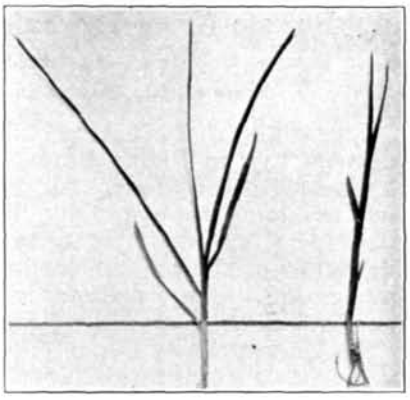

Figure 4.—The shoot at the left is from a plant of Kentucky bluegrass, the one at the right from a plant of Canada bluegrass. The growing point of shoots of Kentucky bluegrass usually are at or slightly beneath the surface of the soil; in the shoots of Canada bluegrass the growing points gradually become elevated above the surface of the soil.

Some greenkeepers find that they can treat their greens more quickly by the dry method of applying fungicides, and the absence of any need for costly equipment is also an advantage. In this method the chemicals are diluted by mixing them with dry soil or sand, to give them bulk so that they can be applied more easily and uniformly. Usually about 8 quarts of soil or sand is used for each 1,000 square feet of turf. The soil should be comparatively dry and finely-screened. It is necessary to obtain a uniform mixture of the chemical and soil and to pulverize all the lumps, for if any lumps are permitted to lie on the turf they are likely to cause severe burns. An efficient method of mixing the chemical with soil is to first mix it with dry, sharp sand; preferably about twice as much sand as chemical should be used. These are rolled together with a rolling pin or a piece of pipe. In rolling them together the lumps are broken by the grinding action of the sand. The rolling should be continued until a uniform mixture is obtained as indicated by the absence of streaks. This mixture of sand and chemical is then mixed with the soil and broadcast over the green.

Whether the fungicide is applied with a sprayer or by the dry method it is usually watered thoroughly immediately after the application.