

# How cool-season turfgrasses respond to elevated UV-B radiation

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In the northern hemisphere, peak ultraviolet radiation exposure is predicted to occur between 2010 and 2020. Decreases in ozone lead to increased exposure to wavelengths in the ultraviolet range, and ultraviolet radiation in turn affects plants' ability to effectively use photosynthesis for growth and development. Scientists say large land areas could be affected by UV-B exposure on turfgrasses that are typically cut high, such as those grasses used for residential lawns, so identifying grasses that can grow in evaluated UV-B conditions is crucial.

Researchers tested [turfgrass](#) cultivars for growth rates, color, and tillering. Tall fescue ('Barvado'), perennial ryegrass, and two creeping bentgrasses ('Penncross' and 'L93') were chosen for the study. The researchers conducted two separate experiments (March and May 2011) at The Ohio State University; their results were published in the April 2016 issue of *HortScience*.

Three weeks after light treatments were initiated relative growth rates were significantly lower under UV-B conditions for all turfgrasses. Turfgrasses cut to typical residential lawn heights and exposed to the UV-B light had lower color ratings compared with the non-UV-B treated control. "These experiments demonstrated that exposure to UV-B resulted in a decline of growth rate and color in cool-season turfgrasses within a timeframe of 2 weeks," noted lead author Ed Nangle.

Analyses showed some variation in the relative growth rate of the

turfgrass varieties: creeping bentgrass growth rates were reduced by UV-B more than tall fescue or perennial ryegrass. "Coarse-textured turfgrasses may be more adapted to higher UV-B conditions due to morphological differences compared with the finer-textured varieties," Nangle said.

The experiments showed that ultraviolet-B light significantly inhibited tiller production in the first experiment in all grasses except perennial ryegrass; however, no grasses were inhibited in the second experiment. The coarser-leaved plants had significant color loss, but still maintained acceptable [color](#) levels compared with the two creeping bentgrass cultivars. "This may be an important factor to consider regarding tolerance of cool-season grasses to UV light stress," the authors said.

**More information:** *HortScience*, [hortsci.ashspublications.org/content/51/4/439.abstract](https://hortsci.ashspublications.org/content/51/4/439.abstract)

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