

Going Against the Grain

Grain on putting surfaces is often given as a reason why players miss putts. But is this truly the reason?

BY LARRY GILHULY



The natural tendency for turfgrass grain is to go downhill. The lighter sheen of turf means the turfgrass leaf blades are lying away from you, or with the grain. Conversely, the darker sheen occurs when leaf blades are lying toward you, which means you are putting against the grain.

Watch virtually any televised golf event and you are certain to hear commentary about grain being the reason for missed putts. “The ball got caught up in the grain” or “the player simply misread the grain” are the most frequent comments. But none are better than the all-time classics of “the grain grows to the setting sun” or “the grain grows to the ocean, lake, river, mountain” or any other physical feature. With all due respect to the many who did or still do display a great ability to strike a little white ball, such comments are not supported by fact. Let’s take a look at what turfgrass grain is and isn’t, and how it applies to

the five major grasses found on putting surfaces: *Poa annua*, creeping bentgrass, bermudagrass, seashore paspalum, and fine fescue.

THE REALITY OF GRAIN

In 2008, John Foy, director of the USGA Green Section’s Florida Region, wrote an excellent article titled [Grain on the Brain](#). Give it a read and then come back for a continuation on this topic. The article discusses the many reasons why grain exists and does not exist on modern bermudagrass and bentgrass putting greens. But what about the newer grasses that have been introduced on both warm- and

cool-season sites? Beginning with *Poa annua* and ending with fine fescues, there is one overriding theme about grain that will become evident.

- ***Poa annua*** does not have grain. *Poa annua* has a bunch-type growth habit, which means it grows upright rather than laterally. Additionally, *Poa annua* greens are almost always composed of many different strains or biotypes of *Poa annua*. There are literally thousands of different biotypes found around the world. A few years ago, Dr. Tom Cook, a professor at Oregon State University, visited an older *Poa annua* golf course in the Pacific Northwest and reported nearly 100 different



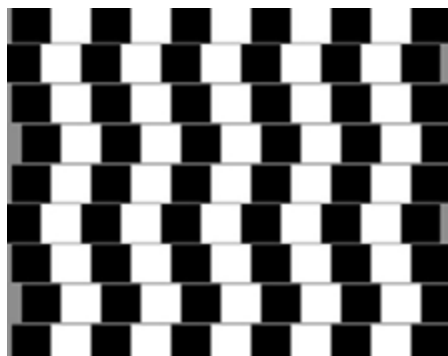
Grain on putting greens can be man-made, such as when “burned in” over time by repeatedly mowing in the same direction. This type of grain can be next to impossible to eliminate through conventional maintenance practices.

biotypes on a single green. When maintained at mowing heights of 0.125 inch or less, consistent grain is seldom, if ever, observed. While some of the thousands of different biotypes of *Poa annua* found on putting greens may lie slightly in one direction, there will be just as many leaf blades lying in the opposite direction. If you do happen to observe this grass slightly lying in one direction, rest assured it is almost always going downhill.

- **Creeping bentgrass** often has grain. As its name implies, creeping bentgrass has a lateral growth habit as well as a natural tendency for its leaf blades to bend sideways, especially when mowed at higher heights. Its stoloniferous growth habit is a major reason why it can often become somewhat grainy. The direction of the grain is usually downhill.

- **Bermudagrass** has the most grain of the turfgrasses used for putting greens. Even with the advent of the superb new ultradwarf varieties of bermudagrass, this type of grass is prone to develop grain. The leaves tend to align with the downslope of the green, with grain being more pronounced as cutting heights increase. Note the photo on the first page of this article showing an ultradwarf green with dark and light areas going in two or more directions.

- **Seashore paspalum** is a relative newcomer to the putting green scene



The eye can easily be fooled into seeing slopes that are not there, as illustrated by this image. Are the horizontal lines parallel, or do they slope? In fact, they are parallel. Similarly, misperception of slope can occur in areas where prominent geological features are present. (Image from <http://kids.niehs.nih.gov/games/illusions/>).

and can develop grain similar to bermudagrass, although less pronounced. Grain on paspalum greens also tends to follow the downward slope.

- **Fine fescues** are seldom planted on greens in the United States but can make great putting surfaces. Since this grass must be mowed higher to help it survive, grain is sometimes an issue. However, in spite of the longer leaves, when maintained on the dry side during the summer months, fine fescue has less of a tendency to impact ball roll. This is because it is not nearly as

dense as other turfgrasses common to putting greens.

Golf course superintendents recognize that grain can be an issue on most of the grasses used for putting greens. To prevent grain from becoming severe enough to adversely impact putting quality, they employ a variety of management techniques, including topdressing, vertical mowing, grooming, brushing, etc.

From the golfer’s perspective, there are a few key points to keep in mind when judging the impact of grain on a putt.

- Unlike sunflowers, turfgrass leaves do not follow the sun as it travels across the sky.

- There is no physiological mechanism in the turfgrass plant that causes leaves to grow en masse toward geological features such as oceans, lakes, mountains, or valleys. In areas where such features are prominent, it is more difficult to read the slope of the green. A green that appears to the eye to be flat may in fact slope toward or away from such features.

- The direction of grain can often be identified by the turf color. On a green with light and dark areas, the grain in the lighter areas is going away from the player, while the grain in the darker areas is oriented toward the player.

- With the exception of *Poa annua*, all of the grasses discussed above can develop grain, and the orientation of the grain is almost always downhill. However, occasionally USGA agronomists will visit sites where swirling grain or directional grain has been created as a result of maintenance practices. For example, if greens are mowed in the same direction during the grow-in phase, this “burning in the lines” can result in long-lasting grain in opposite, linear directions.

So the next time you are watching a telecast and the announcer begins the sentence with, “The grain goes . . . ,” rest assured that its natural pattern is to go downhill. Any other comment is simply going “against the grain.”

[LARRY GILHULY](#) is director of the USGA Green Section Northwest Region, lgilhuly@usga.org or 253.278.2766.