The grass won't do it your way

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Too often we try to make the turf grow to our specification instead of adapting our practices to those of the turf. We often hear "I don't believe in using a lot of nitrogen," "I don't believe in aerification," or "I never use phosphorous." It doesn't really matter what we believe or what we think. What is important are the needs of the grass plant to survive, especially during the stress periods.

First of all, it is imporant that we realize turfgrass lives in a dynamic plant community where it is in constant battle with many other plant species for the space it occupies. We have been able to maintain a turf system as a mono-culture, mainly because of the modern-day herbicides available to us. We have many broadleaf herbicides to manage the broadleaf weeds and pre-emergence to manage the annual broadleaf weeds and grasses. However, we do not have a selective means to manage the annual bluegrass with the possible exception of "Prograss," which is currently unavailable in Canada. Therefore, the main competition for creeping bentgrass under golf course conditions is annual bluegrass, and depending on how we manage the system, we will favor one species over the other.

But before we discuss the cultural requirements of each species, I think there is one fallacy that needs to be corrected. The idea that annual bluegrass is a weak turfgrass species is not true. If it were truly "weak" grass, it would not have persisted as the dominant species on all our older golf courses. It is a very diverse species, with each golf course probably having over 50 different biotypes or cultivars, if you prefer. Some can adapt to high ground while others adapt to low ground. Some can tolerate dry conditions, others wet conditions, some tolerate good soil, and others compacted soil. So, whatever situation presents itself on your golf course, annual bluegrass has a biotype that is adapted to it. All it needs to germinate and to become established is for a void to occur in the turf through mis-management.

In addition to its tremendous genetic diversity, it also has a greater photosynthetic rate than creeping bentgrass. This means it is more efficient at making energy and compounds it needs for survival.

Creeping Bentgrass Management

Coring

This should be done at the beginning of prolific seed head production by annual bluegrass in the spring. The roots of the annual bluegrass plants stop growing and begin to deteriorate as all the plants' energy and carbohydrates are put into seed production. If coring is done at this time, the actively growing creeping bentgrass roots will fill the coring holes. Adequate oxygen will be present in these coring holes for good root growth and the proper uptake of water and nutrients. This should give the creeping bentgrass plants a competitive edge over the annual bluegrass plant, which will have to try and develop roots in the more denser or compacted surrounding soil where there will not be as much oxygen present for good root growth or adequate uptake of water and nutrients. (cont'd. page 14)

(Vargas cont'd.)

Fertilizer

Penncross and most of the "native" bentgrasses can survive quite well on low to moderate levels of nitrogen. Annual bluegrass is a "nitrogen lover" and does better under high nitrogen fertility regimes. Timing is also important when fertilizing. Applying nitrogen during prolific annual bluegrass seedhead production, where few annual bluegrass roots are functioning, should allow the creeping bentgrass plant to take up the nitrogen. By doing this at a time when the annual bluegrass plant has limited ability to take up nutrients will also help give it the competitive edge to creeping bluegrass by denying the "nitrogen lover" annual bluegrass the nitrogen it needs to survive.

Rhizotron studies have shown creeping bentgrass roots to remain active approximately three weeks longer than annual bluegrass roots in the fall and to start growing three weeks earlier in the spring. Therefore, by applying a late fall application of nitrogen after annual bluegrass roots have ceased activity should again deny the annual bluegrass plants the nitrogen they need to be competitive, while supplying the creeping bentgrass plants adequate nitrogen to survive. An August application is needed to help promote plant growth after the slow down phase in the summer from high temperatures (See Figure 1).

Month	May-June	July	Aug	Sept	Oct	Nov-Dec
1 bs/1000 sq. ft.	1		1/2			1

Vertical Mowing

Vertical mowing should be done lightly every week from late May through September to prevent scalping of the traditional thatch that creeping bentgrass tends to develop during the warm weather.

PGR

Cutless will selectively stop the growth of annual bluegrass while allowing the creeping bentgrass to keep on growing. When used in combination with overseed, it could greatly increase the amount of creeping bentgrass in your fairways.

Collecting Clippings

This has led to the single greatest improvement in fairway management. It has also led to an increase in creeping bentgrass content in fairways, probably due to lower nitrogen levels as well as to the beneficial effects of removing the clippings during the warm weather of summer. This prevents the clipping from breaking down rapidly and releasing toxic products which can thin the creeping bentgrass and allow the annual bluegrass to germinate and fill in the voids in the fall.

Annual Bluegrass Management

Aerification

Aerification should be done three times a year if possible. The first time should be early in the spring after green up, the second in the spring after the heavy seed production, and then later in the summer when the cool night temperatures return. If only one aerification can be done, the one following prolific seedhead production is the most important. The roots of the annual bluegrass plants stop functioning during this period, as all the plant's energy is transferred to seedhead production. Following the period of maximum seedhead production, the plant has only 2 to 3 weeks to develop a root system to get it through the summer stress period. (cont'd. page 19)

(Vargas cont'd.)

PGR

Embark applied at low rates between 70 and 90 degrees F, using a base 50 degrees F will prevent seedhead production and allow the annual bluegrass to continue good root development in the spring and to store energy needed to survive the summer stress period.

Vertical Mowing

Vertical mowing should be done deeply in the spring to promote juvenile plants, which should be better suited to survive the summer stress period. This will also supply aeration for better root growth.

Collectin Clippings

For the reason mentioned under creeping bentgrass, and as stated before, this is the single greatest discovery for fairway quality. This has been demonstrated over the past twenty years, since we started spraying fairways with fungicides.

Fertility

Annual bluegrass is a nitrogen lover. It requires nitrogen to survive and to help it fight off diseases like anthracnose and summer patch (See Figure 2).

	June 1	July 1	Aug. 1	Sept. 1	Oct.	Nov. 15
(lbs/1000 sq. ft.)						
Option I	1/2	1/2	1/2	1		1
Option II	1-1/2			1		1
(Slow release)						
			(Anthracnose)			
			(Dollar spot)			
			Brown patch)			
						Fusarium Patch
						Typhula Blight

Figure 2. Nitrogen fertility schedule for annual bluegrass

Conclusions:

The grass plant won't grow to your needs. You must supply it with its needs. The grass plant lives in a dynamic system and whatever you do with your management practices will favor one over the other. You can have creeping bentgrass or annual bluegrass, the choice is yours; it all depends on your management regime.

Credit: Greenmaster, Sept./Oct. 1988

Figure 1. Nitrogen schedule for creeping bentgrass

Influence of Prestress Environment on Annual Bluegrass Heat Tolerance

D. L. Martin and D. J. Wehner
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Annual bluegrass characteristically has reduced quality during periods of high temperature. In order to improve summer quality of annual bluegrass, heat tolerance of selections has been evaluated along with cultural practices that may promote stress tolerance. Variability in stress tolerance of annual bluegrass does not appear to be very predictable. Of the other factors known to influence heat tolerance, the turfgrass manager has control over cultural practices, such as irrigation, fertilization and mowing.