

INTERSEEDING TIPS

Summary of T-1 and Alpha Trials

JACKLIN
S E E D
by Simplot

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TOPICS

Seeding Date

Establishment Techniques

Seeding Rate

Irrigation

Mowing Routine

Interseeding Frequency

PGR's (Plant Growth Regulators)

Cultural Practices

Over the past few years, there have been several articles detailing new research discoveries about interseeding with creeping bentgrass. New research projects include Jacklin Seed led research on golf course putting greens and fairways at multiple sites around the country, research initiated on the Jacklin Seed *Poa annua* research putting green, and research conducted at universities. While there is a lot of new and invaluable information about interseeding, a superintendent interested in interseeding has to compile all of this data from multiple sources. **The purpose of this article is to summarize all of those findings into one document; therefore, providing a one-stop for how to implement a successful interseeding program.**

SUMMARY OF INFORMATION

Choosing a Cultivar: This is a crucial step in your interseeding success. T-1, Alpha and L-93 are proven to work. Contact Jacklin Seed to discuss which is best for your project.

Seeding Date: Research projects at Rutgers University (New Jersey) indicate mid-summer seeding results in greater bentgrass coverage compared to a fall seeding date.

Establishment Technique: Establishment techniques appears to be important immediately following interseeding, but one-year later, results are similar regardless of how the seed was introduced into the *Poa annua* surface.

Seeding Rate: Recommended interseeding rates are between 2-4lbs/1000ft². (10-20g/m²)

Irrigation: Treat the area like a new seedbed. Keep area moist for at least 10-14 days after interseeding.

Mowing Routine: Continue normal mowing practices after interseeding. However, try to mow without collecting clippings, so you're not removing seed you just planted.

Interseeding Frequency: Interseed in multiple directions at least 1 to 2 times per year.

Plant Growth Regulators: For an aggressive conversion program, Trimit and Cutless applied in 2-week intervals at the maximum label rate provides best results. For a slower conversion, apply Legacy at the maximum label rate in 2-week intervals shows greater bentgrass than untreated plots.

Cultural Practices: Once bentgrass has established, inducing minor drought stress and backing off fungicide applications will further strengthen bentgrass, while weakening the existing *Poa annua* stand.

Pictured above: Alpha 4 months after Interseeding
Avondale, Hayden Lake, Idaho



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Summary of T-1 and Alpha Trials

SEEDING DATE

When is the best time of year to interseed creeping bentgrass?

Traditionally, when considering seeding creeping bentgrass on bare soil, a spring or fall seeding date is considered an optimum time of year for seeding. However, is a spring or fall seeding date the best time to seed when interseeding creeping bentgrass into a live stand of *Poa annua*? To answer this question, two projects were conducted at Rutgers University examining the effect of seeding date when (1) seeding bentgrass in an area with a seed bank of *Poa annua* and (2) interseeding creeping bentgrass into a live stand of *Poa annua*.

Results: The first project, Murphy et al (2005) seeded creeping bentgrass in mid-June, mid-August, mid-September, or mid-October. Various creeping bentgrass cultivars were planted, including L-93 which performed very well, at a seeding rate of 0.75lb/1000ft² (3.75g/m²). Glyphosate was sprayed two weeks and one week prior to each seeding date.

The following year after seeding, a June and August seeding date yielded greatest creeping bentgrass coverage, while September and October showed significantly less creeping bentgrass. When seeded in June, Pennncross was the worst and consistently had the greatest amount of *Poa annua* in plots the following year compared to the other creeping bentgrass cultivars.

While Murphy et al. (2005) determined that a mid-summer seeding was best when seeding into an area with a *Poa annua* seed bank, Henry et al. (2005) investigated the impact of seeding date when interseeding into a live stand of *Poa annua* without using glyphosate. Various creeping bentgrass cultivars were interseeded into *Poa annua* at the beginning of July, mid-August, or mid-September. 12 to 24 months after interseeding, the early July seeding date resulted in greatest bentgrass coverage. Also, similar to Murphy et al. (2005) results, Pennncross coverage was consistently lower on all rating dates over the 2-year study period.

Summary: While *Poa annua* germination ceases during summer months, creeping bentgrass can germinate and tiller in the summer; therefore, a mid-summer seeding appears to be a good strategy when initiating an interseeding program. Interseeding creeping bentgrass cultivars like T-1 and Alpha will provide best results because these have high shoot density and aggressive lateral growth habits which enable them to be more competitive against *Poa annua* than lower shoot density cultivars, like Pennncross.

Henry G.M., S.E. Hart, and J.A. Murphy. 2005. Overseeding bentgrass species into existing stands of annual bluegrass. *HortScience* 40(2): 468-470.

Murphy, J.A., H. Samaranayake, T.J. Lawson, J.A. Honig, and S. Hart. 2005. Seeding date and cultivar impact on establishment of bentgrass in soil containing annual bluegrass seed. *International Turfgrass Society Research Journal*. 10(Part 1): 410-415.

ESTABLISHMENT TECHNIQUES

The Importance of Establishment Techniques When Interseeding

Previous research has shown that seeding date is an important step when interseeding. The next management practice to consider when interseeding: Will the method of seed incorporation into *Poa annua* impact results? To answer this question, two projects were initiated on two golf courses in Spokane, WA, Downriver and Esmeralda. Both golf courses are two of the oldest courses in Spokane. Projects were conducted on practice putting greens that were composed primarily of *Poa annua*. Treatments included hollow-tine aerification, solid-tine aerification, grooming, and topdressing. Creeping bentgrass cultivars seeded included T-1 and Alpha at a 2lb/1000ft² (10g/m²) rate. Plots were interseeded in early July and left unmowed one week following interseeding. Details of this project have been published by Brede (2009) and Baldwin and Brede (2009 a, b). Complete references, with links to the full article, are listed below.

Results: As shown in the graph on the next page, 3 months after interseeding at Esmeralda golf course, grooming treatment had greater bentgrass than hollow-tine aerification, followed by solid tine aerification. However, 1-year after interseeding, no clear trends emerged indicating that one establishment technique was superior to another. All plots were rating an average of 55% to 65% bentgrass. It should also be noted that the practice putting greens were only interseeded once and no PGRs were applied. Overall, these areas were managed like a *Poa annua* putting green.

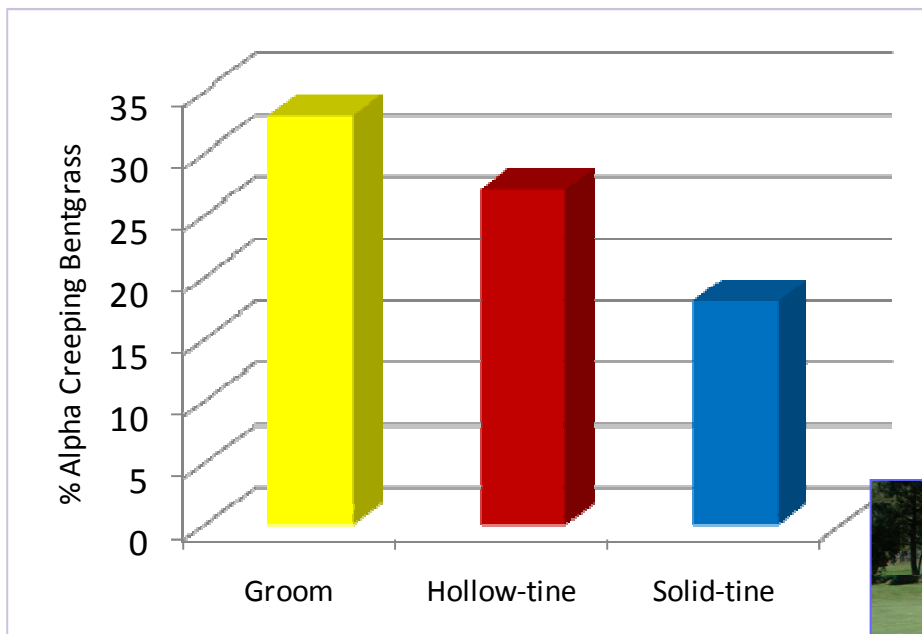
INTERSEEDING TIPS

Summary of T-1 and Alpha Trials

Establishment Techniques continued

Continued—

Summary: In the months immediately following interseeding, the method used to interseed T-1 or Alpha bentgrass into *Poa annua* seems to be most influential. However, 1 to 2 years later, the amount of T-1 or Alpha coverage was similar, regardless of treatment. As shown in the picture below, the species population of these putting greens shifted from predominantly *Poa annua* to a healthy mix of *Poa annua* and creeping bentgrass 1-year after interseeding. These projects prove the effectiveness of Alpha and T-1 as a vital component to an interseeding program.



Graph (left): Comparison of establishment technique treatments of solid-tine aerification, grooming, and hollow-tine aerification 3 months after interseeding 'Alpha' creeping bentgrass at Esmeralda golf course in Spokane, WA

Pictured (below): Illustration of how the Downriver golf course practice putting green species composition has shifted from *Poa annua* to a mix of creeping bentgrass and *Poa annua* 1-year after interseeding T-1 and Alpha.



Baldwin, C.M. and D. Brede. 2009a. Crowding out *Poa*. *TurfGrass TRENDS*. 63 (8):53, 56.

Baldwin, C.M. and A.D. Brede. 2009b. Seeding rates and establishment techniques when interseeding 'T-1' and 'Alpha' creeping bentgrass into *Poa annua* putting greens and fairways. 2009 Annual Meeting Abstracts [ASA/CSSA/SSSA/CSSS]. Pittsburg, PA.

Brede, D. 2009. Superintendents report success interseeding bentgrass into *Poa annua*. *Turf & Recreation*. September/October. 22(6):25-30.

SEEDING RATE

Should Seeding Rates Increase When Interseeding into *Poa Annua* Fairways?

When establishing creeping bentgrass, normal recommended seeding rates range from 0.75 to 1.0lb per 1000ft² (3.75-5g/m²). However, should this recommendation change when interseeded creeping bentgrass into a live stand of *Poa annua* or an old fairway?

To determine this, T-1 and Alpha were interseeded into fairways in Pennsylvania and Minnesota in 2008. These were chosen because of their climates are challenging. The first project was on Bunker Hills Golf Course in Coon Rapids, MN (public golf course). T-1 and Alpha were interseeded the first week of June at 1, 2, or 4lbs/1000ft² (5, 10, or 20g/m²). Seed was introduced using a TriWave 60-inch seeder. The second project was initiated on a private golf course, Green Valley Country Club, near Philadelphia, PA. Treatments and method of seed incorporation were identical, except plots were seeded the first week of August.

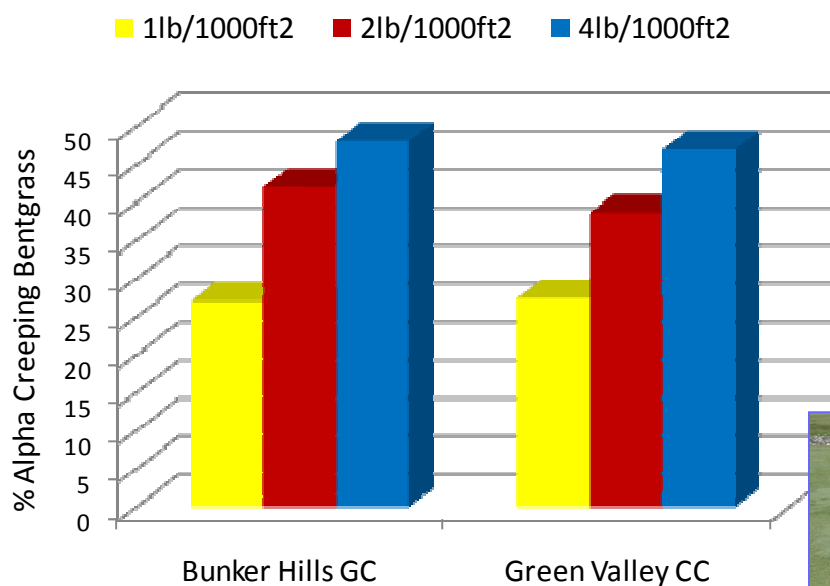
INTERSEEDING TIPS

Summary of T-1 and Alpha Trials

Seeding Rate continued

(continued)— Fairways at both sites were predominantly *Poa annua*. Details of these projects have been published by Brede (2009) and Baldwin and Brede (2009 a, b). Complete references, with links to the full articles, are listed below.

Results: Regardless of location, results were similar. Increasing seeding rates increased both T-1 and Alpha establishment 1-year after interseeding into *Poa annua*.



Graph (left): Comparison of seeding rate treatments, 1, 2, and 4lbs/1000ft² (5, 10, or 20g/m²), 1-year after interseeding 'Alpha' creeping bentgrass at Bunker Hills golf course in Coon Rapids, MN and Green Valley Country Club in Lafayette Hills, PA.

Pictured (below): Note the amount of Alpha creeping bentgrass 1-year after interseeding at Bunker Hills Golf Course in Coon Rapids, MN. Previously, this fairway was almost 100% *Poa annua*.



Summary: Results from the east coast and Midwest both suggest a seeding rate between 2-4 lbs/1000ft² (10, or 20g/m²). These rates increased the amount of T-1 and Alpha creeping bentgrass 1-year following interseeding compared to lower rates. A higher seeding rate does not appear to create an environment where seedlings compete with each other; rather, a higher rate seems to compensate for increased seed mortality that may occur when interseeding into a live stand of *Poa annua* or an old fairway.

Baldwin, C.M. and D. Brede. 2009a. Crowding out *Poa*. *TurfGrass TRENDS*. 63(8):53, 56.

Baldwin, C.M. and A.D. Brede. 2009b. Seeding rates and establishment techniques when interseeding 'T-1' and 'Alpha' creeping bents into *Poa annua* putting greens and fairways. 2009 Annual Meeting Abstracts [ASA/CSSA/SSSA/CSSS]. Pittsburg, PA.

Brede, D. 2009. Superintendents report success interseeding bentgrass into *Poa annua*. *Turf & Recreation*. Sept/Oct. 22(6):25-30.

MOWING ROUTINE

Should Interseeding Alter Mowing Routines?

An important management decision to consider after interseeding is mowing. Should mowing stop for a certain period of time or should mowing continue as normal. To answer this management question, a research project was initiated at the Jacklin Seed research putting green. Alpha creeping bentgrass was interseeded into a 100% stand of *Poa annua* in September at 3lbs/1000ft² (15g/m²) which is not the best time to interseed as *Poa annua* is at its most competitive. Following interseeding, the area was topdressed and brushed. Treatments included continuous mowing, skip week 1, skip week 2, skip week 3, and skip weeks 1-3. *continued*

INTERSEEDING TIPS

Summary of T-1 and Alpha Trials

Mowing Routine continued

(continued)

Results: Details of this project have been published by Brede (2009). The complete reference, with a link to the full article, is listed below. Regardless of when plots were rated, no treatment stood out as being superior to any other treatment. However, an interesting trend emerged as the data was analyzed: skipping mowing 2 weeks after interseeding resulted in

slightly less bentgrass compared to continuous mowing. This makes sense as creeping bentgrass is starting to germinate at this time. By skipping mowing 2 weeks after interseeding, the *Poa annua* grew tall and presumably shaded out the newly germinated creeping bentgrass seeds.

Summary: It appears the best mowing strategy following interseeding is to continue daily mowing. While our recommendation is to continue a normal mowing pattern, if possible, keep the buckets off the mower so seed removal is minimized.

Brede, D. 2009. Superintendents report success interseeding bentgrass into *Poa annua*. *Turf & Recreation*. September/October. 22 (6):25-30.

INTERSEEDING FREQUENCY

Interseed in multiple directions at least 1 to 2 times per year.

PGR'S Plant Growth Regulators

Are Plant Growth Regulators an Effective Tool for *Poa annua* Control When Interseeding?

Studies were conducted on practice putting greens at two public golf courses, Downriver and Esmeralda, in Spokane, WA and one golf course in Hayden Lake, ID, Avondale. Prior to applying plant growth regulators (PGRs), all study sites had approximately 60 to 65% T-1 and Alpha creeping bentgrass. PGR treatments at Downriver and Esmeralda included a control, Legacy (5 and 10oz/A) (0.04-0.07ml/m²), Cutless (4 and 8oz/A) (0.03-0.06ml/m²), Primo (11oz/A) (0.08ml/m²) and Trimmit (8oz/A) (0.06ml/m²). All PGR treatments were applied every two weeks beginning on May 19, 2009 and continued through late September. At Avondale, PGR treatments included a control, Legacy (5 and 10oz/A) (0.04-0.07ml/m²), Cutless (6.4oz/A) (0.05ml/m²), Primo (11oz/A) (0.08ml/m²) and Trimmit (8oz/A) (0.06ml/m²). PGRs were applied every two weeks and were initiated on May 29, 2009 with a final application in mid-September. Data collected included percent creeping bentgrass, *Poa annua* color, creeping bentgrass color, and recovery from aerification. Plots at Avondale were aerified a few days after PGRs were applied. Ratings were recorded approximately 10 days after aerification.

Results: Results were similar at Downriver and Esmeralda; therefore, only Downriver data will be summarized. At Downriver, Legacy (10oz/A) (0.07ml/m²), Trimmit (8oz/A) (0.06ml/m²), and Cutless (8oz/A) (0.06ml/m²) resulted in greatest bentgrass coverage with approximately 81% in mid-August. The PGR with the least amount of bentgrass in plots was Primo (66%). The amount of creeping bentgrass slightly decreased by late September; however, trends were similar with Legacy (10oz/A) (0.07ml/m²), Trimmit (8oz/A) (0.06ml/m²), and Cutless (8oz/A) (0.06ml/m²) having greatest bentgrass coverage with approximately 72%. Again, Primo only had 56% bentgrass in plots. While Trimmit, Cutless, and Legacy resulted in greatest bentgrass in plots, these PGRs also resulted in greatest bentgrass and *Poa annua* discoloration. However, Legacy resulted in significantly less creeping bentgrass and *Poa annua* discoloration. At no time did Primo cause any discoloration of either creeping bentgrass or *Poa annua*.

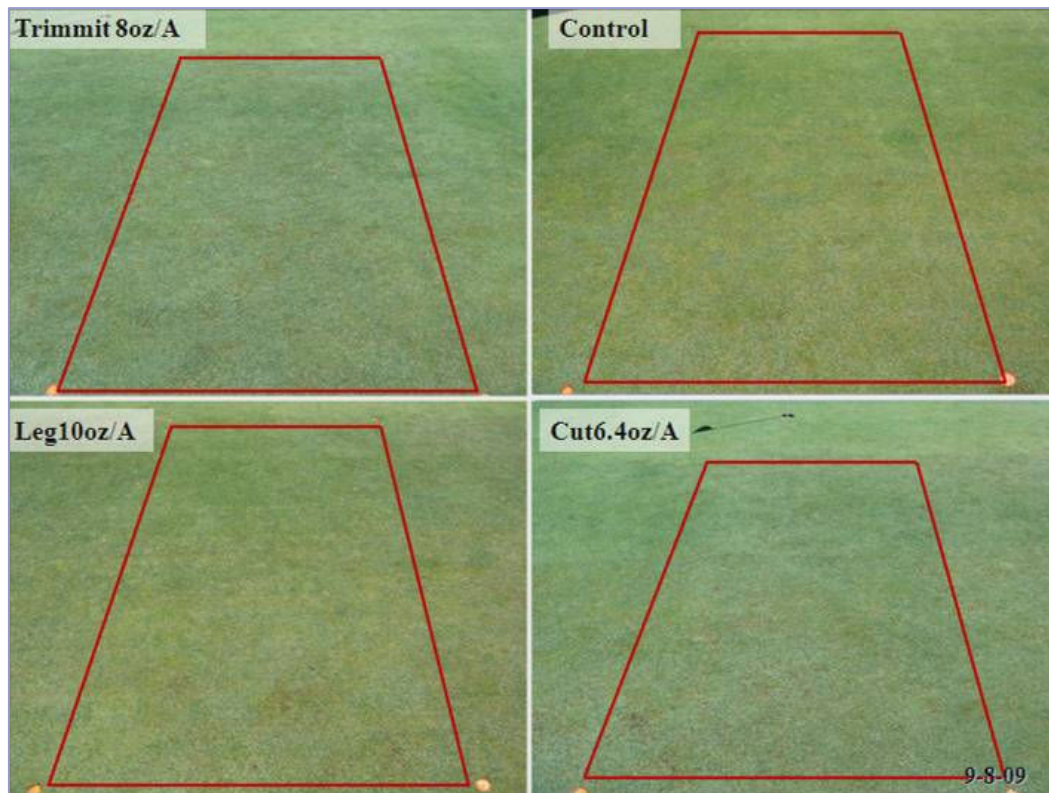
At Avondale, results slightly varied from Downriver and Esmeralda. By the beginning of September, Trimmit (8oz/A) (0.06ml/m²) and Cutless (6.4oz/A) (0.05ml/m²) showed the highest percent creeping bentgrass with approximately 80%. Legacy was equally effective as these two PGRs at Downriver and Esmeralda; however, Legacy only yielded 67% creeping bentgrass at Avondale. Regardless, Primo was the least beneficial PGR only resulting in 60% creeping bentgrass. Color ratings at Avondale were similar to Downriver. Trimmit and Cutless caused the most amount of discoloration followed by Legacy (10oz/A) (0.07ml/m²);

INTERSEEDING TIPS

Summary of T-1 and Alpha Trials

PGR's Continued

(continued)—meanwhile, Primo did not discolor *Poa annua* or creeping bentgrass at any time. All PGRs reduced recovery following an aerification event compared to non-PGR treated plots (Fig. 2). Trimmit (8oz/A)(0.06ml/m²), Cutless (6.4oz/A) (0.05ml/m²), and Legacy (10oz/A) (0.07ml/m²) significantly reduced the rate of recovery following aerification.



Pictured (above), note the amount of T-1/Alpha following 8 applications in two week intervals of Cutless and Trimmit treated plots. Picture taken 9-8-09 at Avondale golf course in Hayden Lake, ID where *Poa annua* thrives in the Idaho climate.

Summary: Results from these studies show that implementing a PGR program is effective to increase the amount of T-1 and Alpha creeping bentgrass, while reducing the population of *Poa annua* on putting greens. When considering PGRs, Primo was the least effective and consistently showed creeping bentgrass percentage similar to control plots. While PGRs appear to be an invaluable tool in an interseeding program, the amount of discoloration from the initial applications may be considered unacceptable for many superintendents. Also, the timing of PGR applications should be taken into consideration prior to initiating a PGR program. Therefore, prior to widespread use on a golf course, on-site testing should be initiated due to the many variable environments present on golf courses which could impact results.

CULTURAL PRACTICES

Once T-1 or Alpha bentgrass has the chance to fully established, inducing minor drought stress and backing off fungicide applications will further strengthen bentgrass, while weakening the existing *Poa annua* stand. For recommendations specific to your program, please contact your Jacklin representative.

For more information:

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