

Overseeding: The Expanding Role Of Seasonal Turfgrasses

Like leaded gasoline and low-top tennis shoes, the concept of a permanent monostand of turf appears to be fading into the past. As improved turfgrasses enter the market each year, many golf course superintendents and sports turf managers put them to work either by overseeding or interseeding. They are constantly adjusting the mix of grasses under their care to improve the durability and overall quality, whether on an annual or seasonal basis.

Interseeding and overseeding are practical alternatives to complete reconstruction or renovation. They allow turf managers to increase the natural defenses of a turf area by adding varieties better adapted to seasonal weather or use levels. This ability to adjust the components of a turf mix allows superintendents and groundskeepers to extend their playing season into the winter, when their primary turfgrass is dormant or lacks the ability to recover from use.

The addition of seasonal grasses to the turf manager's list of responsibilities requires an expanded knowledge of their characteristics and maintenance levels. "Temporary" turfgrasses must establish quickly when needed and transition out smoothly after their job is done. In both cases, the turf manager needs a certain amount of control over what is taking place. He must be able to balance the desired goals of establishment, seasonal turf performance, and transition. Selection of the best overseeding blend or mix is not a simple task.



Ryan Mattaway drill seeder. Photo courtesy: Cushman, Inc.

The use of cool-season grasses for overseeding warm-season turf is not new. Annual ryegrass, more appropriately named Italian ryegrass, has been used for many years for this purpose. Turf managers were willing to tolerate the light green color, rapid growth rate, and broader leaf of annual ryegrass to have winter turf color. Annual ryegrass has poor heat and cold tolerance, tends to shred when mowed, and is fairly susceptible to a number of diseases. However, it germinates very rapidly and fades out quickly in the spring, when main-

tenance practices are switched back to those intended for bermudagrass.

With the development of the first improved perennial ryegrasses in the '60s and '70s, turf managers began to favor the perennials for their darker color, finer leaf blade, more manageable growth rate, and improved traffic tolerance. The perennials could be mowed at the low cutting heights of greens and provided greater density for putting surfaces. Subsequent breeding work has produced perennial ryegrasses with improved mowing quality, better heat and cold tolerance, and, most recently, insect resistance.

Perennial ryegrasses are also maintained successfully at higher heights for tees, fairways, and athletic fields. Best of all, they germinate and establish as quickly as annual rye. A perennial ryegrass green, fairway, or field can also be played on within weeks without significant damage to the immature grass.

Some of the improvements in perennial ryegrasses, such as greater heat and wear tolerance, make them more persistent in the spring, when transition may be desired. Seed researchers are presently working on perennials which have the desirable features of dark color, density, and fine texture, without excessive competition to warm-season grasses in the spring. The tradeoff is a reduction in heat tolerance.

When different varieties mature in the spring is another factor researchers are looking into. As ryegrasses reach maturity

during the first spring after establishment, they begin to convert their energy toward producing seed. This causes the plants to become stemmy, points out Eugene Mayer, seed specialist with O. M. Scott & Sons in Marysville, OH. Later-maturing varieties exhibit less stemminess prior to spring transition.

The creation of the National Turfgrass Evaluation Program (NTEP) is helping seed distributors select and offer blends of perennial ryegrasses which fit their area best in terms of performance and spring transition. NTEP coordinates and gathers turf performance data from nearly 30 different test sites across the country. Virtually all present and future varieties of perennial ryegrass are being rated at the test sites.

Ask your distributor or local turf extension specialist for the results from the National Perennial Ryegrass Test. Copies of the report are available from Kevin Morris, NTEP, U.S. Department of Agriculture, Agricultural Research Center, Beltsville Agricultural Research Center, Beltsville, MD 20705. Distributors and seed companies have begun to utilize the data to offer regional blends in various parts of the country.

While perennial ryegrass has dominated the overseeding market, there are situations where it may fall short of expectations. Both chewings fescues and rough bluegrass (*Poa trivialis*) are more cold- and shade-tolerant than perennial ryegrass, explains Dr. Richard Hurley, vice president of Lofts Seed Co. in Bound Brook, NJ.

While a frost a few days before a major golf tournament can knock some ryegrasses off color, fine fescue and rough bluegrass will stay green. These two grasses are also more tolerant of shade from nearby evergreens during the winter. In these circumstances, superintendents often choose a mix of perennial ryegrass, rough bluegrass, and/or chewings fescue. Since a cold snap is impossible to predict, the inclusion of one or both of these turfgrasses may be wise in some areas.

"If spring transition is a concern," Hurley advises, "instead of overseeding with ryegrass, consider using a mixture of 80 percent chewings fescue and 20 percent rough bluegrass (by weight). Both chewings fescue and rough bluegrass are proven overseeding grasses, with histories of avoiding excessive spring competition with warm-season grasses. You might also try a mix of 85 percent perennial ryegrass and 15 percent rough bluegrass."

**NTEP is helping
seed distributors
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which fit their area
best.**

"Perennial ryegrasses are most susceptible to discoloration by frost when they are inadequately fertilized," explains Dr. Bill Meyer, vice president and director of research for Turf Seed, Inc., in Hubbard, OR. "If you keep them well fed and growing in the winter, you reduce the chance of ryegrasses going off color."

Scott's Mayer says it's important to note that rough bluegrass and chewings fescue are not as traffic tolerant as improved perennial ryegrasses. Their use on athletic fields is not as practical as on golf greens.

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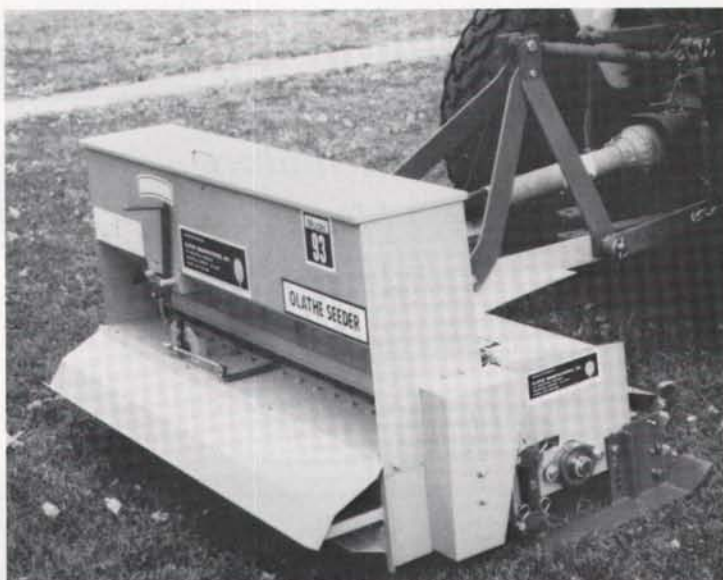
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He adds that both rough bluegrass and chewings fescue transition well in the spring.

The popularity of bentgrass as a putting surface has also brought some changes to the overseeding market. As northern golf professionals and "snowbird" golfers head south during the winter to keep their games in shape, they bring with them their preference for bentgrass greens. Southern superintendents started overseeding their bermudagrass greens with bentgrass instead of ryegrass to satisfy them. However, the transition of aggressive bentgrasses in the spring occasionally presented problems in some areas.

Some superintendents eventually reasoned that the extra effort required to overseed greens with bentgrass was not much greater than maintaining bentgrass throughout the year. The use of preventive fungicides and the recent introduction of more heat-tolerant bentgrasses have enabled some southern superintendents to



Olathe tractor-drawn drill seeder.

offer bentgrass greens year-round. The fact that bentgrasses can be reseeded in case of loss, as opposed to resodding or sprigging of bermudagrass lost to winterkill, makes bentgrass surprisingly practical in some areas once considered bermudagrass-only territory.

Turf Seed's Meyer does not see transition as a major problem of bentgrasses. He

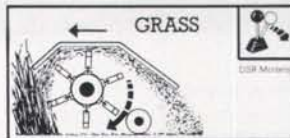
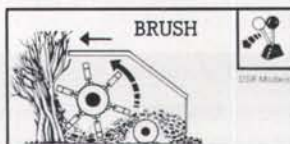
explains, "Bentgrasses do a nice job of concealing some of the mottling of bermudagrasses [in areas where they don't go completely dormant in the winter]. Bermudagrass offtypes become visible during the winter a few years after establishment. Bentgrasses spread quickly and laterally through the bermuda to cover up these patches of offtypes." Transition should not be a problem as temperature and humidity rise in the spring, adds Meyer.

Similarly, tall fescues have found their way onto athletic fields in portions of the South and transition zone. Breeders have succeeded in developing new varieties of tall fescue which more closely resemble Kentucky bluegrass in color, density, and fineness. They are generally not recommended for overseeding into bermudagrass fields. However, when used as a year-round turf, tall fescues stay green longer into the fall football and soccer seasons than does bermuda. Furthermore, tall fescues are less prone to

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winterkill and more shade tolerant than bermudagrasses.

While tall fescue does germinate fairly rapidly, it does not reach its full recuperative potential and traffic tolerance for a period of months. It is notably different from perennial ryegrass in terms of the amount of time necessary before it can be played on.

Another concern in some areas is brown patch disease. As the density of tall fescue increased with turf-type varieties, the resistance to this patch disease decreased. "Most of the turf-type tall fescues were screened in the West, where brown patch is not a problem," explains Dr. Douglas Brede, director of research for Jacklin Seed Co. in Post Falls, ID. "Ironically, early varieties such as K31 and Alta have more brown patch resistance than newer varieties. However, we have been incorporating brown patch resistance into some of our

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newer varieties. We are doing more testing in the Southeast for this reason."

Like bentgrass, tall fescue requires additional maintenance to compete against adapted warm-season grasses as a primary turfgrass. "Any time you take a turfgrass out of its range of adaption, it will require special care," cautions Dr. Reed Funk, head of the turfgrass breeding program at Rutgers University in New Brunswick, NJ. By being aware of the problems with turfgrasses growing outside their range, the turf manager can adjust maintenance to compensate. In the meantime, turf researchers continue to seek better adapted varieties.

Jacklin has been exploring seeded varieties of bermudagrass with better cold tolerance than common bermudagrass. These new varieties establish fairly rapidly, provide superior durability for athletic fields, and offer greater disease resistance than

cool-season grasses during hot, humid summers.

In the fall, the bermudas can be overseeded with perennial ryegrasses. Bermudagrass lost to winterkill can be re-established through seeding instead of by vegetative means. The use of seeded

bermudagrasses for sports fields in the transition zone is a frequent recommendation of Dr. David Minner, associate professor at the University of Missouri in Columbia.

Another warm-season turfgrass being
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studied for establishment by seed is zoysiagrass. Dr. Herbert Portz, a retired professor from Southern Illinois University in Carbondale, and Dr. Milt Engelke at Texas A&M University's Agricultural Research Center in Dallas, have been trying to increase the germination rate of Korean common zoysia for nearly 20 years. Zoysia is a dense, spreading turfgrass with relatively fine leaves that has been limited to establishment by sod and plugs.

Their work has inspired others to take a serious look at a process called seed priming. By treating seed with chemicals to prepare it for germination, both the speed and percentage of germination can be increased substantially. Primed seed can also be packaged and shipped like conventional seed, although its shelf life is limited to less than one year.

Zoysia has many strong features that make it attractive for fairways and sports fields. Once established, it forms a dense, low, and highly wear-resistant surface during warm periods. It exhibits strong

tolerance to heat, drought, shade and cold. Zoysia grows more slowly than bermudagrass and in a more upright habit. It should be mowed with a reel mower and verticut periodically to avoid thatch buildup. One drawback is the fact that it enters dormancy fairly early in the fall and requires overseeding for heavy autumn schedules. However, it appears to be less prone to winterkill than seeded bermudas.

Seed priming is just one method of improving the speed and percentage of germination of turfgrasses. Pregermination is rapidly gaining popularity with both golf course superintendents and sports turf managers. In this method, seed is germinated in barrels of water or dampened piles before it is sown. There are certain guide-

lines concerning pregermination that affect its success. Contact your seed supplier or extension turf specialist before attempting pregermination.

The beauty of pregermination is that it eliminates weeks of time and improves uniformity during establishment. It can be used for slower-germinating turfgrasses, such as Kentucky bluegrass and bentgrass, as well as the quick ryegrasses. By reducing the waste and uncertainty of conventional seedbed germination, it may allow for the use of lower seeding rates.

The current test of a buyer's knowledge about overseeding mixes is found in the endophyte. This natural parasite lives between the cells of turfgrass plants. Instead of harming ryegrasses, tall fescues, and



Overseeding ryegrass into bermudagrass green with drop seeders. Photo courtesy: O.M. Scott & Sons.

chewings fescues, the endophyte sickens insects that attempt to feed on their roots and foliage. The result is that these grasses repel turf insects to a large degree, saving them from insect damage.

Seed producers have successfully incorporated endophyte into many varieties of cool-season grasses. By overseeding or interseeding with these varie-

ties, the sports turf manager can increase the insect resistance of his golf course or sports fields.

Dr. Richard White, plant physiologist at the Texas A&M University Agricultural Research Center in Dallas, has been studying the benefits of endophyte in turfgrasses. "We have been comparing the same varieties with and without endophyte," says White. "Insect resistance in the endophyte-enhanced plants is fairly consistent. However, in a number of cases, we have also seen increased vigor and drought tolerance.

"The endophyte-enhanced turf seems to get an extra jump in the spring when the turfgrass is flowering [producing seed]. This vigor may extend into the summer to

improve drought tolerance to varying degrees. It is a subtle difference that we do not understand completely at the present time," White admits.

So far, added vigor has been scientifically documented only in space plantings in nurseries. More research is needed on root growth and plant water use to identify the right type of endophyte, environmental conditions, and varieties for the greatest effect, adds White.

He does point out that the benefits of the endophyte can be lost if seed is not properly stored or is kept for too long. "It's important to use fresh seed that has been handled and stored properly," White stresses.

Whether endophyte is an important fac-

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tor in overseeded winter grasses has not been established. A subtle improvement in drought tolerance may increase the persistence of these grasses during spring transition. This has to be compared to the importance of insect resistance during late winter and spring. If an important event has been scheduled for May in an area where bermudagrass has not yet come fully out of dormancy, this little extra persistence may prove valuable.

The golf course superintendent or the sports turf manager is the individual who must make the decision regarding which turfgrass to utilize at different times of the year. He must weigh the impact of overseeding and spring transition when his facility's



Dragging ryegrass into bermudagrass green with drop seeders. Photo courtesy: O.M. Scott & Sons.

schedule extends late into the fall or spring.

Judging from the increased volume of seed produced for winter grasses, a growing number of turf managers are opting for overseeding. "When I moved to Oregon in 1975, about one million pounds of perennial ryegrass was produced annually," Meyer reveals. "This year production will exceed 100 million pounds." A similar trend can be seen in the number of varieties of rough bluegrass and creeping bentgrasses.

Jacklin is betting that improved varieties

of seeded warm-season grasses will one day take off as cool-season overseeded varieties have done. The company has expanded its research efforts with bermudagrass and zoysiagrass, and has begun to build production on at least one variety of bermuda.


In the meantime, seed producers are working closely with distributors to customize overseeding blends and mixes for particular regions of the country. They have done the same for sod growers, with considerable success.



"Seed breeding and selection is an endless and sometimes frustrating process," Rutgers' Funk ad-

mits. "Pathogens [diseases] keep changing. We need more exploration to find germplasm that fits specific uses, maintenance, and environmental conditions."

If the hunt for better grasses is never-ending for breeders, it follows that learning about improved turfgrasses and their maintenance must also be continuous for turf managers. They must decide which varieties fit their schedule, climate, turf standards, and maintenance program best. The days of managing one type of turf 12 months a year, year after year, are past. ☺

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