

# Perennial Ryegrasses are Getting Better!

by **STANLEY J. ZONTEK**  
Director, North-Central Region, USGA Green Section

**A**MONG THE 1,500 or so species of grasses growing in the United States, only about a dozen are suitable for turfgrass purposes. Even on that limited scale, ryegrasses have never received a very high rating.

Their early use was limited mostly to southern golf courses for overseeding bermudagrass for winter color. They were accepted in the more northern areas of the country as a short-lived nurse or companion grass for Kentucky bluegrass and fescue blends. The annual or Italian ryegrasses (*Lolium multiflorum* Lam.) and early varieties of perennial ryes (*Lolium perene* L.) were either true annuals or, at most, short-lived perennials. They had wide and coarse leaf blades, were susceptible to a wide range of diseases, were stemmy and oftentimes difficult to cut and maintain. They had a very distinctive and not necessarily pleasing color and growth

habit. The ryes were considered cheap, of low turf quality, and found mostly in inexpensive grass seed blends. They germinated quickly, but beyond that, they were not particularly long-lived and were definitely not the types of grasses a knowledgeable golf course superintendent would use.

All of this has begun to change, however, and may soon change even more!

**I**MPROVED VARIETIES of ryegrasses began to appear in the late 1950s and early 1960s. NK-100, Pelo, and Norlia are examples. The new varieties exhibited, for the first time, characteristics the turf manager could use. However, they were still coarse bladed, stemmy, and had rapid vertical growth, especially early in the spring. Most of them were included in seed mixtures with predominantly Kentucky bluegrasses and fescues. Few if any

could stand alone as distinct varieties. They did, however, begin to stimulate interest in perennial ryegrasses, because they had good persistence and generally quite acceptable performance, far beyond that of the common ryegrasses then available.

**R**EAL ADVANCES in turf type perennial ryegrasses occurred in 1967 and 1969 with the release of Manhattan and Pennfine, respectively. These grasses were the first perennial ryes to have excellent management characteristics, appearance, and playability. They had thinner leaf blades, which made them easier to mow. They had good density, a decumbent growth habit, a pleasing green color, and excellent persistence. They seemed very similar in appearance and performance to the improved Kentucky bluegrasses and, from a few feet away, were practically

Figure 1.





Figure 2.

indistinguishable from them. This confusion in identity still exists. Some turf managers believe they are growing Kentucky bluegrass but, when you really examine the grasses, oftentimes you find that they are predominately perennial rye.

Other improved perennial ryegrasses soon began to appear. They were the result of intensive breeding efforts to further improve this species. Today over two dozen improved turf type perennial ryegrasses are available! In essence, the turfgrass breeder has invented a turfgrass species. Because of his efforts, the golf course superintendent has a new class of turfgrass for his work.

Perhaps the first turf managers to appreciate and use the new perennial ryegrasses were the southern golf course superintendents. They were quick to catch on to the superiority of these grasses. For years they had been using and relying on the old annual or semi-perennial types for winter overseeding. With the improved varieties, they had grasses with superior playing characteristics as well as better and smoother spring transitions. Although they were more expensive to use on a cost-per-pound-of-seed basis, fewer total pounds of seed per 1,000 square feet were required. Nevertheless, while the extra quality did cost extra money, it was worth it, especially for greens. Today

the new perennial ryes have almost totally replaced annual ryes in southern putting green overseeding.

Golf course superintendents in the northern cool-season areas have been somewhat slower to integrate perennial ryes into their seed blends. Most superintendents still use predominantly Kentucky bluegrass blends to overseed fairways (except those golf courses using bentgrass for overseeding). As time goes by, however, more northern superintendents are beginning to work higher percentages of perennial ryegrasses into their seed mixes. The reason is simple. Of all the overseeding work done over the years, it is the improved perennial ryegrasses that are establishing themselves! When superintendents went down on their hands and knees and really looked at the types of grasses surviving from overseeding, instead of finding Kentucky bluegrass, more often they find perennial rye dominating in the stand. What many thought and perhaps still think is Kentucky bluegrass is really ryegrass. Furthermore, it seems to be effectively competing with *Poa annua* as well as providing an enjoyable grass cover for play. In the mid to late 1970s, the perennial ryegrasses came into their own as a distinct genus and species of turfgrass. From all appearances and from their performance to date, they are here to stay!

Evidence is growing that perennial ryegrasses are beginning to replace Kentucky bluegrass as the primary fairway turf in northern areas because Kentucky bluegrasses simply cannot tolerate the lower cutting heights demanded by today's golfers. Therefore, the choice in fairway grasses, where cutting heights are to be less than one inch, are either zoysiagrass or bermudagrass (in the southern climates and transition zones); and bentgrass, *Poa annua*, and perennial ryegrass (in the northern climates and transition zones). Pure Kentucky bluegrass fairways are becoming more rare. The ryes generally have outperformed Kentucky bluegrass at lower cutting heights, are to the average golfer indistinguishable from Kentucky bluegrass, can tolerate lower fairway cutting heights, and they seem to compete quite favorably with *Poa annua* — even to the extent of actually pushing *Poa annua* out of fairways following a comprehensive overseeding program.

**T**ODAY, RESEARCH stations like the New Jersey Agricultural Experimental Station, working with other universities and independent commercial seed companies, are continuing to release new generation perennial ryes. These new ryes have even better turf qualities, better disease resistance, and generally



Figure 3.



Figure 4.



Figure 5.

better overall performance than the first and probably the second generation perennial ryegrasses. From a modest beginning only a few years ago, their use has exploded.

**A**S WITH ALMOST everything else in turfgrass management, however, there are no panaceas, no perfect chemicals, and no perfect grasses. There are always advantages and disadvantages. Following are some of the strengths of the new perennial ryegrasses.

1. Low cost per pound of seed. Perennial ryegrasses are relatively economical to use.

2. Excellent seedling vigor. (See Figure 1.) When planted with good soil-to-seed contact, they germinate quickly (usually less than a week) and they establish a playable turf quickly.

3. Long-lived perennials. The original research plot of Manhattan perennial ryegrass was planted in 1966 and is still thriving. With proper management, the new perennial ryegrasses are long-lived perennials.



Figure 6.

Figure 7.



4. Excellent competition with *Poa annua*. Some evidence exists that an allelopathic phenomenon exists between *Poa annua* and perennial rye. Allelopathy is defined as the competition between one plant and another whereby one species produces a compound that suppresses the other species. Research has been performed to substantiate this theory. The perennial ryegrasses seem to compete quite well with *Poa annua* and co-exist, if not eventually predominating over annual bluegrass.

5. Tolerant to close mowing. The perennial ryes tolerate cutting heights in the 1/2-inch to 3/4-inch range better than most Kentucky bluegrasses.

6. Good heat tolerance. (See Figure 2.) Although differences in heat tolerance exist between different varieties of the perennial ryes, they hold up better as a group than most other cool-season turf-grasses.

7. Good drought tolerance. The perennial ryes hold their color and don't seem to go dormant nearly as rapidly as Kentucky bluegrasses in dry weather. Once it is established, perennial ryes tolerate droughty conditions very well.

8. Good insect resistance. Some varieties of perennial ryes show excellent resistance to insects such as sod webworms, aphids, and chinch bugs.

9. Good density and playability.

10. Reasonably good winter hardiness. Although somewhat susceptible to ice damage, these grasses nevertheless exhibit good winter hardiness.

11. Excellent early spring green-up and vigor (sometimes too early and vigorous; see ryegrass weaknesses). Seems to initiate growth early in the spring, which can be important in areas where the golf course is open for play as snow and frost leave the ground.

12. Compatible with Kentucky bluegrasses. The perennial ryes closely resemble appearance and growth habit of Kentucky bluegrasses and, in a blend, they can actually complement each other. This is quite true where Kentucky bluegrasses have had a problem with *Fusarium* blight. The ryes are quite resistant to this disease.

13. Excellent wear tolerance. (See Figure 3.) Perennial ryes outperform almost all other cool-season grasses in areas of high traffic. This toughness relates to difficulty sometimes in cleanly cutting the perennial ryes, because they have a high fiber content in the leaf.

Since there is no perfect grass for every golf course, there are no perfect



Figure 8.

perennial ryegrasses. Although they have a long list of strengths, they also have some weaknesses. Some of them are:

1. Susceptibility to diseases. As a group, the perennial ryegrasses are quite susceptible to a wide range of turfgrass diseases. They include dollar spot, brown patch, red thread, pythium blight, leaf spot and rusts, snow molds, etc. Perhaps the only primary turfgrass disease to which they are relatively resistant is fusarium blight. Therefore, in order to maintain the perennial ryes in a disease-free state, you may need a comprehensive fungicide spray program at certain times.

2. Tough to cut. (See Figure 4.) Sharp mowers are needed to clip perennial ryegrass cleanly.

3. Slow spreading. As a group, the perennial ryes are classified as bunchgrasses. Generally they do not have rhizomes or stolons and usually spread by basal tillering. There are a few exceptions to this rule, however; some of the newer perennial ryes do have some rhizomes. Nevertheless, most are bunchgrasses and do not spread very rapidly, if at all. Unless they are planted in a reasonably dense stand, they can become clumpy. (See Figure 5.)

4. Rapid vertical growth in the spring. This can either be an advantage or a disadvantage, depending on the use of the perennial ryes. Although the

newer second and third generation perennial ryes have far less vigorous vertical growth in the spring, it still is a concern.

5. Susceptibility to winter injury. The perennial ryes seem susceptible to ice damage. They can winterkill out in some years where water sits and freezes in low spots.

6. Too persistent. (See Figure 6.) Sometimes perennial ryegrasses can survive even under low cutting heights in stands of creeping bentgrass. They sometimes have remarkable persistence in areas where you don't want them. Depending on the weather, in southern overseedings the perennial ryes can also linger too long in the spring, which can make the spring transition to bermudagrass more difficult.

**P**ERENNIAL RYEGRASSES have excellent wear tolerance. Figure 3 illustrates this point clearly. The patches of grass in this cart traffic wear area are perennial ryegrass. All of the surrounding grass is Kentucky bluegrass worn down almost to the soil. By seeing this and realizing that the ryes are tolerating the traffic, then the golf course superintendent can use this strength to advantage.

Perhaps one of the most interesting uses for perennial ryegrasses is for fairway renovation. Along with improved Kentucky bluegrasses, they can be used to renovate and generally rejuvenate

old common Kentucky bluegrass fairways. This program of overseeding perennial rye/improved Kentucky bluegrasses into existing fairways has generally worked well. (See Figure 7, showing a "skip" in ryegrass/Kentucky bluegrass overseeding.)

Another increasingly important use of improved perennial ryegrass is on those golf courses that are reducing their acreage of high-maintenance fairway turf. Over the years, many golf courses have developed 40 to 50 or more acres of fairways. Obviously, this amount of acreage can become expensive to maintain. Because most of these fairways are predominantly *Poa annua* with some creeping bentgrass intermixed with some lingering Kentucky bluegrasses, you just cannot let this type of mix grow tall. It makes for a thick, clumpy, gnarled mass of vegetation. Therefore, these former fairway grass types must be replaced with other, more upright growing grasses.

Another use of perennial ryegrasses alone or mixed with some improved varieties of Kentucky bluegrasses is to re-establish rough areas where fairway acreage is being reduced. (See Figure 8.)

**I**NCREASINGLY, the perennial ryes are being used as an intermediate step in converting *Poa annua*-infested fairways to bentgrass. The thought of extensive fairway renovation — converting



Figure 9.

from one grass to another — is not a happy one. No one likes to have his golf course torn up for renovation, particularly in the northern parts of the country where there is already a short golf season. Routinely, fairway renovation requires an overseeding program and a number of years to complete. It is expensive and disruptive.

Sometimes, to speed renovation, a scorched earth policy is adapted. Using herbicides like Roundup, all the vegetation is killed and the fairway area replanted to the new grass — usually bentgrass. This type of program requires a tremendous amount of club communication, persistence, patience, and understanding. Even then, complaints, grief, and aggravation are commonplace. Nevertheless, results have been quite good to date if one is prepared mentally as well as physically for the undertaking.

There is an alternative to the scorched earth program. It involves a vigorous overseeding effort using perennial ryegrasses. Because of their excellent seedling vigor, speed, and ease of establishment, and their ability to compete with annual bluegrass, the perennial ryes can be established first — alone or in conjunction with bentgrass overseeding. The idea is to establish perennial ryes at the expense of the *Poa annua* and then begin seeding bentgrasses into the rye-

grass stand, or to allow the bentgrasses that are already there to spread. Using their supposed allelopathic properties to naturally suppress the *Poa annua*, the ryegrass acts as a nurse crop for the bentgrass. It is interesting that some golf courses seed the bentgrasses at the same time that the fairways are opened for the perennial ryegrass overseedings, while others wait for the ryes to become established and then begin seeding the bents into the ryes. Both approaches seem sound and both have merit.

Figure 9 shows the 17th fairway at the Butler National Golf Club, in Oak Brook, Illinois, just before the 1982 Western Open Championship. This fairway was heavily overseeded using the perennial rye/creeping bentgrass combination. At the time this picture was taken, the fairway was predominantly perennial rye with some lingering *Poa annua* and Kentucky bluegrasses. The bentgrasses were young seedlings but, as of this writing, two seasons later, this fairway as well as all the others on the course (they were all renovated in 1982) are predominantly Penneagle creeping bentgrass with relatively minor amounts of *Poa annua*, perennial ryegrass, and Kentucky bluegrass remaining. It should be noted that following the fairway ryegrass/bentgrass overseeding, the fairways were given a lightweight triplex

mowing and this, along with the seedings, seems to have contributed to the increase in bentgrass at Butler National. The change was so gradual that I suspect the majority of golfers didn't even know the fairways were being renovated and converted to bentgrass.

Butler National is one of a group of clubs, including Westmoor Country Club in Brookfield, Wisconsin, that have so far successfully used perennial ryegrasses on their fairways as an intermediate step in converting from predominantly *Poa annua* to predominantly creeping bentgrass fairways.

**T**HERE WILL surely be continuing research by seed companies and university turfgrass breeders to further improve disease resistance, winter hardiness, heat and drought resistance, and all of the other characteristics which would make the perennial ryes even more attractive. The breeding of types with greater rhizome characteristics is especially needed, and at least one of the new third generation perennial types — Manhattan II — shows some segregates having greater rhizome-producing qualities.

The future looks bright for these grasses. They are already an improved tool for use by golf course superintendents, and they have the promise of becoming even better.