

Why Are Our New Bentgrass Collars Dying?

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In the last two years I have been called upon to diagnose the cause of dying bentgrass on collars of new or newly renovated greens. In several situations entire collars died or exhibited severe thinning, but the putting surface remained in relatively good condition. Most of the problems have been associated with bentgrass grown on sand, but mineral soil growing media were not always exempted. Most injury appeared in the spring or summer following a fall seeding. In nearly all of the cases with which I have been involved, the damage was mechanical. In a small number of situations we implicated *Pythium* spp.

The major part of the problem...may very well be mechanical injury from a combination of mowing and topdressing succulent, immature plants whose crowns are growing in sand rather than buffered thatch.

The collars are sometimes rendered more susceptible to mechanical damage because walk-behind greens mowers often are turned on the collars. Even if this is not the case, the turning action of the mower (walk-behind or triplex), when the collar itself is being cut, somehow causes more twisting and crushing of the leaves than occurs on the putting surface. This is probably because the mower cuts in straight lines on greens; whereas, collar shape meanders in a circular or serpentine pattern. In nearly all cases, nitrogen levels in past months at these sites had been very high to speed the growing-in process. As a result, leaves were very succulent. Rooting also may be less deep in collars versus the bentgrass on the green. Because there is little or no thatch, I believe it likely that twisting of the taller leaves, and more importantly the crowns and roots of plants, results in a destructive grinding action to these tissues by the sand growing medium. This taller and succulent foliage has a much greater surface area for reels, rollers, groomers and wheels to inflict injury. Furthermore, topdressing (mostly abrasive angular sand) also is much more damaging to the taller (i.e., greater leaf surface area) succulent leaves of the collar canopy. In all cases that I know about, the

decline in collars occurred about 10 to 14 days after topdressing. Topdressing in spring may be injurious to young succulent bentgrass, but topdressing young bentgrass in hot weather can be very destructive. No matter how gently the topdressing is applied or brushed-in, the abrasive sand (especially during hot-humid weather) is very injurious to succulent leaves and crowns. Damage is greatest in walk-on and off areas or where the layout of the green makes it impossible to avoid turning the mower on the collar. Furthermore, mowing young bentgrass collars during very hot weather or when collars are very wet or spongy also causes mechanical injury. Most who experience this problem invariably conclude it must be a disease. This is not usually so; however, *Pythium* spp are sometimes associated with the problem. I have observed only two cases: Bethesda CC and Winters Run GC. In both cases, large numbers of *Pythium* spores were found in

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sheaths and leaves. *Pythium* oospores can be found in association with roots of all bentgrass/annual bluegrass greens. *Pythium* spp occasionally build up to a point where they cause root dysfunction, which is also known as *Pythium* root rot. Root rot is a misnomer because infected roots are not usually rotted and often appear white and healthy. When huge populations of oospores are produced in roots, they lose their root hairs and can no longer function adequately. This most often occurs during very wet weather and as a result turf thins out. Again, *Pythium*-induced root dysfunction is not as common in the Mid-Atlantic region as you may have been led to believe. Regardless, it is rare to find these same types of *Pythium* spp. oospores in leaves and sheaths. It is possible that the leaves and sheaths of bentgrass on collars at Bethesda CC and Winters Run GC were predisposed to *Pythium* invasion by mechanical injury. When these *Pythium* spp. are present in high populations, Aliette + Fore, and Koban or Terneb SP drenches have helped to alleviate the condition. The major part of the problem, however,

may very well be mechanical injury from a combination of mowing and topdressing succulent, immature plants whose crowns are growing in sand rather than buffered by thatch. Note, a similar phenomenon is common at the outer periphery of many older greens that are subjected to the stressful turning action of a triplex mower; while, the inner portions of the green remain in good condition.

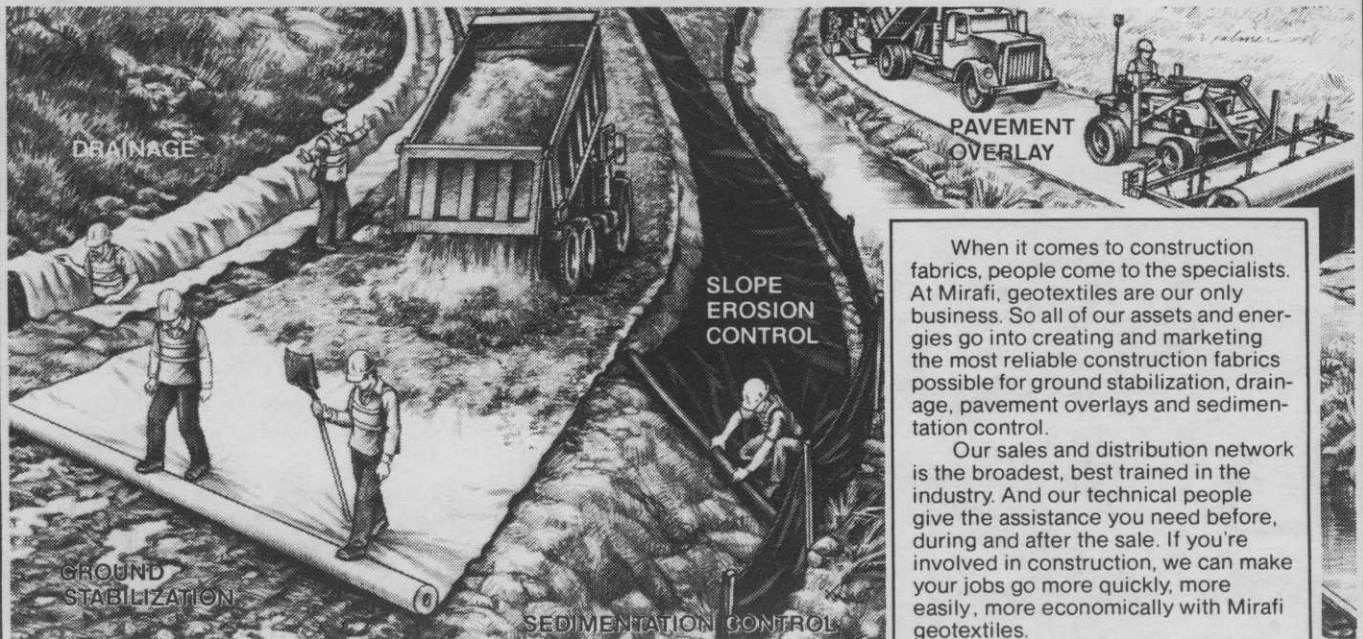
Whenever mechanical injury becomes evident it is important to avoid topdressing if weather conditions are hot and humid. Avoid topdressing and any kind of cultivation or grooming practices until cooler weather, and only perform these cultivation practices when bentgrass is actively growing. During periods of heat stress, reduce mowing frequency of collars and only mow during the coolest part of the day and when the surface is dry. Also, stop applying nitrogen and rely on iron to improve turf color during stressful summer periods. Hand syringe frequently when weather conditions warrant and avoid water puddling.



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