

# 생명공학적 방법에 의한 잔디 품종 개발

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## Engineering Turfgrass with Phytochrome Genes

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As a survival strategy to seek light for photosynthesis, higher plants display avoidance responses to shade and darkness (so-called *shade avoidance response*, 음지회피반응). The shade avoidance is particularly prominent in plants growing under self- and neighbor-shadowing growth conditions. Phytochromes (phy) are plant's red/far-red light-responding photoreceptor for the suppression of shade avoidance and many other photomorphogenetic phenomena. I will discuss how the phosphorylation sites of phytochromes can be engineered for biotechnological applications to turfgrass. The mutated genes transformed led to the suppression of the shade avoidance in turfgrass. The shade-tolerant turfgrass so generated shows shorter hypocotyls and darker green leaves, i.e., more efficient photosynthesis. The shade-tolerant turfgrass cultivars are, thus, generally "healthier" than conventional cultivars, resulting in significant reductions in (a) mowing need, (b) irrigation, and (c) fertilizer use. Several cultivars are currently undergoing pre-commercialization tests in our greenhouses as well as in the fenced field.