



Cooling Turf With Fans

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What exactly do fans near putting greens accomplish? Several golf courses I have played recently are using them, but they only seem to run in the summer.

Fans are often used to cool the turfgrass canopy on putting greens, typically cool-season species such as creeping bentgrass and *Poa annua*, but occasionally they are used on tees during periods of heat stress. Air movement across a turf canopy has a very strong influence on the overall health of the turf, especially in cooling of the plant during hot and humid weather.

Research shows that air currents of at least 3 miles per hour, but preferably closer to 6, are needed across the playing surface to effectively cool turfgrass canopies. Plants have a built-in cooling system whereby water transpires through small openings, called stomata, in leaves and collects on leaf surfaces. This is similar to how we perspire when sweat forms on our skin through pores. In the presence of air movement, the moisture evaporates and cools the surface, the same for turf as a golfer's skin. Reduction in turfgrass canopy temperatures when airflow is sufficient can be as much as 10°F or more, and soil temperatures are consequently lowered as well.

Cool-season turfgrasses generally perform best when soil temperatures are between 60 and 75°F. When soil temperatures reach 80°F or more, root and shoot growth is severely restricted and at 86°F or above root death begins. During stretches of extreme summer heat it is not uncommon for soil temperatures to rise well into the 90s or above. Such temperatures are simply too high for cool-season turfgrasses to endure for very long and the turf goes into physiological decline. Left untreated or if a natural cooling event does not occur, the turf will eventually die.

Keep in mind that prevailing summer winds are usually from the south or southwest, so trees, buildings or mounds blocking predominant summer airflow patterns can be devastating to turf. Trees, shrubs and brush surrounding greens and tees should be removed for this reason. However, when doing so still doesn't allow for enough air movement to maintain healthy turf through the summer or in the case of buildings or surrounding topography that cannot be changed, the use of a fan to mechanically generate air movement makes sense.

Useful Resources:

[Using Fans in the Northeast](#)

[The Costs of Blowing Wind](#)