

Research You Can Use

Spring Transition: Going, Going, Gone

Removal of overseeded perennial ryegrass from bermudagrass is a must.

BY FRED YELVERTON

Few discussions regarding turfgrass management on golf courses get more emotional than discussions on whether or not to overseed fairways, roughs, etc., with perennial ryegrass. This discussion will not wander into those waters. However, one fact about overseeding is indisputable: Overseeding with perennial ryegrass can, and often does, have an adverse effect on bermudagrass. Nevertheless, management practices can be implemented that significantly reduce the impact of overseeding on bermudagrass health. The most important of those practices is *getting rid of the perennial ryegrass by late spring!*

One of the troubling trends occurring on golf courses is the increasing practice of overseeding too early in the fall and keeping the ryegrass too late in spring/summer. If bermudagrass does not have sufficient time to grow during the summer without competition from perennial ryegrass, the bermudagrass will decline over time. This may occur in one year, but more often it occurs gradually over a period of several years. Why does this happen? A brief discussion of plant competition will provide insight.

A fundamental principle in weed science is that plants compete with one another for four basic resources:

1) water, 2) nutrients, 3) carbon dioxide, and 4) light.¹ When bermudagrass and perennial ryegrass grow together in spring, which of these resources would be limiting?

1) Water? No, golf courses provide ample water.

2) Nutrients? No, same as water.

3) Carbon dioxide? No, this should never be limiting.

4) Light? Yes, this is the main culprit.

Beard² describes bermudagrass adaptability to shade as very poor. Duple² states that at low light intensities (less than 60% full sunlight), bermudagrass develops narrow, elongated leaves; thin upright stems; elongated internodes; and weak rhizomes. Any golf course superintendent who has managed bermudagrass knows it does not perform well in shade. In overseeded environments, when bermudagrass begins to come out of dormancy in spring, perennial ryegrass growth is at its maximum. As a result, the perennial ryegrass provides significant shade to the bermudagrass. An indication of this can be seen by comparing bermudagrass growth in the fairway vs. the rough.

In most climates, bermudagrass needs about 100 days of growth without ryegrass competition. We know this because, on golf courses, bermudagrass tends to disappear gradually over time if ryegrass is allowed to remain in the summer and bermudagrass has less than 100 days of growth. Typically, bermudagrass thinning is a culmination of several years of overseeding where the perennial ryegrass is allowed to remain too long. This is exacerbated by the fact that many of the newer perennial ryegrass cultivars appear to be more heat

tolerant and tend to persist longer if not chemically removed.

METHODS OF PERENNIAL RYEGRASS REMOVAL

It is an understatement to say that the typical golfer doesn't understand the dynamics of overseeding and the potential problems it can cause. A vast majority just see green grass and may not be very understanding when a herbicide has been applied to remove the perennial ryegrass. I once heard from a golf club member, "Now, I do not know much about growing grass, but the grass is dying and that is typically a bad thing." No, actually, that is a good thing. In a vast majority of environments in the United States where bermudagrass is overseeded, a herbicide should be used to remove the perennial ryegrass in late spring/early summer. With the possible exception of very warm climates like South Florida and South Texas, perennial ryegrass will not die out on its own early enough to provide sufficient recovery and growth of the bermudagrass.

Cultural methods of ryegrass removal have been extensively tested. A former graduate student at N.C. State University (Dr. Brian Horgan, now at the University of Minnesota) tested a number of such methods. His overall objective was to initiate management practices that favored the bermudagrass and disfavored the ryegrass as temperatures began to warm in spring. Treatments included nitrogen fertilization,

scalping, vertical mowing, aerification, and combinations of each of these. None of the treatments or combination of treatments would consistently remove the perennial ryegrass in a timely manner.³ Furthermore, one of the worst things that can happen is that only about 90% of the perennial ryegrass dies. This will result in the remaining ryegrass becoming *clumpy*. Once perennial ryegrass becomes clumpy, it will not die out on its own. Clumpy ryegrass is fast becoming one of the worst golf course weed problems in areas that overseed bermudagrass with perennial ryegrass.

In recent years, several new herbicides have been introduced that are highly effective in the removal of perennial ryegrass from bermudagrass. These newer herbicides include Revolver (foramsulfuron), Tranxit (rimsulfuron), and Monument (trifloxy-sulfuron). Prior to these products, Kerb (pronamide) or Manor (metsulfuron) were used effectively for perennial ryegrass removal. While Kerb was effective, it removed perennial ryegrass very slowly. Typically, six weeks were needed to get good control. In addition, Kerb is highly mobile, so extreme care was needed when it was used in close proximity to cool-season grasses. Manor (first released in turf as DMC Weed Control) was used for several years with much success. It is still utilized and is highly effective. One of the complaints about Manor is that it occasionally needs to be reapplied because of an incomplete kill. In addition, it has no activity on annual bluegrass (*Poa annua*). It is common to have annual bluegrass in perennial ryegrass at time of transition.

Tranxit, Revolver, and Monument have all been released in the past few years. Not only are these products highly effective in removing ryegrass, but they also will kill annual bluegrass. Furthermore, these herbicides tend to kill ryegrass very quickly (2 to 4 weeks). Because these products kill ryegrass rapidly, they should be used as a late



Perennial ryegrass growing in low densities becomes clumpy. This occurs when ryegrass is tracked from overseeded areas or when overseeded ryegrass does not completely die in spring/summer.

transition aid. To state it another way, the underlying bermudagrass must be actively growing before these herbicides should be applied. If they are applied too early (before the bermuda is actively growing), then the ryegrass will die before the bermudagrass is able to fill in the voids from the perennial ryegrass, and the resulting overall turf quality will be poor. However, that they work very quickly allows turfgrass managers to leave the ryegrass in until later in the

spring. A fast kill still allows about 100 days of bermudagrass growth without ryegrass competition.

The mobility and tracking potential of these new herbicides also have been issues. Because cool-season grasses are sensitive, use around bentgrass putting greens or overseeded bermudagrass greens is a concern. Several studies to investigate lateral movement have shown the potential for this to occur. However, they appear to be less mobile than Kerb. In terms of tracking, these herbicides should not be applied immediately prior to equipment or golfers tracking through the treated area and onto a putting green. It is advisable to apply these products after golfers have left for the day, followed by a light irrigation prior to equipment or golf traffic being allowed back on the greens.

Field trials tested the effectiveness of these products on the removal of perennial ryegrass. By four weeks after treatment, the perennial ryegrass had been removed.

In summary, any decision to overseed bermudagrass with perennial ryegrass should include a plan to remove the ryegrass. Failure to have a removal plan will lead to a decline in the overall health of the bermudagrass over time. Several new herbicides are available that are effective in removing ryegrass.

LITERATURE CITED

1. Beard, J. B. 2002. p. 728. *In* Turf Management for Golf Courses. Ann Arbor Press, Chelsea, Mich.
2. Duple, R. L. 1996. p. 42. *In* Turfgrasses, Their Management and Use in the Southern Zone. Texas A&M University Press, College Station, Texas.
3. Horgan, B. P., and F. H. Yelverton. 2001. Removal of perennial ryegrass from overseeded bermudagrass using cultural methods. *Crop Science* 41:118-126.
4. Klingman, G. C., and F. M. Ashton. 1982. p. 23. *In* Weed Science: Principles and Practices. John Wiley and Sons.

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