

Moss on Bentgrass Putting Greens— An Increasing Problem

Fred Yelverton

The occurrence of mosses on bentgrass (*Agrostis* spp.) putting greens is increasing in many areas of the United States. Moss on bentgrass greens is not a new problem. However, **most areas of the country are reporting the incidence of mosses is increasing at an alarming rate.** Even areas with warm and sunny climates, such as southern California and the southern United States, are experiencing substantial increases in moss problems.

Golf course superintendents are asking the logical question, Why is it increasing? The answer is, Nobody knows for sure. However, a review of moss history and changes in bentgrass cultural practices may provide some insight.

Mosses are very primitive plants. They are not higher plants like our turfgrass species or weeds. Their life cycle and morphological characteristics differ dramatically from those of higher plants. For instance, **mosses do not have roots; they have specialized structures called rhizoids that basically function to anchor the plants to a surface.** You may have noticed that mosses do not necessarily grow in or on soil. It is not unusual to see them thriving on walkways, bridges, rocks, and even vertical walls. **Most mosses also lack a true vascular system, a fact that makes control exceedingly difficult.** Another problem is that very little is known about moss biology and ecology. There are only a very few scientists in the world that study these plants.

Mosses are characterized as primitive survivors. Fossil records date back to between 360 and 438 million years ago. As a reference point, dinosaurs first appeared about 248 million years ago and were extinct 144 million years ago. Other primitive organisms that are still around today include

cockroaches, opossums, alligators, and sharks. These organisms, including mosses, have survived because they are highly adaptable. **Mosses have traditionally been associated with a low intensity of management, low-pH soils, dense shade, and wet soils. Their ability to adapt to and survive in putting green conditions is remarkable.**

Changes in bentgrass cultural practices may have contributed to the increased invasion of mosses. Mosses are very opportunistic plants and generally do not survive very well when the turf is highly competitive. **A trend toward lower mowing heights on bentgrass greens is generally regarded as one of the reasons that mosses are increasing.** Moss often is observed to invade and be most acute in areas of the green that are prone to scalping, such as on acute changes in slopes or mounds. Another potential contributing factor may be the discontinued availability and use of mercury-based fungicides. Mosses are sensitive to many heavy metals. In my research, I have examined the effects of these older products and have had good suppression of moss. The newer fungicides available today appear to have little if any activity on moss.

There has been some research conducted on management of mosses in bentgrass greens. However, look for research activity to increase due to the increase in moss incidence. One of the first objectives is to properly identify the moss species. **There are approximately 9,500 species of moss, but only a very few have been identified on bentgrass greens. The most common thus far is silvery thread moss (*Bryum argenteum*).** A thorough understanding of the biology and ecology of this plant will be necessary if successful control strategies are to be found. 