

December's extremely cold weather that penetrated much of the United States resulted in bermudagrass going brown in many regions of the southern and southwestern United States. In some cases, dormancy occurred where it rarely does. When turf goes brown we usually refer to it as dormant, but physiologically what happens when a plant goes dormant?

Dormancy is an important mechanism nature has devised where plants can suspend growth for a period of time in response to unfavorable environmental conditions. Dormancy can occur in the summer or winter in response to moisture deficits and temperatures both high and low.

There are levels of dormancy. True dormancy is defined as the point where a plant, if exposed to favorable conditions, will not immediately resume growth. Lesser levels of dormancy can occur in turfgrasses, especially cool season turfgrasses, which are called resting or quiescence stages. Turfgrasses in a quiescent stage of dormancy quickly resume growth with the onset of favorable growing conditions.

For example, on cool season turfgrasses like Kentucky bluegrass, summer dormancy is induced by a lack of moisture. The plant sacrifices its leaves (senescence) and stems, and inactivation of the crown occurs. Upon the arrival of adequate moisture (rainfall, irrigation) the turfgrass resumes growth by crown reactivation. Similarly, bermudagrass will undergo summer dormancy in the absence of moisture for a prolonged period, but resume growth with the arrival of moisture.

Winter dormancy depends on the existing environmental conditions. In tropical climates like south Florida, bermudagrass may not enter dormancy (except for this past year). As you move further north toward the transition zone and colder winters or colder temperatures — especially nighttime temperatures in the Southwestern United States — bermudagrass can reach a stage of true dormancy. Under true dormancy even with a rise in temperature above freezing winter dormancy is not broken.

The Levels of Dormancy

BY KARL DANNEBERGER



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The management advantage of true dormancy for the southern golf course superintendents is it allows for the potential use of non-selective herbicides for winter weed control. Where these herbicides could cause damage to actively growing bermudagrass they are relatively safe on a bermudagrass turf in true dormancy.

Factors that interact with temperature to induce winter dormancy include light, photoperiod, nutritional levels and moisture. Light intensity is important primarily in spring for breaking dormancy. High light intensities promote photosynthesis and growth. Photoperiod or the day length is not fully understood with relation to winter dormancy. It is believed to play a minor role in dormancy but may explain why some cultivars or varieties go dormant sooner than others or resume growth later in the spring. Short day lengths favor zoysiagrass dormancy while increasing the day length reduced dormancy (Zhu, 2008).

Management practices like fertilization and watering can promote dormancy. Withholding or reducing nitrogen and water from a bermudagrass turf can promote dormancy. These practices might be introduced prior to winter overseeding in an attempt to reduce potential bermudagrass competition.

Given the slowing or stoppage of growth associated with dormancy, traffic or wear can cause injury to the turf. When possible, minimize the concentration of foot and golf car traffic. Dispersion of wear will reduce any potential injury to the growing point, which will delay growth when conditions become favorable to break dormancy.

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