Overseeding Greens: Increasing the Odds for Success

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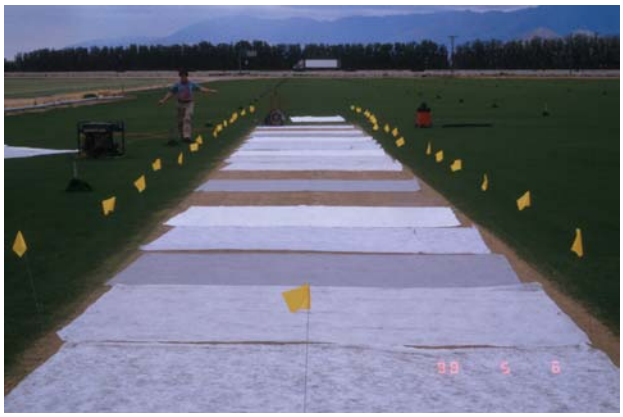
Bottom line: Even the most carefully planned greens overseeding programs can be ambushed by unpredictable factors such as variable air temperatures, high winds and poor irrigation uniformity. PACE research trials conducted on greens height bermudagrass that was overseeded with perennial rye and *Poa trivialis* (rye/poa) demonstrates that there are techniques available than can help overcome some of these variables. The use of fabric covers that are placed over newly seeded turf can dramatically increase overseeded rye/poa density by decreasing seed movement due to wind and irrigation, and by maintaining the higher temperatures needed for germination. In addition, chemical renovation (slowing bermudagrass growth prior to overseeding with burn-down herbicides) was as effective as conventional mechanical renovation in fostering rye/poa germination, growth and density. Use of chemical renovation reduces the time, money and greenwaste associated with conventional renovation, and may cause less long-term damage to bermudagrass, thus helping to achieve a smother springtime transition back to bermudagrass.



In 1998, the PACE Turfgrass Research Institute (PTRI) evaluated five different fabric covers for their ability to improve ryegrass/*Poa trivialis* (rye/poa) germination on greens height Tifdwarf bermudagrass. The turf covers above were laid in place immediately after renovation and seeding with perennial rye (25 lb/1000 sq ft) and *Poa trivialis* (6 lb/1000 sq ft). Some plots were left uncovered for the purposes of comparison. The research plots were located at West Coast Turf's Indio, CA facility.

For a successful fall overseeding program on bermudagrass greens, everything must go right – from timing, to weather, to irrigation systems and seed quality. And of course, with Mother Nature involved, the chances of everything going right are sometimes depressingly low. Yet learning to manage these almost unmanageable variables is what can lead to more consistent results with overseeding programs, year after year.

In their efforts to achieve this type of consistency, superintendents Rick Sall (Tamarisk Country Club; Rancho Mirage, CA) and Mark Smith, CGCS (The Quarry at La Quinta; La Quinta, CA) have experimented over the years with different renovation methods, and with the use of fabric covers with promising results. To explore their observations further, the HiLo GCSA funded the PACE Turfgrass Research Institute to carry out the replicated small plot trials described below.

Many research cooperators were involved in putting out this trial, including Joe Foster (West Coast Turf); Rick Sall (Tamarisk CC); Mark Smith, CGCS (The Quarry at La Quinta); Craig Shafer (Simplot Partners) and our youngest research cooperator to date, Taryn Sall, seen below assisting in preparing the turf covers.

Cutting to the chase: turf covers work!

Table 1. Turf covers tested, their suppliers and relative costs. Contact suppliers for the most current prices.

TURF COVER	SUPPLIER	COST/1000 SQ FT
"Seed Guard" seed blanket	DeWitt Co., Sikeston, MO 800-888-9669	$16.23
Typar T-518 1.25 oz	Triangle Marketing & Sales, Cary, NC 800-455-3392	$38.00
2 oz. Frost blanket	"	
Reemay 2006 0.6 oz	"	$25.00
Bunker liner	Not available	

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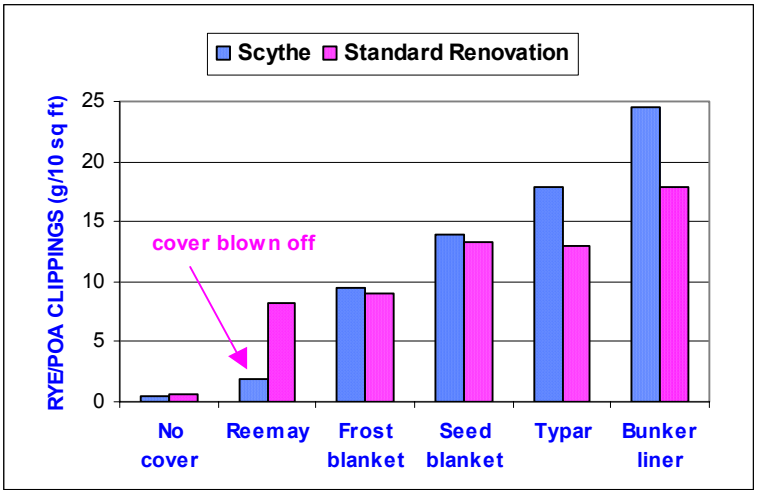
As figure 1 illustrates, rye germination and growth was significantly improved when fabric covers were used to protect germinating seedlings. Some of the key conclusions of the study include:

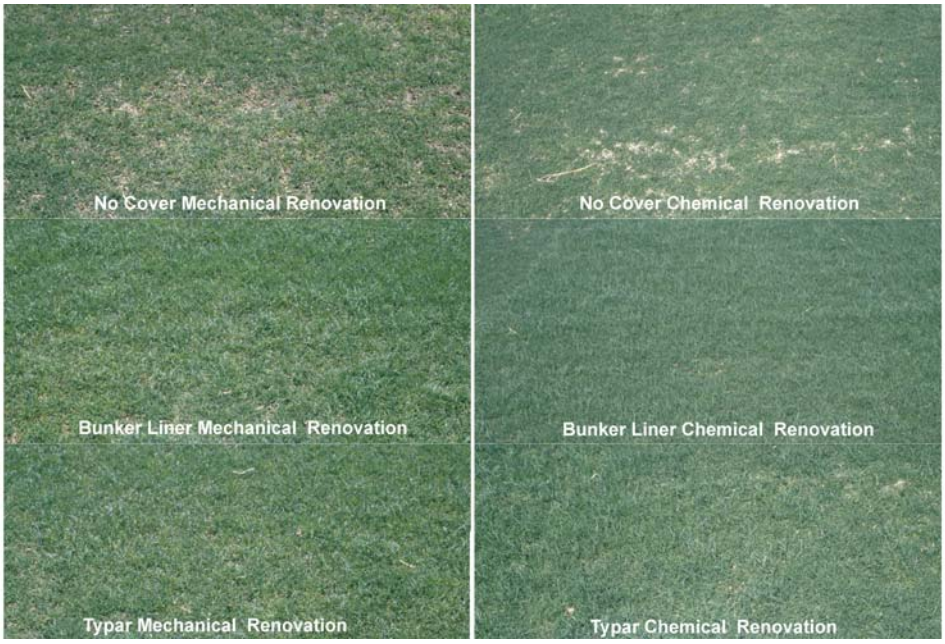
- All five turf covers tested resulted in imporved rye/poa triv establishment when compared to uncovered turf. The covers were secured with staples immediately after seeding with rye and *Poa trivialis*, and were removed 8 days later, once the majority of seed had germinated.
- The major benefit of the turf covers was to protect newly deposited seeds from movement due to wind or irrigation.
- The best performing covers (Typar T-518 and the Bunker liner fabric) shared the qualities of resistance to high winds without tearing, while also allowing sufficient light transmission to support the growth of new seedlings.
- The Typar and bunker liner fabrics also maintained slightly higher temperatures underneath the covers, thus allowing for more rapid growth of emering seedings.

Figure 2. Rye/Poa triv establishment, 15 days after seeding. Note the poor establishment of cool season turf in the plots with no covers (the majority of the turf here is bermudagrass), vs. the significantly better establishment under the bunker liner and typar fabrics. Chemical renovation with Scythe appears to produce a slightly higher density of turf, but these results were not statistically significant.Covers that did not perform as well either tore and blew away in high winds (Reemay and seed blanket fabrics) or were so dense that they blocked light to emerging turf seedlings (frost blanket). These poorer performing covers had less of an effect on raising temperatures underneath the covers.

- Chemical renovation with the burn-down herbicide Scythe (pelargonic acid) provided rye/poa establishment that was as good as that resulting from mechanical re renovation. The time, cost and greenwaste savings from the chemical renovation approach warrant its further investigation. In addition, it is highly likely that chemical renovation places less stress on bermudagrass, thus aiding in smoother springtime transitions back to bermudagrass.

Figure 1. Growth of rye and Poa trivialis 15 days after overseeding. Each plot was mowed at ½ inch to collect rye/poa clippings and to prevent inclusion of low-growing bermuda clippings.





Why do turf covers work?

To answer this question, one picture is probably worth 1,000 words. Figure 3 illustrates the same plots pictured on page one, but 8 days later – 8 days where winds occasionally reached 30 mph and where the turf was irrigated every two hours during daylight hours. As a result, the seed in the uncovered plots was moved around significantly, while the seed under the covers remained in place. However, some of the flimsier turf covers ripped, shredded or even blew away. The Reemay fabric was particularly susceptible to wind damage, with one cover blowing completely off early in the trial. As a result, the rye/poa growth in the plots (supposedly) covered with Reemay fabric was almost as low as in the plots with no covers at all (see graph

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above). Keeping the seed in place, and protecting it from wind and irrigation, seems to be the major benefit that the turf covers offer.

Figure 3. Effect of wind. Eight days after overseeding and placement of covers on turf, high winds (up to 30 mph) ripped some of the fabrics, causing them to blow away.

Increased temperatures underneath some of the fabrics may have also contributed to better performance. To explore this, we used a bead thermocouple to take four readings underneath and over the top of each of the five fabrics.

Turf covers with the best seedling germination (Typar and bunker liner) also appeared to cause a small, but significant increase in temperature underneath the turf covers (see Table 2). This increase may have also contributed to the improved stand of rye/poa as well as of bermudagrass underneath these covers.

Table 2. Temperature changes (F) underneath fabric covers. Fabrics that resulted in significantly (P<0.05) higher temperatures underneath the fabric are denoted in green.

	Temperature (°F)		
Turf cover	**Under fabric**	**Above fabric**	**Increase under fabric**
Typar 1.2 oz	93.75	91.78	**1.97**
Reemay 0.6 oz	94.00	91.98	2.02
Frost blanket	91.95	92.95	1.00
"Seedguard" Seed blanket	90.50	89.38	1.12
Bunker liner	92.15*	89.98	**2.17**

The down-side: reduction of light

Can turf covers shade the germinating turf too much? Do some turf covers interfere with sunlight more than others? To answer these questions, we shined a 12 volt light source (Maxi-Lux camcorder light, model LT-3) 17 inches above a fabric square measuring 5 inches by 5 inches. To determine how much light was intercepted by the fabric, the light intensity (millivolts) was measured with and without the fabric between the light source and a pyranometer (Sol-A-Meter pyranometer, Matrix, Inc. Mesa, AZ). Three measurements were taken for each of the five fabrics tested in this trial. Percent reduction was then calculated using the following equation:

$$\text{Percent Reduction} = 100 \times \left(\frac{\text{(Intensitiy without fabirc) - (intensity with fabric)}}{\text{Intensity without fabirc}} \right)$$

Large differences were observed between the 5 different turf covers, as illustrated in Table 3 below. Although all of the turf covers tested resulted in some reduction of light, this did not appear to be a problem in most cases. However, the frost blanket, which had the lowest light levels underneath the turf cover was also one of the poorer performing turf covers.

Table 3. Percent light reduction under 5 different turf covers. From this data, it appears that the germinating turf can tolerate up to 36% reduction in light (as it did with the bunker liner), but cannot tolerate the almost 50% reduction in light caused by the frost blanket. Treatments followed by different letters are significantly different from one another (P<0.05)

Turf cover	**% light reduction**
"Seedguard" Seed blanket	18.2 a
Typar 1.2 oz	18.6 a
Reemay 0.6 oz	25.3 a
Bunker liner	36.1 b
Frost blanket	49.3 c

acceptable

unacceptable

Alternative renovation strategies

Conventional renovation procedures on most bermudagrass greens rely on vertical mowing followed by scalping. And this procedure fairly consistently produces the desired result: production of dense stands of cool season overseeded turf that do not have to compete with bermudagrass for space, nutrients or moisture. Unfortunately, this procedure is also time and labor consuming, and produces high volumes of greenwaste. And there is a concern that these heavy

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renovation procedures may place enough stress on bermudagrass in the fall to cause problems during the transition back to bermudagrass during the following spring. An alternative approach deletes the vertical mowing step and replaces it with application of a burn-down herbicide such as pelargonic acid (Scythe, available from Dow) or glufosinate (Finale, available from Aventis). We compared these two approaches – both with and without turf covers – to see if chemical renovation could be an acceptable alternative to conventional mechanical renovation.

Mechanical renovation: The mechanical renovation procedure was achieved using a Jacobsen Green Kings 4 with verticut reels and carbide tipped blades at a setting of +0.125, followed by scalping with a walking greens mower set at 0.070 inches. Only the area to the right of the yellow flags was subjected to this renovation procedure.

Chemical renovation: This procedure was carried out by making a single application of Scythe at a 10% concentration, 24 hours prior to seeding (on May 5). The darkened plots on the left-hand side of this photo were treated with Scythe approximately 6 hours earlier.

One day after the Scythe application, the plots were scalped with a walking greens mower set at 0.060 inches.

NOTE: The research summarized in this report was conducted in May of 1998. Although this is not the time period in which overseeding generally occurs, air temperatures during the trial were typical of the Fall overseeding period in the Palm Springs area of California (90°F maximum and 60°F minimum).

Chemical vs. mechanical renovation: The plots to the left were subjected to chemical renovation, and those to the right were subjected to mechanical renovation. This photo was taken immediately prior to overseeding.

Overseeding: Plots were overseeded with Sonoran perennial rye blend at 25 lb/1000 sq ft plus Poa trivialis at 6 lb/1000 sq ft. A Gandy drop spread was used to deliver the seed.

The results reported here indicate that both chemical renovation and mechanical renovation resulted in successful overseeding, but only when the appropriate turf covers were used. Neither renovation procedure was effective when no turf covers were in place (Figure 1). Superintendents who use a chemical renovation procedure of the sort described above report that the decreased stress on the bermudagrass results in improved springtime bermudagrass transition. We haven't yet followed up on this by conducting replicated research trials, but if you have had difficulty with springtime transitions, you may want to consider trying chemical renovation on a few greens.

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