FEATURE ARTICLE
Mark Grundman *Jacklin Seed by Simplot*

Seeding– What Works

Image 1. A dead putting green in Northern Minnesota after winter of 2004-05

In the past most have attempted intraseeding (seeding into an existing stand of turfgrass to shift plant populations) in one form or another with limited success. Some researchers and investigators will tell you the failures outnumber the successes by a wide margin. If the odds are stacked against this process, why should do we keep trying to intraseed? There are several answers, however, Mother Nature is often the reason we need to keep trying to grow turf in this fashion. Adverse growing conditions generating turf loss such as the winter of 2004 and the summer of 2005 caused a number of golf courses throughout the Midwest to look to intraseeding as a method to compensate for the damage that occurred.

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Sometimes turf managers will try and improve existing grass stands by seeding with improved cultivars and varieties because they offer better disease resistance, traffic tolerance, and life at lower mowing heights. Perhaps one of the largest reasons behind an attempt to change a turf is our old friend Mrs. Poa annua. Often I hear "well if my current grasses do not survive, then Poa annua will save the day". Unfortunately with shrinking budgets, the cost of maintaining Poa annua has become quite expensive. Thus, the need for grass replacement with a species or variety that is adapted to day-to-day usage is needed to help compensate for these problems. *(See Image 1.)*

Setting Up a Program

My experience shows those turf managers that set up a plan to intra seed have the most success rather than those that just run out with the seeder at the first crack of cool weather. The first step to a successful plan is to answer the question: Why should I seed? Typically your answer will be one of the following.

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- To increase density.
- To change the genetic variability of or turf area.
- To increase the overall disease resistance.
- To build better wear tolerance.
- To build better uniformity and color into our grassed areas.

In giving this a great deal of thought, I find of all problems faced by most turf managers, old Mrs. Poa annua keeps making her way to the top of the list. When battling any foe, it is important to know "thy enemy". A review of the strengths and weaknesses of Poa annua are as follows:

- Invades whenever we have a problem.
- It disrupts the uniformity of any course.
- Monies spent to create a constant uniformity is enormous.
- Shoot density declines during the summer months.
- Dies when subject to heavy traffic and other summer stresses.
- The prolific seed bank helps it to recover, however, not until the end of the golfing season.

And most importantly, we always compete with *Poa annua* when it is at its strongest.

The question asked every day on golf courses is how do we compete with such an aggressive plant? The answer is easy, with an aggressive, better-adapted plant. We all know that an improved stand of bentgrass or bluegrass will significantly reduce the amount of management that we apply to our courses, and in turn will keep *Poa annua* at bay. So the real question is how do we do this successfully into an existing stand of turf?

The first step is to take a critical look at the overall condition of the golf course and evaluate where we have greatest number of problems. Next, set a realistic budget targeted to correct the reasons *Poa annua* invades. Typically these areas have poor drainage, low light levels, greater compaction, etc. Once these problems are remedied, evaluation and selection of the best turf species can occur.

This is a critical part of the program, and every step should be taken to look at each species and variety that will give the best edge against the competitive nature of the weedy species that invades our turf. Look for grasses that match color wise, are adaptable to current mowing and nutrient regimes, and offer strengths to maintain themselves against the problems of disease, high traffic, high heat and cold tolerance. *(See Image 2.)* Ask your local seed vendors for information on varieties that show the strongest tolerance to the problems on your list. Second, evaluate this information through local test facilities. If none are available, regional testing sites can give great insight into the varieties that will work best. Remember, every site is different, so search for the grasses that will give you the best long-term solutions. One point

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Image 2. Intraseeded putting green in Northern Minnesota in Summer 2005

to remember when mixing grasses or species is the mix or blend is no better than the worst variety or species in the formulation. Mix one susceptible variety or species in a formulation and within a few years the entire mix or blend becomes susceptible to the problems faced on site. From a local perspective, I like to utilize high chlorophyll content varieties. In recent NTEP studies, these performers have shown the strongest resistance to the day-to-day problems that most courses go through in the Midwest.

The final step is deciding when to seed. In the past, seeding in the fall was the accepted norm:

It gave the best chance for survival to young seedlings, especially on courses that had minimal irrigation capabilities.

It was at a time when we disrupted golf and golfers the least.

Unfortunately, this is at a time when *Poa annua*, is at its strongest. If we are to compete against *Poa annua*, based on several recent papers, the time to seed is at the end of May through the beginning of July. *(See Figure 1.)* In the world of research, this might work well, but how can this be accomplished during the midst of our golfing season? In recent years a number of new seeders and aerifiers have been designed to over seed fairways with very little disruption to golf. Utilizing these new machines is a start to the process. *(See Image 3.)*

After the variety and cultivar is selected, the next step is to determine the seeding rate. Current studies have shown another change on the horizon. One study compared common standards of seeding rates versus higher seeding rates of new aggressive varieties

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Bentgrass Populations as affected by the main effects of seeding date.

Month of Seeding	10/31/1999	7/24/2000
June	80%	83%
August	73%	74%
September	33%	58%
October	53%	39%

Figure 1. Bentgrass seedling vitality at different times of the year.

(2-4 lbs per 1000 sq. ft. with bentgrass and 5 – 10 lbs per 1000 sq. ft. with bluegrass). The studies were conducted in June into 100% stands of *Poa annua*. The higher rates prevailed and the rate of establishment was increased by 40% when compared to overseeding with lower levels of older cultivars of turf. *(See Figures 2 and 3.)*

The next step in the process is placing seed where moisture levels are the highest. In the past, the practice has been to place the seed no deeper than three times the thickness of the seed into the soil. Unfortunately, most of the seed never came into contact with the soil at these shallow depths. Often we ended up placing the seed directly into the matt layer where seedlings would dry out, die and Poa annua would take this opportunity to prevail once again. *(See Image 4.)* It is imperative that seed is placed below the matt layer. This will assure successful seeding and establishment. Placing the seed at a level below the matt layer becomes critical to the success the project.

If possible, prior to seeding, scalping of the existing turf should be accomplished. Recent tests conducted at Kansas State showed reducing the mowing height by half, for at least four weeks, increased the rate of establishment by thirty percent in the conversion process. Remember the young seedlings need water and regular mowing at reduced or normal heights. This

Kansas State Univ. fairway interseeding

Treatment	Timing	Seed #/M	% Ky. bluegrass	
Not scalped	Fall	2 lbs.	13%	
Not scalped	Fall+Spring	2 lbs.	17%	
Scalped	Fall	2 lbs.	29%	
Scalped	Fall+Spring	2 lbs.	29%	
Scalped	Fall	4 lbs.	29%	
Scalped	Fall+Spring	4 lbs.	33%	
Scalped	Fall	4 lbs.	39%	
Scalped	Fall+Spring	4 lbs.	40%	PGR Added

Figure 2. Kentucky bluegrass seeded at different rates and times.

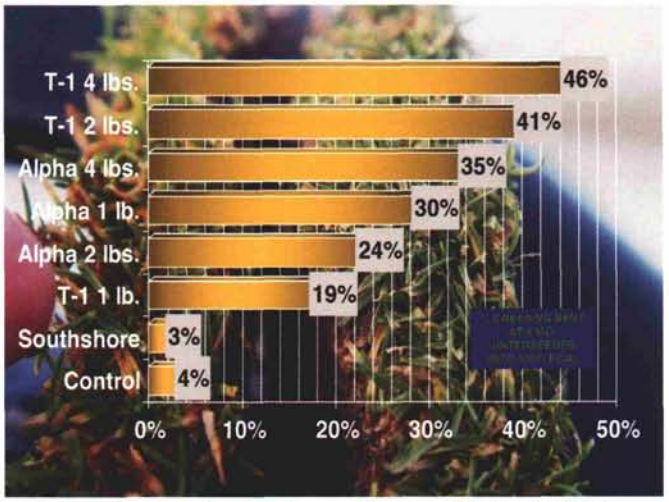

Figure 3. Data from intraseeding bent into 100% Poa annua from Jacklin Seed

Image 4. Placing seed past dead mat for proper establishment (Slit seeding vs. Aerification)

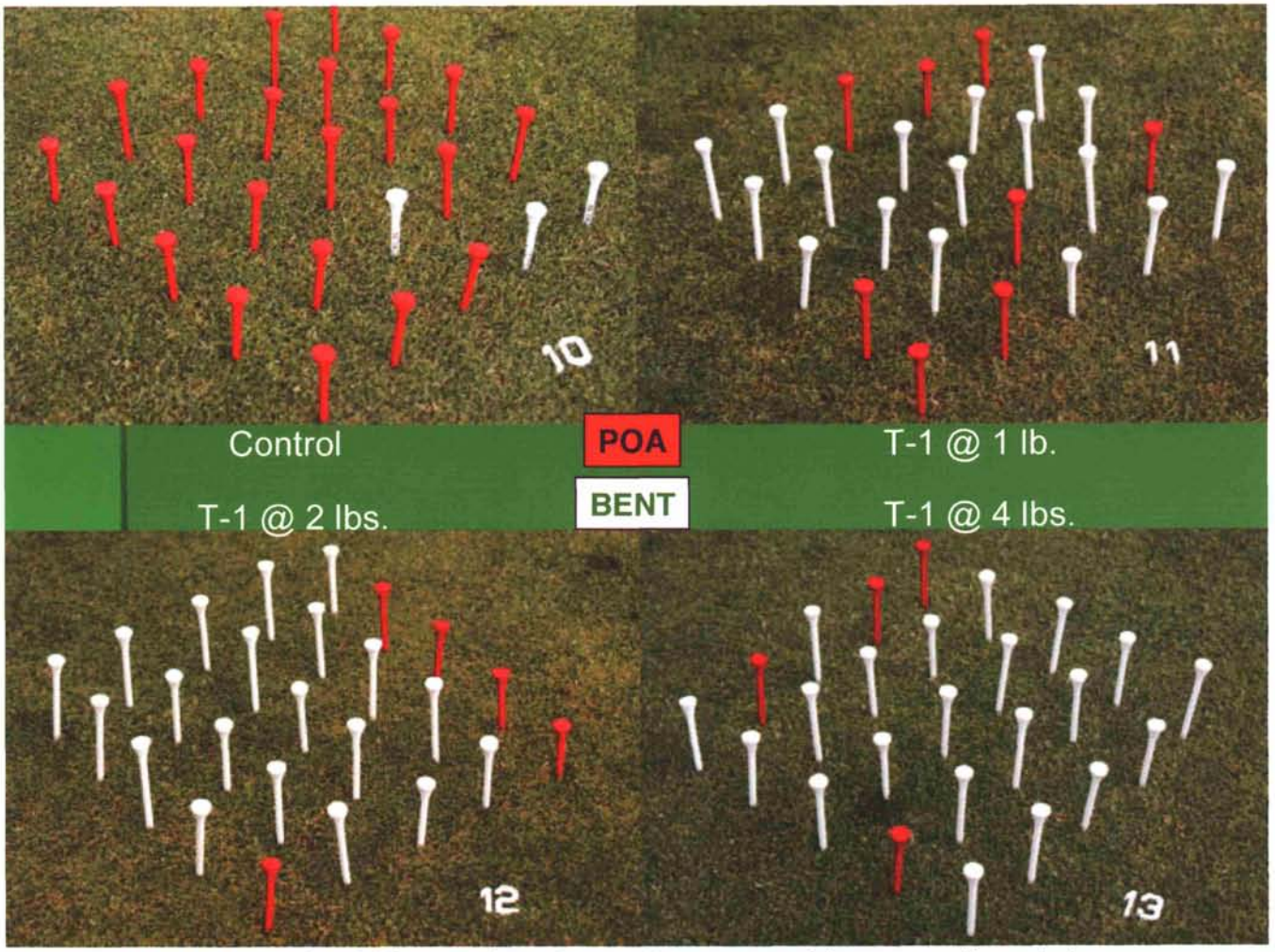

Figure 4. Visual establishment of Bent into 100% Poa annua with proper seeding techniques.

will help to control the shading effects from older plants. Once established, the use of an herbicide designed to control Poa annua will help to control its encroachment and reestablishment of this weed.

Intraseeding works if you are able to re-think and follow new guidelines for successful establishment. *(See Figure 4.)* There are some superb varieties available today, and if incorporated into a successful overseeding program, improved stands of existing turf are possible without the disruption of total renovation. The long-term results equate to reduced maintenance and improved playing surfaces for all.