

//HEALTHY COMPETITION

Pursuing *Poa annua*-free cool-season fairways

Overseeding and post-seeding herbicides

By Zac Reicher, Ph.D.

All golf courses, regardless of budget, struggle to minimize *Poa annua* in fairways. Thinning or complete death of *Poa annua* in summer or winter, plus additional damage to the desired species inevitably leads to reseeding the desired turf.

However, *Poa annua* quickly germinates when favorable weather returns and it aggressively out-competes seedlings of the desired turf. Often the end result is higher populations of *Poa annua* than were originally present (Fig. 1). This cycle may repeat itself annually in areas of the country with consistently difficult summers and/or difficult winters. However, new thinking with modern herbicides may help stop this cycle.

TIMING OF OVERSEEDING

Seeding summer-thinned areas usually starts near Labor Day with the return of cooler temperatures. Though this is an ideal time to seed cool-season grasses, the majority of *Poa annua* seed in the soil will also start to germinate in mid-September (Kaminski and Dernoeden, 2007). The desired grass and *Poa annua* will be germinating at almost the same time and *Poa annua* will always outcompete desired turf. Therefore, seeding earlier in the summer is preferred to allow germination and maximum maturity prior to *Poa annua* seed germination.

Our work at Purdue showed that seeding creeping bentgrass in mid-August resulted in 19 percent cover

FIGURE 1



Poa annua filling in between lines of perennial ryegrass overseeded in early September in Nebraska. The *Poa annua* will out-compete the perennial ryegrass over the winter, likely resulting in more *Poa annua* present than in the previous year.

of annual bluegrass by the following June (with no control interventions), whereas seeding only a month later resulted in 43 percent cover of annual bluegrass. Furthermore, Henry et al. (2005) showed overseeding creeping bentgrass into an existing *Poa annua* green in July resulted in greater than 70 percent coverage of creeping bentgrass two years later, whereas August seedings resulted in 17 percent or less coverage and September seedings resulted in eight percent or less coverage of creeping bentgrass (Fig. 2).

Our current work at the University of Nebraska is also evaluating seeding in mid-summer, almost as a preventative seeding in areas that perennially thin during the summer stress. This three-year study will wrap up soon,

but early results indicate early summer seeding is more effective than late summer seeding for long-term success, especially when overseeding with creeping bentgrass. More important, our work is showing that following up seeding with herbicides for *Poa annua* control limits competition and further improves successful establishment of desired seedlings.

In other studies, we are evaluating ratios of Kentucky bluegrass/perennial ryegrass, for short-term cover (golfer satisfaction) as well as aiming to maximize Kentucky bluegrass in the stand. This study also includes aggressive use of post-seeding herbicides to minimize *Poa annua*. Early results suggest that regardless of the Kentucky bluegrass/perennial

ryegrass ratio used in seeding, the most important aspect is aggressive use of post-seeding *Poa annua* control herbicides (Fig. 3).

HERBICIDES FOR POA ANNUA CONTROL

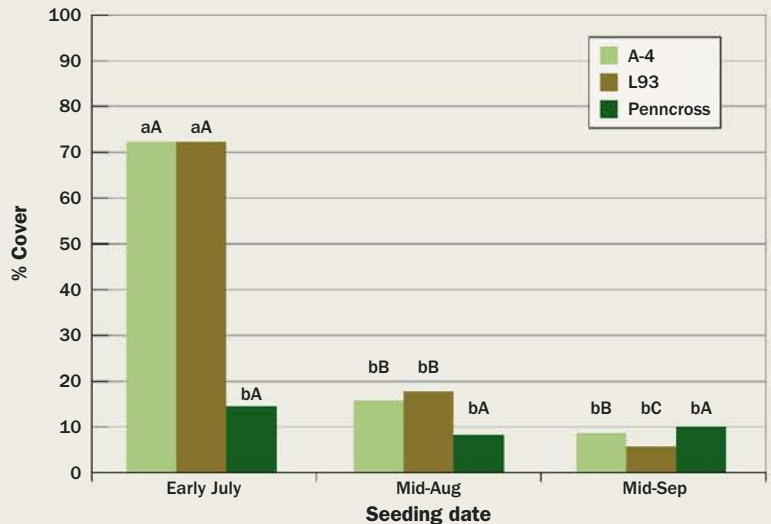
Controlling established annual bluegrass is difficult and a task that the industry has struggled with for generations. However, control is much easier on annual bluegrass that is thinning due to summer stress or when it is a newly-germinated seedling. Even though there is some risk that seedling damage may occur with aggressive herbicide use, it can be quickly compensated for with reduced competition from annual bluegrass.

Herbicide choice depends on the overseeded turf species. Velocity (byspiribac-sodium) can be used as early as two weeks after emergence of creeping bentgrass or perennial ryegrass according to the label. Tenacity (mesotrione) is highly effective when used

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FIGURE 2

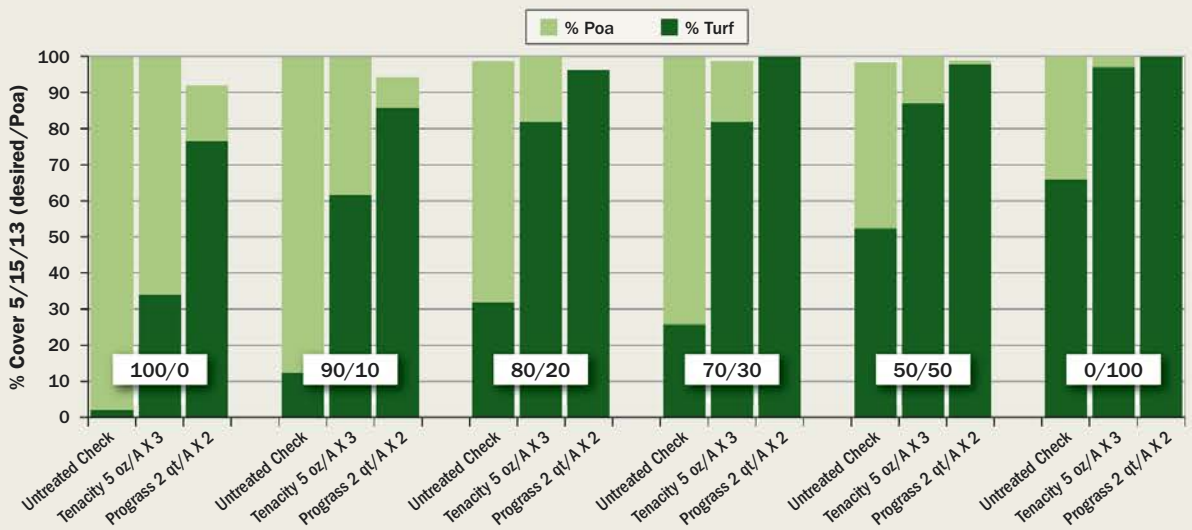
Effect of seeding date on creeping bentgrass overseeding into Petersons creeping bluegrass (*Poa annua* L. spp. *reptans*) green rated in July, two years after seeding.



Seeding earlier in the summer results in improved establishment of creeping bentgrass in the short term, which continues to spread in future years. This is especially true with the newer, more aggressive creeping bentgrasses. Bars with a different lower case letter within a seeding date are different at P<0.05 and bars with a different uppercase letter within a cultivar are different at P<0.05 (Henry et al, 2005).

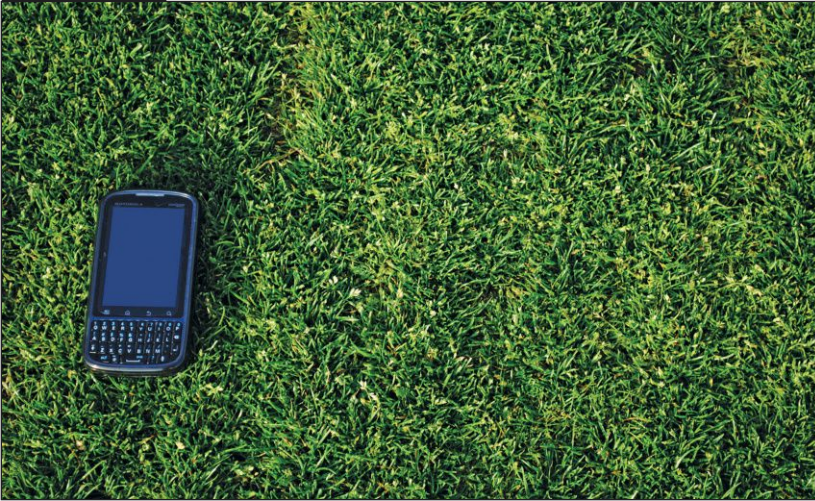
FIGURE 3

Effect of seeding ratio of Kentucky bluegrass/perennial ryegrass (in white box in each set of bars) and post-seeding herbicides on percent cover of desired turf or *Poa annua* rated in May following seeding.



Areas were killed with glyphosate, power raked in two directions, seeded in September 2012, herbicide applications began in mid-October 2012 and were made on two week intervals. Regardless of seeding ratio, this preliminary data suggests following-up seeding with aggressive *Poa annua* control herbicides will reduce *Poa annua* and increase desired turf.

FIGURE 4



A fall seeding of perennial ryegrass with no follow-up *Poa annua* control herbicide application results in turf that is over 50 percent *Poa annua* the following spring.

FIGURE 5



A fall seeding of perennial ryegrass with aggressive Tenacity use following seeding. *Poa annua* cover is essentially zero percent the following spring and ryegrass can fill in with no competition.

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in the seedbed of Kentucky bluegrass or perennial ryegrass to control *Poa annua* before it germinates. Tenacity can also be used postemergence within four weeks after seedling emergence (Fig. 4 and Fig. 5). Tenacity applied as recommended on the label at 8 oz./A in the seedbed followed by 8 oz./A at four weeks after seedling emergence is highly effective, as are three 5.3 oz./A applications with the first application

applied to the seedbed and the second and third applications made four and six weeks after seedling emergence. Though Tenacity is safe on seedlings of Kentucky bluegrass and perennial ryegrass and on established Kentucky bluegrass, damage is occasionally seen when applied to established perennial ryegrass.

Though not as commonly used, Prograss (ethofumesate) is also labeled and effective for *Poa annua*

control when applied to seedlings of perennial ryegrass (Fig. 3). Dimension or Dithiopyr (dithiopyr) has the most flexible label among the preemergence herbicides for use over seedlings. Dithiopyr can be applied shortly after the second mowing of the seedlings to help limit *Poa annua* germinating later in the fall and/or early spring. However, this herbicide cannot be used on fairways mowed below 0.5 inch.

Regardless of the situation on each golf course, it is crucial to follow up seeding with aggressive control of *Poa annua*. Furthermore, if seeding in the spring following winterkill, additional controls will likely be needed for crabgrass and broadleaf weeds. Tenacity, Tupersan (siduron), Drive and other quinclorac-containing products, Quicksilver (carfentrazone) and SquareOne (carfentrazone plus quinclorac) have some of the most flexible labels for use in seedling cool-season grasses for controlling crabgrass and/or broadleaf weeds.

REGRASSING WITHOUT CLOSING FAIRWAYS?

The expense and inconvenience of closing fairways often raises questions about successful regrassing from annual bluegrass without closing. Historical research suggests it is virtually impossible when converting to Kentucky bluegrass (Kraft et al., 2004) since it is not aggressive as a seedling.

Converting fairways to perennial ryegrass may be more successful since it is more aggressive as a seedling. Most success is seen with regular overseeding with creeping bentgrass to convert the fairways (Reicher and Hardebeck, 2002). However, most success is currently seen when overseeding at high rates over many years and when combined with scalping, growth regulators and/or other strategies that favor the overseeded grass (Figure 4). Our previously mentioned research is re-evaluating some of these strategies using newer herbicides after seeding.

FIGURE 6



Converting fairways to a new species is difficult without an application of glyphosate and closing. However, three years of seeding creeping bentgrass at high rates is starting to have an effect in this study on an Indiana golf course.

TAKE HOME MESSAGE

Unfortunately, many golf courses are faced with repairing summer- or winter-damaged areas of *Poa annua*. The easiest and quickest fix is to overseed a fast-germinating species plus allow the *Poa annua* to germinate and fill back in.

However, this is only a short-term fix and damage will likely reoccur with the next harsh summer or winter. Rethinking the situation, fixing the cultural issues, choosing to overseed a better-performing species at a potentially better time than used in the past and following up with *Poa annua* controls should help limit future problems.

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