



## Establishment and Management of Alpha Creeping Bentgrass

Written by Doug Brede, Ph.D., breeder of Alpha



### **General Guidelines**

Each and every golf course is unique. As breeder of Alpha creeping bentgrass, I developed the following guidelines to serve as a starting point in the management of this remarkable cultivar. These guidelines cover the basics as well as some advanced topics of cultivar management. Do not assume you need to incorporate every one of these recommendations, as Alpha is fairly flexible and accommodates a range of management styles. Sound agronomic judgments will always produce the best performing turf.

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### Establishment

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#### **Timing of seeding**

Bentgrass seed germinates most readily when soil temperatures are warm (above 60°F/15°C). If seeded in very warm conditions (above 80°F / 27°C air temp), bentgrass will germinate quickly but may need protection from damping-off fungi. Seed can be coated with fungicide to provide protection before emergence. In most cases an over-the-top application of fungicide after emergence will be sufficient.

Warm soil temperatures offer the best time to plant if *Poa annua* seed is present in the soil. *Poa annua* rarely germinates above 80°F / 27°C, hence giving the competitive edge toward bent establishment.

Bentgrass can be sown in the cooler months of the year but seed may require 30 days or more to emerge in cold weather. During this interval the surface is vulnerable to erosion. For example, seed planted in early August might produce a putting green that's ready for play by June of the next year. However, a green not planted until late September (in Northern areas) may require a full year until it's ready to open for play.

In semi-tropical areas, spring plantings may be problematic in trying to nurse immature seedlings through the summer. This feat can be accomplished but requires skill in irrigation and fungicides. Spring planting may also prolong the time until the grass is ready to play.

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#### **Germination rate**

Alpha exhibits good seedling vigor. It is equal to or better than 82% of bentgrass varieties in seedling vigor, according to university trials. Because Alpha has a slower vertical growth rate than Penncross or Seaside it may appear to produce less topgrowth during establishment. This is normal.

Superintendent observations:

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“Germination of Alpha was fast and consistent. It popped in 4 to 5 days.” - Jim Roney, superintendent, Sand Ridge CC, near Cleveland, OH

“I'm happy with Alpha's quick establishment and dense, upright turf that held up beautifully on our newly redesigned driving range tee here at Metropolis Country Club,” says Tony Grasso, superintendent, White Plains, NY. “Members are pleased with its great year-round color, ball set-up and disease resistance.”

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**Seeding rate**

The optimal seeding rate for Alpha is 0.75 to 1.5 lbs. of seed per 1000 ft<sup>2</sup> (3.7-7.5 g/m<sup>2</sup>). Applying more than 1.5 lbs. seed per 1000 ft<sup>2</sup> does not make up for seeding errors, nor does it allow for the green to open sooner for play. In fact, it may delay opening day because the overly dense plants are immature. Excessive seeding rates produce turf that is less stress tolerant and more susceptible to damping off.

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**Establishment fertility**

Do a lab soil test before seeding so that results are in hand prior to establishment day. Apply a corrective (basic) fertilizer to correct deficiencies in P, K, Mg, and pH as noted on the lab report. Do not try to correct N, or Ca in most cases, or pH's above 8.5.

Apply a balanced starter fertilizer with a 1-1-1 ratio of N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O (example: 10-10-10 or 16-16-16). Apply just before, at, or within 1 week after seeding. Apply it at 0.75 to 1.5 lbs. of actual nitrogen (N) per 1000 ft<sup>2</sup> (3.8 to 7.5 g N/m<sup>2</sup>). With a 16-16-16 product, this would equate to a rate of 200 to 400 lbs. of fertilizer product per acre. If a farm-grade fertilizer is used, apply only the lower rates to avoid burn.

Another alternative, if potassium levels are adequate, is to apply a 4-5-1 ratio starter. A product based on mono-ammonium phosphate offers fast nutrient availability with less salt effect.

Some superintendents prefer a starter with some slow-release N component. Try to avoid using a superphosphate-based P-source, as superphosphate dispenses phosphate slower than seedlings require. Generally do not use liquid fertilizer as a starter treatment unless you have had success with this method in the past.

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**Fertilization from emergence to 4-6 weeks**

An application of 1-1-1 ratio fast-release fertilizer should be made on an every-five-day cycle at 0.3 to 0.5 lbs. N/1000 ft<sup>2</sup> (1.5-2.5 g N/m<sup>2</sup>). Water immediately after applying. Another alternative is a 6-1-6 ratio fertilizer with some slow-release nitrogen component.

Fertigation (i.e., soluble fertilizer delivered through the irrigation system) may be applied at 0.3 to 0.5 lbs. N/1000 ft<sup>2</sup> (1.5-2.5 g N/m<sup>2</sup>) every 1 to 2 weeks.

Ammonium sulfate can be substituted during the cooler months as a nitrogen source. Ammonium sulfate also benefits disease control.

Seedlings grown on a sand-medium will usually require a foliar micronutrient application by

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2 or 3 weeks after emergence.

Superintendent observation: The following notes were recorded by the superintendent at Red Rock CC in Las Vegas during establishment of their Alpha practice green:

“Log For New Green (All fertilizer apps are applied with Scotts R-8)

April 27, 2004 - Applied pre plant fertilizer

- 3 bags of Milorganite, 1 bag of 8-30-15, 0-0-50 setting J (1 direction)

April 27, 2004

- Seeded green
- Set up water for 3 minutes every hour from 5 am to 8 pm

May 1, 2004

- Seed swelling, seeing small hairs on seed

May 2, 2004

- Some seed germinating

May 8, 2004

- Fertilized for first time
- 10-4-16 set M (1 direction) 3/4 lbs. N, 0-0-50 set D1/2 (1 direction) 1lb. K
- Bumped down irrigation from 3 min. every hour, to 5 min. every other hour

May 11, 2004

- Fertilized w/ 10-4-16 set M (1 direction) 3/4 lbs. N, 0-0-50 set D1/2 (1 direction) 1 lb. K

May 13, 2004

- Mowed for first time @ .375

May 14, 2004

- Mowed for second time @. 300
- Fertilized w/ 10-4-16 set M (1 direction) 3/4 lbs. N, 8-30-15 set K (1 direction) 1 lb. P, 0-0-50 set D1/2 (1 direction) 1 lb. K

May 16, 2004

- Mowed again @. 300

May 17, 2004

- Fertilized w/ 10-4-16 set M (1 direction) 3/4 lbs. N, 8-30-15 set K (1 direction) 1lb. P, 0-0-50 set D1/2 (1 direction) 1lb. K

May 18, 2004

- Mowed again @ .300
- Bumped down irrigation from 5 min. every other hour, to 4 and 3 min. every other hour

May 20, 2004

- Mowed @ .250
- Topdressed with straight sand
- Rolled with greens roller

***Maintenance  
fertilizer during  
grow-in***

Maintenance fertilization varies depending on whether the growing medium is straight sand, USGA mix, or native soil. Sandier soils will require lighter and more frequent fertilizations and slightly heavier yearly rates.

Switch from a grow-in to a maintenance fertilizer regime at 4 to 6 weeks after emergence, or when the grass has reached nearly 100% ground coverage. It is important with Alpha to decrease the N fertility input as the stand completely covers the ground. Apply fertilizer as the grass requires it, not on a calendar schedule (see Maintenance section below). It is not unusual to end up applying 8-10 lbs. N/1000 ft<sup>2</sup> (40-50 g N /m<sup>2</sup>) over the course of the first growing season. That amount should drop by half in the second year and be even lower in the third.

There are numerous fertilizer choices that can be used during grow-in. Polyon or similar slow-release fertilizer, such as GreensKote 18-3-18, can be applied at 500 lbs. product per acre. Or a 1-1-1 ratio soluble fertilizer can be used at 0.1 to 0.3 lbs. N/1000 ft<sup>2</sup> (1.5-2.5 g N/m<sup>2</sup>) as needed during the season for quick greening, especially if the stand seems sluggish or there are not enough clippings caught in the buckets. Liquid fertilizer sources can be sprayed on the turf or fertigated at label rates as needed.

***Mulch***

A light application of wood fiber, clean straw, pellet or other organic mulch can be applied to the surface. Mulch aids moisture retention around seedlings and minimizes washing of seed during storms. Some courses remove the straw at 3-4 weeks (raking) while others allow it to decompose. Mulch can be used on all seeded areas, with lower mulch rates used on closer-cut surfaces.

The mulch can be omitted if an auto-irrigation system is used and timings of water are tightly controlled (see below). Some people have had success with a geotextile blanket in lieu of an organic mulch. If you have used these successfully before, you can use them with Alpha. Otherwise, I'd recommend sticking with organics.

***Mowing during  
grow-in***

The first mow should occur as soon as the surface is physically capable of supporting the weight of a mower, without damage. Never let the stand grow to 1 inch (25 mm) tall before mowing. First mowing should be done when there is uniform turf coverage and the plants reach:

- 0.25 to 0.38 inch (6 to 10 mm) for greens
- 0.38 to 0.5 inch (10 to 12 mm) for tees
- 0.6 to 0.75 inch (16 to 19 mm) for fairways

It's a good idea to run a walk-behind mower across the green with the reels off, once before mowing for the first time, to help solidify the surface. Collect the clippings during the first mow and then alternate catching and not catching until surface coverage reaches 80%. This small amount of added biomass improves wear and reduces ball marking when the course first opens. Use a fiberglass whip as needed to prevent clippings from shading and damaging the surface.

Never use a riding or triplex mower for the first 4-6 weeks after establishment. Wait until the greens are solid enough to support the weight without tearing. Many superintendents prefer to use only walk-behind mowing the first growing season on greens.

Lower the mowing height in small increments, every other mow. Ideally, you should reach the desired mowing height by 6 to 8 weeks after first mowing if not sooner. The greens should be mowed the first season with smooth front rollers. Grooved rollers should not be used the first year, especially on the clean-up pass.

Special care should be given depending on the sand particle shape: Round sands tend to shift during establishment causing holes and bare spots to form. Angular sands pack tighter but can be more abrasive to young plants until a thatch builds.

***Topdressing during grow-in***

Light weekly topdressing should be used to help cover the clippings and smooth any surface irregularities. Washed masonry sand with particles from 0.25 to 0.5 mm can be used in place of a sand-organic topdressing during the establishment year, if desired.

***Irrigation during grow-in***

The irrigation system should be checked thoroughly before seeding day. It's a good idea to water the day before seeding to help firm the sand surface and bring the green to field capacity. A green will normally require more irrigation the first week after seeding than thereafter.

During germination, it is best to irrigate on multiple 5 to 10 minute cycles, spaced out across the daylight hours. The time of run should be watched every day so that NO puddling or washing of seed occurs. If the system is flexible enough, 2 revolutions of the sprinklers every hour is ideal.

Early irrigating practices are key to success or failure of bentgrass establishment. The critical time for seedling viability is when seedlings are first emerging from the soil. At that point seedlings are at their lowest energy state and even one missed day of irrigation (or rainfall) can mean a spotty stand. At around 2 weeks after emergence, gradually switch from very frequent watering to once or twice daily watering. By 4-6 weeks after emergence, the green should be on a normal maintenance irrigation schedule (see below).

***Core aeration and vertical mowing during grow-in***

Core aeration is generally unneeded during the establishment year. In fact, it can cause surface damage if handled roughly, until the sand surface stabilizes. Vertical mowing (grooming) is desirable during the establishment year if you notice plants with larger-than-desired leaf widths, and/or stolons creeping across the surface into thinner areas.

***How to tell when an Alpha green is ready for opening***

My rule of thumb is to cut a square of turf from the green and examine it to see whether a mat (cushion) layer has adequately developed. Also, try pulling the square apart. It should be fairly resistant to tearing.

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**Maintenance**

***Fertilizer***

Yearly nitrogen applications should total 1 to 4 pounds (5-20 g/m<sup>2</sup>), phosphorous 2 to 3 pounds (10-15 g/m<sup>2</sup>), and potassium 6 to 10 pounds/1000 ft<sup>2</sup> (30-50 g/m<sup>2</sup>). Higher rates in each range are used with more golf rounds and sandier soils. Likewise, courses with smaller-than-average greens may need to fertilize to compensate for more concentrated wear.

Alpha greens up earlier in the spring than most creeping bentgrass cultivars and thus may benefit from an earlier “wake-up” shot of fertilizer. In university trials averaged across 7 sites from Washington State to Virginia, Penncross greened up 84% as strongly as Alpha, and Seaside only 63%.

Alpha has a naturally dark color and does not lose its color readily. Therefore, you are advised to watch the clipping collection buckets rather than relying on color to tell you when to fertilize.

Also, being a dwarf bentgrass strain, Alpha produces less volume of clippings than some other bents. Keep this in mind if you’re used to growing older bents like Penncross and Seaside and gauge your maintenance inputs accordingly.

A soil test should be done annually, each year in the same month, to correct deficiencies. Micronutrients should be checked via tissue tests during the summer.

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***Mowing***

Common mowing heights for Alpha are:

0.100 to 0.150 inch (2.5 to 4 mm) for greens

0.150 to 0.400 inch (4 to 10 mm) for tees

0.250 to 0.500 inch (6 to 12 mm) for fairways

Although Alpha is a “Fore-giving” bentgrass, it is not recommended that you skimp on its mowing frequency. A consistent mowing schedule always provides a higher quality turf. Infrequent mowing results in the removal of excessive amounts of leaf tissue and puts the grass under stress. Removal of half of the leaf tissue at a single mowing can result in stunted growth

and a stemmy surface. For greens, mowing 6-7 times weekly is recommended. Mowing less often can be done if reductions in surface quality are acceptable. For fairways or tees, mowing 2 to 3 times weekly during the growing season is best.

Changing mowing patterns each day helps eliminate grain and reduce wear and compaction. When triplex greens mowers are used, the final “clean-up” cut around the perimeter of the green should be mowed on alternate days. Some superintendents make this perimeter cut with a walking greens mower to reduce wear and compaction.

If fast greens are desired for tournament play, mowing heights can be lowered for a short period. However, other practices such as brushing and verticutting are recommended instead to increase speed of greens. Research has shown that the primary factors influencing putting green speed are double mowing (mowing twice per day) and rolling.

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***Vertical mowing,  
grooming,  
brushing***

Alpha generally will require less vertical mowing than “horizontal” varieties like Penncross. Once or twice a month should be adequate in most cases. Groomers may reduce the need to verticut as often. Groomers may be used as desired (perhaps 1-4 times per week) depending the growth and maturity.

Some superintendents use a deep verticut (Graden) in the spring to remove thatch and dead material. My preference for thatch control is core aerification and topdressing.

Brushing is another useful maintenance tool. Brushing early in the spring and once a month depending on weather and growth, will increase plant density. Brushes on mowers will do an acceptable job but are not as thorough as a heavier brushing or brooming.

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***Aerification,  
topdressing***

Most golf courses aerate two to three times a year - once in the spring, early summer and fall. Aerification frequency of Alpha is similar to other bentgrasses. Because of its lateral vigor, Alpha heals readily after aerification. Therefore, a range of tine sizes can be used from the ¼” solid to 5/8” hollow core. Solid tine, star tines, and Hydro-jet injection also work.

A divot-recovery trial at Oklahoma State University confirmed the healing rate of Alpha. Divots taken June 15th on tee-height Alpha healed 65% by 4 weeks versus 44% for Seaside and 58% for Princeville.

Superintendent observation: “We had cottage guests at the course who took quite a few wedge shots off our bent test plots, leaving big divots all across the plots. Four weeks later, I was showing a visitor around. The divots were still apparent on most plots but were gone on the Alpha plots. I mean, we could still feel the depressions in the Alpha plots but the divots were filled solid.” - Jim Roney, superintendent, Sand Ridge CC, 0.100 inch mowing

Topdressing styles vary from golf course to golf course. Topdressing is important to smooth the greens from foot traffic and ball marks. Alpha accommodates light weekly applications

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or heavier monthly applications. The main purpose of topdressing is to dilute thatch. An even blending of topdressing and thatch is the fastest way to stem thatch buildup.

If thatch thickness is increasing, your options for remedy are to apply less nitrogen per year, apply topdressing more frequently, and/or aerify more often.

It is important to incorporate the topdressing into the plant canopy. Topdressing can be worked into the stand by dragging or brushing, or with the application of water. Remaining small stones and large sand particles should be brushed off the green.

Alpha has a shoot density that is 2-3 times greater than older bents. Thus it is important to open up the stand before topdressing by use of groomers, verticutting, grooving, slicing, aerification, or spiking. It may also be helpful to specify topdressing sand with fewer large particles (>0.5 mm).

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**Irrigation**

It is best to irrigate “as needed” rather than on a tightly fixed schedule. Weather conditions and greens construction have major influences on watering. Watering rates vary from 0.05 to 0.3 inches (1.3-7.6 mm) per day depending on temperature, wind, humidity and sunlight. During cooler months, rates are less than 0.1 inch (2.5 mm) of water per day and weekly irrigation may be adequate.

Watering every other day or every second day is preferable over daily irrigation. Research from Texas A&M has shown that watering greens every other day or twice weekly produced a higher quality surface than turf watered daily (weekly water rates being equal).

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**Plant growth regulators (PGR's)**

Alpha responds well to Primo MAXX (trinexapac-ethyl), Proxy (ethephon), and Trimmit (paclobutrazol). In fact, Alpha gets even darker and more dense with PGR treatment.

Recovery rate from ball-mark damage can be enhanced by the application of PGR. Studies at Penn State University have shown that growth regulators and bio-stimulants can accelerate ball mark recovery without the need to increase nitrogen fertility, which can reduce green speed.

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**Poa annua control (annual bluegrass)**

Alpha was bred for improved competitiveness against *Poa annua*. At Jacklin Seed, we test every bent strain in our breeding program against *Poa annua*. If it can't hold up against *Poa*, we pitch it. All of the plants that went into Alpha excelled at keeping *Poa* at bay. In fact, they made visible gains against *Poa* every year.

Alpha's *Poa annua* resistance was confirmed in a fairway-height wear trial at the University of Wisconsin O.J. Noer Center. Alpha maintained less than 6% *Poa* invasion under heavy simulated-cart wear. Penncross had twice as much *Poa annua*, Seaside and velvet bentgrass three times as much, and colonial bentgrass four times.

Paclobutrazol (Trimmit) is a particularly useful tool for enhancing the superior *Poa*

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competitiveness of Alpha. Alpha responds well to the higher label rates of paclobutrazol on 4 to 6 week intervals throughout early summer. Ethofumisate (Prograss) and bispyribac-sodium (Velocity) are also safe on Alpha at label rates and timings.

Superintendent observation: Kirtland CC (Cleveland, OH, area) planted a tee box to Alpha, surrounded by *Poa annua*. No *Poa* has been seen on the tee, and the Alpha is actually spreading out into the surrounding *Poa*.

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***Interseeding  
Alpha into an  
existing turf***

Interseeding is the introduction of a new grass into existing turf. One of the most challenging surfaces for interseeding is an existing putting green during play. Interseeding in the past was of little value for most golf courses because cultivars were not vigorous enough to compete under these extreme growing conditions. Initial testing has shown that Alpha is in a league by itself in interseeding capability. A separate protocol sheet is being assembled to explain interseeding tips and techniques in detail. The following is a brief description of two techniques for incorporating Alpha seed into existing turf:

Seed 1 to 3 times annually, each time in a different direction. Use 2-4 lbs. Alpha seed per 1000 ft<sup>2</sup> (10-20 g/m<sup>2</sup>) per application. Research at Jacklin Seed has shown that establishment rate (i.e., surface area covered by Alpha) effectively doubles when seeding rates increase from 1 to 2 lbs. and from 2 to 4 lbs.

Alpha interseeds best into *Poa annua* during months when soil temperatures are warmer. Vertical mow, aerify, or slit seed to open the stand and allow the seed to reach the soil. Then broadcast seed, topdress, and drag or rake.

An alternative method is to interseed at low rates every two weeks throughout the growing season, whenever the stand is groomed, spiked, or topdressed. This technique regularly introduces bentgrass seed to the green and is useful for countering the *Poa annua* "seed bank" in turf soils. A Gandy tip-spiker can also be used to seed. The hopper can be throttled down to low seed application rates.

Superintendent observation: Mark Kuhns at Baltusrol Golf Club uses light, frequent rates. He applies 0.1 to 0.25 lbs. of seed every 2 weeks via a Scotts drop spreader with the spreader gate closed (the spreader leaks bent seed at the proper rate when closed!)

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*Information in this fact sheet is provided as a general guideline. It is intended as a starting point in developing a sound management program. Alpha creeping bentgrass is a patent-pending variety, covered under US patent 10/872,695. Unauthorized propagation is prohibited.*