Ryegrass: The Choice Turf For Winter Sports

Winter overseeding is no longer a luxury restricted to resort golf courses and professional stadiums. Ryegrass has become the life's blood for sports turf facilities across the South and Southwest during the winter. It keeps these facilities in safe, playable condition and protects dormant warm-season turfgrasses during some of the busiest and coldest sports months of the year.

Proof of the tremendous increase of winter overseeding can be found in Oregon where turf seed producers have greatly increased their acreage devoted to ryegrass seed in the last five years. Lofts Seed Inc. increased its acreage of perennial ryegrass by nearly 50 percent in 1987 alone, according to John Dimateo. Now it appears the market is no where near its full potential, says Howard Kaerwer, developer of the first perennial ryegrasses specifically for overseeding while he was the turf breeder for Northrup King.

When Kaerwer started his investigation of winterseeding grasses nearly 20 years ago, turf managers were seeding almost every type of cool-season grass into warm-season turfgrasses in the fall. Annual ryegrass was the most popular, but many turf managers were trying mixtures of older perennial ryegrasses, Kentucky bluegrass, red and chewings fescues, rough bluegrass (*Poa trivialis*) and bentgrass. "We found that the newer perennial ryegrasses had the most potential," said Kaerwer. Some of the first improved perennial ryegrasses were NK100, Pelo, Manhattan and Pennfine. "Today's perennial ryegrasses are far superior to older types like Linn. They may cost more than older varieties or than annual ryegrasses, but they provide qualities the other grasses can't, including better color, insect and disease resistance, wear tolerance, lower fertilizer and water requirements and improved mowability, in addition to rapid germination."

Kaerwer, concentrating on overseeding in the Southeast, helped to develop and promote the use the improved perennial ryegrasses Pennfine, NK200, Delray, and Goalie. He was also the first to treat seed with the fungicide Koban to help the overseeded ryegrass defend itself against seedling diseases. He spent months on golf courses showing superintendents the advantages and techniques important in overseeding with perennial ryegrasses.

As other seed companies, such as Lofts, Burlingham, Pickseed, Turf Merchants and International, began to realize the great potential of the overseeding market, they started looking for new varieties of perennial ryegrass that they could patent and sell.

Only the greens and collars at Innisbrook are ove

The football field at Cooper City High School Stadium in Broward County, FL, is overseeded with perennial ryegrass in the fall.

Annual ryegrass keeps the main baseball fields at Broward County schools bright green during the winter.

ed because the Tifway fairways and roughs do not go completely dormant during the winter.

Many found what they were looking for in Dr. Reed Funk's turfgrass research plots at Rutgers University. Funk collected strong turfgrass specimens he found while travelling around the nation and planted them in his plots in New Brunswick, NJ.

Today, nearly every seed company has a perennial ryegrass that was first recognized for its strengths by Funk or his graduate students. A few examples of varieties born partly at Rutgers are Manhattan, Bell, Birdie, Blazer, Citation, Cowboy, Dasher, Diplomat, Fiesta, Palmer, Pennant, Prelude, Regal and Yorktown.

It wasn't long before seed companies began hiring their own turf breeders to continue to build upon Funk and Kaerwer's work. Some of the most productive have been Lofts' Richard Hurley, Turf Seed's Bill Meyer and Pickseed's Jerry Pepin. They would take "germplasm" from Rutgers, test it for desirable traits, cross it with other ryegrasses, test it again, and give it a name if they had a superior product. Many of the latest perennial ryegrasses are second and third generations of material that originated at Rutgers.

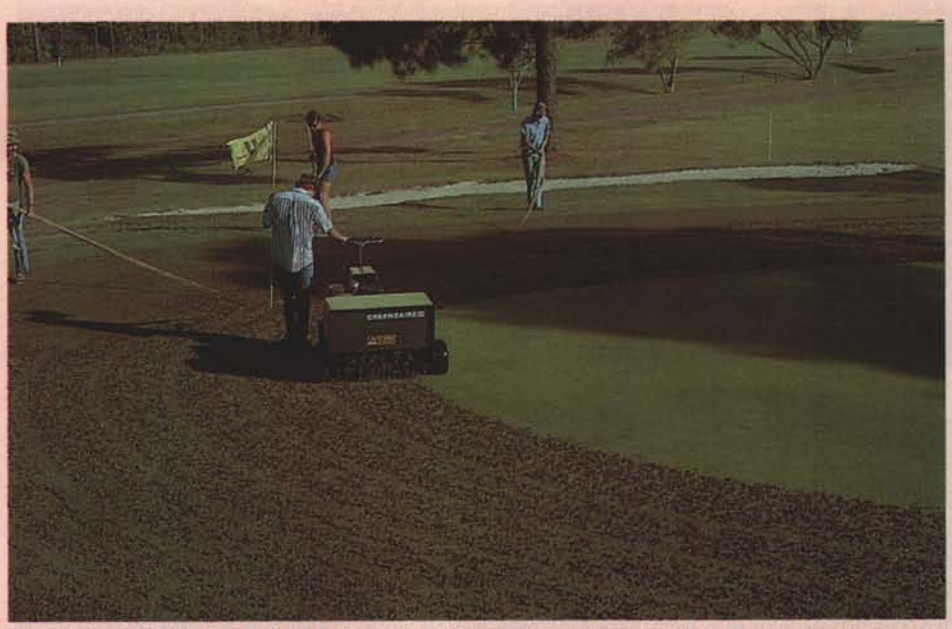
Because of this heightened commercial interest in ryegrasses, golf course superintendents and sports turf managers now have vastly superior tools to use than they did just 15 years ago. The first goal of turf breeders was to produce a ryegrass for greens that could be trimmed down to 1/4 inch. As their work steadily progressed, other characteristics for sports turf became important. These include wear tolerance, heat tolerance, disease resistance and insect resistance. Actually, some of the traits that make one type of ryegrass a good choice for overseeding an athletic field might make it a poor choice for a golf green. For example, a heat-tolerant perennial ryegrass developed for durable turf in the North, might hang on too long in the spring on a green in the South when the superintendent wants the bermudagrass to take over again.

Overseeding golf greens is necessary to maintain quality putting conditions in the South during the winter. Resorts and resort-area golf courses depend heavily upon the winter golfer for income. Many courses simply would not have been built if they could not count on the traffic produced by tourists.

What started on golf greens soon spread to other parts of the course. Some superintendents began to overseed greens and tees with perennial ryegrass and fairways with annual ryegrass. Others overseeded greens and tees and simply painted the dormant bermudagrass on the fairways green during the winter. It wasn't long before some courses were overseeding the entire course and were ordering 40,000 pounds of ryegrass every fall.

A few imaginative turf managers at professional and college stadiums borrowed a page out of the golf course superintendent's play book for important winter football games, especially if they were televised. The options were to paint or to overseed. Those who chose to overseed used annual ryegrass. After all, the intent was to provide a green field for one or two games. With a three-week lead time, irrigation and 1,000 pounds of annual ryegrass, the field manager could turn a brown, dormant field into a bright green gridiron that dazzled fans

continued on page 16



The greens at Gulf Shores Golf Club are aerified six weeks prior to overseeding. Cores are broken up and left as topdressing.

Pythium disease on ryegrass seedlings.

Ryegrass

continued from page 15

in the stands and television viewers up North.

The real test of overseeding came when dormant bermudagrass or centipedegrass fields had to stand up to more than just one or two important games. Daily practice would render a field bare in a few short weeks. Athletic directors and coaches began to appreciate the safety value of overseeding for both stadium and practice fields. Furthermore, the exploding popularity of soccer added to the wear burden on many football fields. Overseeding was rapidly evolving from a luxury into a necessity.

Today overseeding is an indispensable maintenance tool for heavily-used athletic fields and golf courses. It is as important as aerifying, irrigation and fertilization. Most southern sports fields become worn out and dangerous without it.

As evidenced by the following examples of overseeding programs at schools and golf courses across the southern half of the country, it is best to start overseeding a few key turf areas to demonstrate its importance. The practical benefits of overseeding far outweigh the aesthetic ones. The ryegrass insulates the warm-season grass from cold temperatures that could cause winter kill. It also cushions the dormant turf from physical damage caused by sports. Ryegrass, by shading the soil surface during the winter, also discourages germination of winter weed seed.

Once turf managers at schools, parks, universities or golf courses succeed in winning a commitment from management for overseeding, the next step is to educate them regarding the superior qualities of perennial over annual ryegrasses. Only the turf manager knows how far or how fast he can push his management. But evidence exists to support the use of improved perennial ryegrasses for overseeding high-use, warm-season sports turf in the fall.

Ed Birch is responsible for the grounds of 50 out of 170 public schools in Broward County, FL. Located just north of Miami, the bermudagrass and bahiagrass turf in Broward County never goes totally dormant. However, the growth of the turf slows down enough to allow weeds to encroach and to hamper recovery from sports related injuries.

When he was hired by the school system, Birch was told that the system operated under "school-based management." If he wanted to renovate a field, he had to sell the idea to the individual principal first. "I had to go to each principal and explain what I wanted to do to his fields and why," says Birch.

"Weeds were taking over most of the fields," he explained. Surprisingly he ended up with more work than he could handle. The first year he renovated nine football and baseball fields and installed a number of automatic irrigation systems. Birch now renovates three fields every year. The crew sprayed the old turf and weeds with glyphosate (Roundup) and then used a Turf Quaker (which is similar to a rototiller with long vertical blades) to break up the soil to a depth of ten inches. After repairing the irrigation and drainage systems, the fields were sprigged with Tifway.

"There was still tremendous weed pressure on these fields," state Birch. He used this fact to sell overseeding. From August to Thanksgiving the fields are used for football practice and games. Then soccer takes over until February. Birch felt overseeding was necessary to prevent soccer from finishing off the bermudagrass already damaged by football. After the last football game, the fields were sliced to open up the bermudagrass thatch so the seed could reach the soil. The cost conscious Birch purchased intermediate ryegrass, a cross between annual and perennial ryegrass, from Lesco and broadcast it onto the fields at a rate of 600 pounds per acre. With the assistance of an hydraulic valve-in-head irrigation system, the seed germinated quickly.

After the ryegrass was established, Birch made the first of two applications of Ronstar to prevent germination of winter weed seed. The fields have remained in notably improved condition for more than five years. "Principals started bragging about their fields," said Birch, "and I started getting calls from the principals of other schools asking me if we could do the same for their main fields."

Weed encroachment is also the main concern of Holman Griffin, grounds manager of Richardson School District near Dallas, TX. The former United States Golf Association (USGA) regional agronomist is in charge of 50 school grounds. "The only thing that seems to thrive in our black clay soil is goosegrass," explains Griffin.

Despite a "bare bones" budget caused by the depressed state of the oil business, Griffin has been able to upgrade the irrigation and overseed the 12 most important fields in the district. "It's mainly a matter of priorities," explains Griffin. "Kids don't stop playing ball just because the economy is tight. If anything, they play more. Still, we've had to make some tough choices lately."

The school district has always had a busy athletic program. Between football and soccer, the main practice and game fields are busy from August through May. "The only time we can get on the fields to do major work is on Sundays and some Mondays," Griffin says. "We also have to be very careful with irrigation since the clay holds water like a sponge."

The majority of the turf under Griffin's care is common bermudagrass or St. Augustine. The main football and baseball fields are Tifway. Two long freezes in the early '80s wiped out patches of bermudagrass on many of the of the fields.

To solve the winter kill and goosegrass problems Griffin devised a program of overseeding and topdressing with sand. "The idea is to protect the dormant bermudagrass with the ryegrass and a blanket of sand," he explains. "The sand protects the seed, improves drainage over time and fills in all the divots made in the clay. But, there are some very important things to remember.

continued on page 18

Ryegrass
continued from page 16

The sand must be between .1 and 1 millimeter, and no other material can be placed on top of it. You can make a low grade of concrete by using the wrong sand. If you aerify before you topdress, you may also be bringing goosegrass seed up to the surface where it can germinate."

Anytime he has a chance, Griffin gets sand into the field. When he installs new irrigation lines he fills the trenches with sand. He also dug trenches under each five-yard line on two football fields and backfilled them with sand.

Griffin's overseeding program is simple by his own standards. As soon as the football season ends, he goes over the hybrid bermuda fields with an aero-seeder to open up the thatch layer and to sow Pennfine perennial ryegrass at a rate of 350 pounds per acre. He does nothing to the common bermudagrass fields except broadcast 900 pounds per acre of annual ryegrass. A Meter-matic topdresser follows the seeders applying a thin layer of sand over the seed.

If the field has automatic irrigation he will run a short cycle early each morning to keep the seed moist. He lets natural rainfall and irrigation once a week with a portable system get the seed started on fields without automatic irrigation. "Rain does more for the seed than a week of irrigation," says Griffin. "One good rain and the seed seems to jump out of the ground."

In late February, Griffin kills the ryegrass and any goosegrass that come up on the main fields with glyphosate. "It's expensive, but it keeps the goosegrass under control and lets the bermuda get off to a good start in the spring. On fields we don't spray, we get up to a 30 percent carrryover of the perennial ryegrass."

Griffin has entertained the notion of permanent ryegrass or tall fescue turf. On one football field, he seeded varying mixtures of Delray ryegrass and Galway turf-type tall fescue between the five yard lines. "The results showed that no more than ten percent of the mix should be ryegrass," reports Griffin. "I think there is a place for the turf-type tall fescues. We are in the process of converting one of the baseball fields to tall fescue to see how it will stand up."

The threat of winter kill increases the further north one plants bermudagrass. Jay Karlberg guards ten acres of Midiron bermudagrass on the 300-acre grounds of the Kentucky Fair and Exposition Center in Louisville. This is the training site for the University of Louisville football Cardinals under coach Howard Schnellenberger. The university and the city wanted a winning football team badly. Schnellenberger had compiled an impressive record as assistant to Bear Bryant at the University of Alabama, head coach at the University of Miami, and assistant coach for the Miami Dolphins. To entice Schnellenberger they gave him a training camp facility at the Exposition Center

Common bermudagrass baseball field topdressed with sand prior to overseeding.

Same field four weeks later.

rivalling the pros. The coach wanted bermudagrass and he got it.

Midiron is a bermudagrass noted for its winter hardiness. By October it is dormant and will not regain aggressive growth until late May in Louisville. Schellenberger's concern over the bermudagrass is centered on the condition of the field during spring workouts rather than fall practices. So Karlberg overseeds in September to prepare the field primarily for the following spring.

Karlberg aerifies monthly in the summer while the bermudagrass is actively growing to help control thatch and fight compaction. In September, doing one half of the turf at a time, he uses a Jacobsen power seeder to sow 800 pounds of Pennfine perennial ryegrass per acre. He lets the team practice on it for one week to work the seed into the soil. After a week, that half of the area is allowed to rest for two weeks while it is irrigated daily. The process is then repeated on the other half of the turf.

By the end of October, the ryegrass is fully established as the Midiron enters dormancy. In November, Karlberg makes his last monthly application of IBDU, blows out the irrigation system and lets the ryegrass fend for itself (except for mowing) over the winter. When the team suits up for spring workouts in March, the ryegrass is as perfect as turf can get.

When practice is over in May, Karlberg lowers the cut on his triplex reel mowers from 1½ inch to 1/2 inch. The bermudagrass starts getting direct sunlight while the Louisville humidity and heat take their toll on the ryegrass.

Golf adds an extra dimension to winter overseeding. Seeding rates on greens are four to five times higher than for sports fields or fairways and the ryegrass must tolerate mowing heights of 1/4 inch and less. A testament to the success of ryegrass is the fact that some golfers prefer putting on ryegrass than on bermudagrass since it has less grain.

In Tarpon Springs, FL, the good low temperature color retention of Tifway enables Arlin Grant, superintendent of Innisbrook Golf and Country Club, to get by without overseeding his fairways. When it comes to his 36 greens there is no question about overseeding, it's essential. *Golf Digest* holds winter golf schools at Innisbrook and the quality of the course attracts tourist golfers from across the country every winter.

A testament to the success of ryegrass is that some golfers prefer it over bermuda on putting greens.

Grant manages the greens and collars year-round with overseeding in mind. During the summer the 27 Tifdwarf and nine Tifgreen greens are aerified and verticut to control thatch. In September, Grant stops verticutting the greens until December to let some thatch build up to insulate the bermudagrass from cool night temperatures in the fall. "The shorter the time the ryegrass lives on the greens, the easier it is to get rid of in the spring," he points out. "I keep the bermudagrass for as long as I can."

Three days before overseeding in December, Grant verticuts lightly, then topdresses and fertilizes. He closes each course for three days during overseeding. The bermuda greens and collars are cut short before broadcasting 30 pounds per 1,000 square feet of Birdie II perennial ryegrass. After applying a thin coat of sand, he sprays the greens and collars with a slurry of activated charcoal to neutralize any herbicide residues in the soil that could hamper germination. The dark slurry also absorbs the winter sun to warm the seed bed.

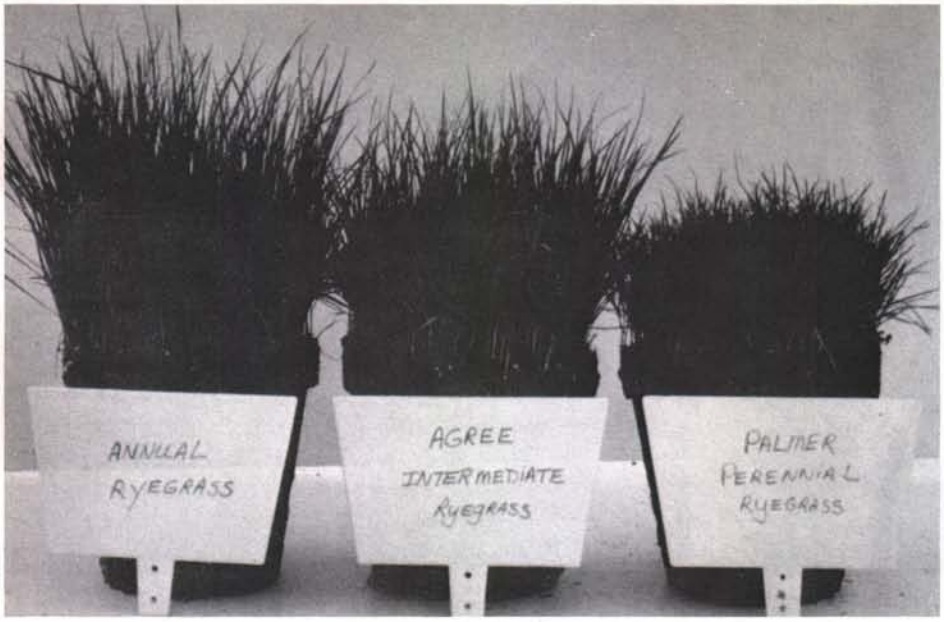
For the next two weeks, the greens will be cut at 1/4 inch and syringed twice a day, once at 10 a.m. and again at 2 p.m. Grant examines each green every day to watch for any signs of *Pythium*. Every seven days until March they are treated with Koban, Subdue or Daconil on an alternating basis. At the end of two weeks, the cutting height is lowered to 3/16 inch and Grant returns to irrigating the greens at night. Eventually the height will be reduced again to 5/32 inch.

When the *Golf Digest* schools end in April, Grant shortens the irrigation cycles on the greens and starts brushing the greens with a steel brush attached to the walking greens mowers. He plans to use the Turf Groomer attachment for his Jacobsen greens mowers this spring to lightly verticut the greens each time they are cut.

ames "Boots" Lang has dealt with every twist nature has thrown at Gulf Shores Golf Club in Gulf Shores, AL, since he helped build it 23 years ago. His familiarity with the course, a copy of the Farmer's Almanac and a close watch on the weather forecast, have helped him manage a successful overseeding program.

Over the years Lang has planned his program to overseed when temperatures drop below 72 degrees F. He knows from experience that this will happen between October 15 and November 15 every year. Six weeks beforehand he aerates, verticuts to break up the cores and drags the Tifdwarf greens. Three weeks before overseeding he topdresses the greens lightly with sand. He topdresses one more time the week before overseeding. Finally, on the day Lang has picked out from local weather conditions, he applies a complete fertilizer then

continued on page 20



The large difference in height between annual and perennial reygrass is a good indicator of the rate of growth between the grasses and the resulting mowing frequency.

Irrigation cycles are increased for two weeks after overseeding.

Seed covered with a light topdressing of sand is dragged to blend it into the prepared turf.

continued from page 19

broadcasts 25 pounds per 1,000 square feet of Medalist 7 perennial ryegrass treated with Apron. "We spread the seed in two directions at a half rate to get uniform coverage," he explains. One more light application of sand is made over the seed and a piece of carpet with the drag mat on top is pulled over the greens.

The irrigation schedule, which has been running for 20 minutes every second or third evening, is changed to a single, daily cycle in the early morning and a light syringing at mid-day. Lang will not cut the greens for the next five to seven days. "We sharpen the blades on the greens mowers while the seed is germinating so that first cut is made with a very sharp mower," Lang points out.

After two to three weeks, the irrigation schedule is returned to normal. If temperature and humidity are conducive for *Pythium*, Lang will treat the greens every ten to 14 days with fungicides. An application of IBDU is then made every 21 days during the winter. In late winter Lang will apply Pre-San to prevent germination of weeds.

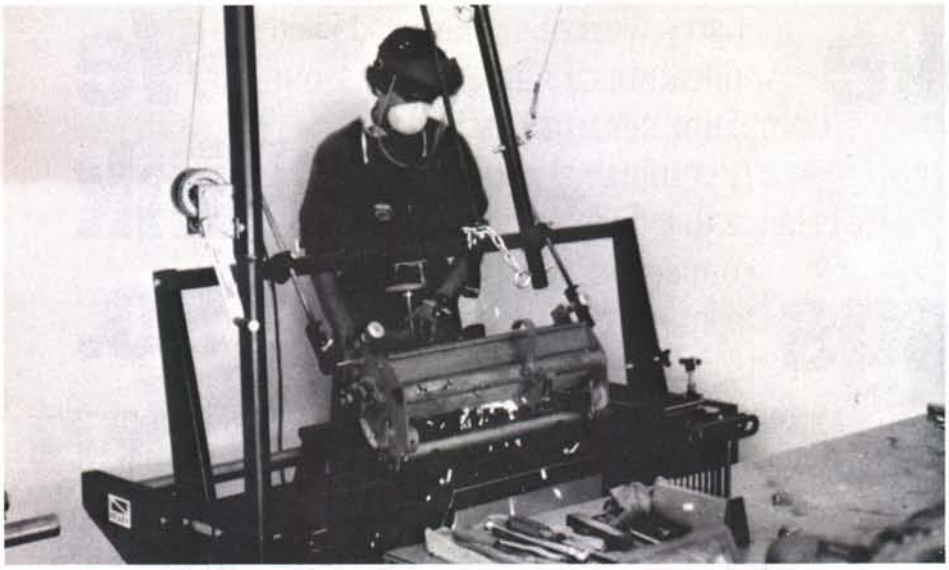
The procedure for the fairways is not as complicated. During the year the Tifway II fairways are aerated three times and dragged to break up the cores and mix them into any thatch that has accumulated. Just before overseeding, Lang slices the fairways to open up the Tifway II to receive the seed. After applying a complete fertilizer, the Gulf Shore crew broadcasts 200 pounds per acre of annual ryegrass. Again, mowing is withheld for up to four days and the irrigation schedule is changed from nightime cycles every six to eight days to once-a-day morning irrigation and mid-day syringing. The roughs are not overseeded.

Lang's spring transition program starts in March. "Around here you have to watch out for a late freeze in March or April," Lang advises. "If you start slicing and aerifying too soon you run a chance of some winter kill of the dormant bermudagrass." Despite all efforts to warm up the soil in the spring to help the bermudagrass get going, ryegrass hangs on usually into June. "If you have an important tournament in late June or early July, it might be better to encourage the ryegrass to stay around until after the tournament. While the golfers don't really notice any big change in the course during the summer, a few know when the bermudagrass is back because they have to read their puts better on the bermuda than the ryegrass."

Spring transition does not seem to be as great a problem for superintendents in the desert Southwest as it is in the Southeast. Extremely high summer temperatures solve that problem. There also appears to be less disease pressure on the ryegrass in the winter.

If there is a problem, it is forcing the bermudagrass into dormancy in the fall so the

continued on page 22



All greensmower blades are sharpened before the first cut of the overseeded ryegrass at Gulf Shores Golf Club.

Ryegrass

continued from page 20

ryegrass can get established in time for the peak tourist season which starts in November. Cal Hardin, superintendent at the private Club at Morningside in Palm Desert, CA, applies maleic hydrazide once every week for three weeks starting in September to slow the Tifgreen bermudagrass on the tees and the common bermudagrass on the Club's fairways and roughs down. Irrigation is also cut way back to stress the bermudagrass. Appearance is generally not a concern since most courses close for the month of October.

Competition among golf courses is intense in this resort community so many superintendents overseed "wall-to-wall" and use improved perennial ryegrasses. Hardin has purchased 65,000 pounds of Citation II perennial ryegrass for this fall. In October, Hardin cuts back on water, scalps, verticuts and vacuums the tees and fairways. The Morningside crew broadcasts 450 pounds of seed per acre to the fairways and up to 25 pounds per 1,000 square feet on the tees. The roughs are scalped and seeded at a rate of 350 pounds per acre.

Hardin contemplated buying seed treated with fungicide at an additional six cents per pound, but felt he could handle disease problems with spraying if an outbreak of *Pythium* occurs. The greens at The Club at Morningside are Penncross bentgrass. Bentgrass greens are becoming the rule at many of the prestige courses in the area. The extra maintenance needed to get the greens through the summer is apparently worth the effort. Hardin will overseed the greens lightly in the fall with coated Penncross to repair any losses during the summer. A few superintendents in the Southeast are trying bentgrass on their greens despite favorable disease conditions. Some call it a fad; others believe it's worth the extra effort and expense.

For two to three weeks after overseeding Hardin sets the irrigation for four two-minute cycles during the day. For the remainder of the winter the turf is irrigated with a six- to ten-minute cycle every other night. The heads at the Club apply 30 gallons of water per minute. During the summer, the bermudagrass is irrigated in nightly 12-minute cycles. This is nearly four times the amount of water used during the winter.

In the Phoenix, AZ, area overseeding is similar to Palm Desert. Westbrook Village Golf Course in Peoria, AZ, closes nine holes at a time for five days at the end of September. Superintendent Paul Merton overseeds greens, tees, fairways and roughs on the 18-hole course which serves as the centerpiece for a housing development. The greens are Tifgreen while the rest of the course is common bermudagrass.

During the fall, Merton will sow more than 40,000 pounds of Pennant perennial ryegrass on the course. He buys the Apron-treated seed for the greens and nontreated seed for the rest of the course. Merton is a strong proponent of perennial ryegrass over annual. "Perennials are better all the way around," he states. "The annual ryegrass grows an inch every day and is always heavy and wet when you cut it. The perennial has better color, grows slower, and needs less water and fertilizer than annual."

He starts the overseeding process in August by aerifying and cutting back on irrigation. When the course is closed, Merton verticuts the greens and tees in four different directions. He applies a light coat of sand, overseeds at 25 pounds per 1,000 square feet, fertilizes, and then applies a second light coat of sand and an application of wetting agent. For one week, the irrigation is set to repeat three-minute cycles five times a day. When that particular nine is reopened, the irrigation is reset for four six-minute cycles during the night.

The common bermudagrass tees, fairways and roughs are scalped before overseeding with 350 pounds of seed per acre. A similar irrigation plan is followed for these portions of the course. Just before Christmas, Merton applies Betasan to control annual bluegrass. In May, Merton shuts the water off for four days to knock the ryegrass back. "This wipes out 50 percent of the ryegrass right away," he says. "The summer temperatures take care of the rest except for a few patches in shady spots."

"When you consider that some superintendents still paint their fairways in the winter, you can see that overseeding still has a long way to go," says Merton. "We all learn a little more every year."

Overseeded winter turf is actually more important than the native warm-season turf for resort areas. "The primary tourist season for Arizona is October through April," explains David Snyder of Snyder Turf Supply in Phoenix, AZ. "For nearly eight months of the year the primary turf here is ryegrass. By the time the bermudagrass gets back on its feet, there are few tourists to enjoy it. If water restrictions force us to decide between irrigating the bermudagrass in the summer or the ryegrass in the winter, the answer has got to be the ryegrass. That's how important it is to this community."

A new concept in overseeding is coating seed with different materials to insure high germination and survival rates. By covering the seed with the nutrients it needs to get established and a fungicide to prevent pythium from attacking the germinated seedlings, seed quantities can be cut in half in some cases. The process has been tried successfully on perennial ryegrass and common bermudagrass seed. The coated seed plants are more vigorous than seedlings from uncoated seed following germination. The seed is basically self-sufficient except for water for the first few critical weeks.

While coating seed does not necessarily save the sports turf manager money, it can improve results. Celpril Industries, Inc., in Manteca, CA, coats seed for various suppliers. The supplier, not Celpril, markets the coated seed with a statement on the label, "contains Nutri-Kote or Nutri-Kote Plus Apron (the fungicide).

At the same time, seed companies are breeding perennial ryegrasses that will not compete with bermudagrasses during spring transition. "We are looking for new perennial ryegrasses that are susceptible to spring heat because the take longer to mature," explains Frederick Ledeboer, who works with Turf Merchants of Albany, OR. The less mature the ryegrass is in the spring, the more susceptible it is to heat and water stress at that time of year."

Dr. Richard Duble of Texas A&M Univeristy, College Station, has shown that high rates of seed tend to produce very dense, less mature stands of ryegrass in the spring. By lowering the seed rate, the ryegrass appear to mature more quickly and becomes more persistent in the spring.

Dr. Robert Mazer, professor of horticulure at Clemson University, Clemason, SC, has recently shown that light vertical mowing in the spring, once a recommended practice to speed up transition, actually slows

The greens at Gulf Shores Golf Club are spiked in the spring when the ground temperature reaches 58 degrees F.

it down (at least in South Carolina). He has also shown that two growth regulators (Embark and maleic hydrazide) will selectively slow the growth of the ryegrass in the spring to give the advantage to the bermudagrass. Kerb (pronamide) is a herbicide that selectively damages the ryegrass. Mazer says the growth regulators do not cause the turf to turn yellow to the degree Kerb does. The net effect, says Mazer, is that the growth regulators can speed up transition by as much as two months.

In other studies Mazer has shown that topdressing has no effect on the success of overseeded ryegrass, neither does aerification. Fertilizing and irrigation in the spring tend to push the ryegrass more than the bermudagrass. Reducing either may help the bermudagrass during transition. Low fertility and low mowing height have also been associated with speeding up transition to bermudagrass.

While advances in perennial ryegrasses are moving along rapidly, advances in bermudagrasses are taking much longer. Dr. Alden Baltensperger of the University of New Mexico, Las Cruces, recently announced that seed to an improved bermudagrass will be available from a Farmers Marketing of Phoenix in about two years. The new bermuda has many superior characteristics to common bermudagrass. Unlike hybrid bermudagrasses, it can be seeded instead of sprigged. Work is also underway to develop bermudagrasses with better winter hardiness.

One thing that threatens the expanding practce of overseeding is water. The limited supply of water in many parts of the country is must be faced. Most overseeded areas have already experienced water restrictions at some time. Choices will have to be made in the future. Judicious use of water today through highly controllable irrigation systems can protect sports turf from the cutbacks of water agencies in the future. When an economy depends upon sports turf for its livelihood, every step should be taken to assure responsible water use.

Overseeding has changed the way sports turf is managed in a large part of the country. What was once an unusual practice has now become commonplace. The growing importance of events played on turf in the South during the winter is too great to depend upon dormant grasses. Only the skill of the sports turf manager and golf course superintendent keeps fields, stadiums and golf courses safe and in play during this important time of year.