

BRIEFS



MID-AM AWARDS CASH

WAUCONDA, Ill. — Four colleges and universities received cash awards for participating in a career fair at the Mid-Am Trade Show, one of the nations leading horticultural expositions. The College of DuPage received \$600 for highest attendance with 25 students. The University of Illinois was awarded \$450 for second best attendance. Joliet Junior College and Iowa State University each got \$225 for third and fourth best attendance. A total of 153 students from 15 schools met with representatives from 76 companies.

ENVIROTRON GETS \$35,000

HOMOSSA SPRINGS, Fla. — The third annual Envirotron Golf Classic at World Woods Golf Resort raised \$35,000 for the University of Florida's Envirotron Research Laboratory.



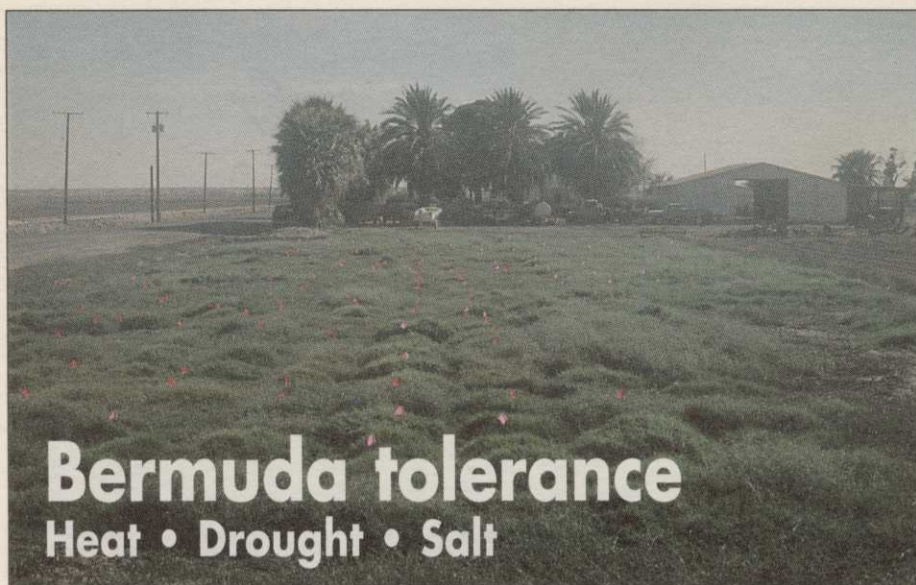
Envirotron is a 3,100-square-foot state-of-the-art research lab that includes a greenhouse, four climate-controlled glass houses, two walk-in growth chambers, labs, study areas, classrooms and offices. Scientists there study turfgrass systems from root to blade and issues like temperature modification, noise abatement, pollution and water purification, and general turfgrass culture.

GCSAA CERTIFIES FIVE

LAWRENCE, Kan. — Kicking off its Environmental Management Program, the Golf Course Superintendents Association of America has cited Certified Golf Course Superintendents David R. Davies, Matthew W. Henry, Keith A. Ihms, Jim B. Key and Evonne K. Sandras. Key, of Pointe and Hilton Resorts in Phoenix, Ariz., completed course work for certificates in the Water Quality, Integrated Plant Management (IPM) and Underground Storage Tanks specialties. IPM certificates were awarded to Davies of Palo Alto (Calif.) Municipal Golf Course; Henry of Dixon (Ill.) Country Club; Ihms of Bent Tree Country Club in Dallas; and Sandras of C.W. Ditto Golf Course in Arlington, Tex.

LATHAM JOINS JACKLINGOLF

James M. Latham, who retired this year as a regional director of the U.S. Golf Association Green Section, has joined JacklinGolf as technical agronomist, working on projects worldwide. A graduate of Texas A&M with a master's degree in agronomy, Latham worked 14 years for the USGA after 24 years with the Milorganite Division of Milwaukee Sewerage. He will work with another former USGA agronomist, Jim Connolly, Jacklin's senior technical agronomist.



Bermuda tolerance
Heat • Drought • Salt

Breeders advance on cold, seed challenges

By MARK LESLIE

As dominant a turf as Bermudagrass is on golf courses in the South, plant breeders would like to improve certain characteristics and introduce it further north. Fulfillment of their quest appears imminent.

"We're there," said Farmers Marketing Corp. (FMC) plant breeder Jeff Klingenberg, Arden Baltensburger's understudy. "We have a series by hybrids under the Princess brand that has the quality of a Tifway."

"We're looking to release one or more varieties within the next year," said Dr. Charlie Taliaferro, a pre-eminent scientist from Oklahoma State University.

Plant breeders have made great advances in meeting their two key challenges: developing seed-propagated Bermudagrasses and vegetative types that are cold-tolerant.

"A great deal of breeding work is being done by private seed companies, and they already have succeeded in putting products on the market," said Taliaferro, whose vegetatively propa-

gated Midlawn and Midfield have been at the top of the national trials.

"Our emphasis has been on development of seeded varieties that have cold tolerance in addition to reasonable turf quality. And in some of the tests in Northern locations, OKS 91-11 certainly survived, persisted and demonstrated cold tolerance."

Saying that the turf quality of the cold-hardy seeded Bermudagrasses is not yet as good as that of the best vegetatively propagated types, Taliaferro explained: "Breeding of seed-produced Bermudagrasses is relatively young. It's been in process only about 10 years, so quite remarkable progress has been made by both public and private sectors."

"We're doing something instead of nothing now. For years, nothing was being done [in seeded Bermudagrass research]," said Ronnie Stapp, senior vice president of Pennington Seed.

Indeed, Pennington has just introduced Yuma. A year ago Seed

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OFF THE RECORD

Insecticides difficult to rub off turfgrass

By MIKE KENNA

Do pesticides come off on your shoes or clothing when they come in contact with the turf on a golf course? This is the question researchers at the University of Florida and University of Massachusetts addressed in projects sponsored by the U.S. Golf Association's Environmental Research Program. Preliminary results indicate that very little rubs off the turf.

The amount of pesticide which can be rubbed off the turf is referred to by scientists as a dislodgeable residue. At the Ft. Lauderdale Research and Education Center, chlorpyrifos (Dursban 2E) was applied at the label rate of 0.75 ounces per 1,000 square feet to a Tifgreen Bermudagrass green around 11 a.m. Immediately after the application, small four-inch squares of cotton cloth were pressed onto the treated turf with a pressure of 1.5 pounds per square inch. A second sample was taken in the same manner following a light

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Research on PGRs and algae urged

By MARK LESLIE

GRIFFIN, Ga. — Saying that golf course superintendents trying to prevent algae on their greens actually may be increasing it, a plant pathologist here believes the summertime effect of plant growth regulators (PGRs) should be studied.

Dr. Lee Burpee of the University of Georgia, whose research plate is full, called on someone in the scientific community to investigate the PGR effect "a little more closely."

Burpee, who has worked on bentgrasses with triazole-based fungicides, said triazoles also are active ingredients in PGRs — and therein lies the rub.

"PGRs can increase root development but decrease foliar elongation," he said. "The detrimental effect is that the canopy of the bentgrass becomes more open and allows light to the soil surface, and you get a tremendous growth in algae. That's what we're concerned about, because when algae comes

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Pinehurst first in on Safe Harbor

PINEHURST, N.C. — Pinehurst Resort and Country Club has helped Secretary of the Interior Bruce Babbitt kick off a first-of-its-kind conservation plan to help endangered red-cockaded woodpeckers find safe homes on private lands.

"This proposal uses the flexibility of the current Endangered Species Act to introduce a new conservation concept that we call Safe Harbor," Babbitt said. "It offers private landowners an incentive to be good stewards of their land and provide habitat for endangered and threatened species. In exchange they get an ironclad guarantee that they will not be subject to restrictions later on if they succeed in attracting endangered species to their land."

Joined at the announcement by Pinehurst superintendent Brad Kocher and Environmental Defense Fund Chairman Michael Bean, Babbitt said Safe Harbor serves as a model for new ways to



Pinehurst's Brad Kocher

work with private landowners to resolve concerns about endangered species.

The plan "removes the disincentives that currently prevent most landowners from carrying out actions that could benefit the woodpecker," Bean said.

"Pinehurst is excited to be the first private landowner to sign on to this ... plan," Kocher said. "We knew the golfers like our

courses but we were happy to learn that woodpeckers find them a good substitute for their disappearing natural habitat."

Pinehurst will work with the U.S. Fish and Wildlife Service to enhance the woodpeckers' habitat.

Officially known as the North Carolina Sandhills Habitat Conservation Plan (HCP), it differs from other habitat conservation plans because it is designed to encourage positive habitat improvements, in advance of any specific project that could adversely affect an endangered spe-

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In Bermudagrass, the future is here

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Research of Oregon introduced Primavera. Jacklin Seed Co.'s Jackpot will be available for the first time in July. International Seed, Inc. (ISI) is releasing two new varieties this year — Mirage and Pyramid. And Medalist America's Sundevil 2 looms as another grass of choice. FMC is introducing Sultan this fall as well as its new, unnamed hybrid. All are seeded types that have good seed-yield, which is not the case with many cultivars.

"In Bermudagrass, we have to make just small gains to make huge advances over Arizona common [Bermudagrass]," said Craig Edminster, director of research at International Seed. "Ultimately, the goal is to get these seeded types so they will compete with vegetative types..."

"Clearly, seeded Bermudagrass already exists today that is comparable in quality to vegetative types, but it would be cost-prohibitive in the marketplace. It may be available in five years at a very competitive price."

Klingenberg said FMC's hybrid "could be used in greens, but it would be more of a low-input golf course because it is still a little coarser than from a dwarf Bermuda. And it is still going to require high maintenance because it is so thick that you will have thatch buildup, especially under high-fertility conditions. It's not a low-maintenance grass, but it will be lower than your Tifways. It's definitely for fairways, great for tees and good for greens collars and places like that."

"We are several years down the road before we can challenge the 'Tifs' on quality," said Stapp. "We're making progress every year on it," he added, admitting that "several years" to a researcher is like tomorrow to others.

Public and private plant breeders have stepped up their development efforts for better Bermudagrasses, according to Kevin Morris, national director of the U.S. Department of Agriculture's National Turfgrass Evaluation Program. "The warm-season grasses are of interest. Anything you can seed is of interest."

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Meanwhile, superintendents across the mid-South and Southern tier of the nation await more cold-tolerant varieties. For too long they have feared walking onto their courses after a cold snap to find dead grass.

"The winter before last, courses lost Bermudagrass throughout the Tennessee Valley," said Lynch. "It was dead everywhere. The Sarah Lee Classic was played on dead grass at The Hermitage [Richmond, Va.] last spring. In July it still was not recovered. Also in southern Kentucky, southern and western Virginia up to the Chesapeake area. Missouri. Oklahoma. "Anywhere in the transition zone, even southern Illinois, is a candidate for some of these Bermudagrasses."

"The biggest problem [to overcome] is winter-hardiness," said Morris. "People would like to use it farther north."

"We tested [a new, unnamed cultivar] as far north as Kentucky," said Doug Brede, research director at Jacklin Seed. "We're trying to engineer them more towards a Tifway 41-type of grass, which means we have to concentrate on texture and density. We've already achieved a darker green without the necessity of putting on more fertilizer. That will be put in production for the first time this summer and be on the mar-

USDA's National Bermudagrass Test Update: 1992-94

Name	AL1	AR1	AZ1	CA2	CA3	FL1	GA1	GA2	IL2	KS2	KY1	LA2	MD1	MO2	MO3	MS1	OK1	OK2	TX1	TX2	UB1	VA1	VA4	Mean
TDS-BM1	5.8	8.0	7.3	5.7	5.9	7.5	4.6	4.4	7.9	7.9	7.9	6.0	1.7	6.4	5.3	7.1	7.4	8.3	6.4	1.9	4.3	3.7	7.6	6.0
*Midlawn	5.7	7.3	6.1	5.2	5.5	5.3	4.4	2.7	6.5	8.5	8.2	5.9	7.7	5.4	4.9	5.7	7.0	7.0	6.5	1.6	6.3	5.8	6.0	5.9
*Midfield	5.7	6.9	6.1	5.4	5.5	5.8	3.8	2.9	6.5	8.4	8.1	5.0	7.3	5.9	5.3	5.9	6.9	6.7	6.7	1.4	6.1	5.9	6.1	5.8
*Midiron	5.7	7.2	5.9	5.4	5.6	6.8	4.1	3.0	6.7	8.0	8.1	5.4	7.0	5.6	4.4	5.9	6.5	6.8	6.6	1.6	5.2	5.2	6.8	5.8
*Tifgreen	5.8	8.3	7.2	5.5	5.7	6.8	4.4	4.2	7.9	7.7	7.3	6.5	1.7	5.8	5.2	7.0	7.0	8.3	6.6	1.4	2.7	2.5	7.5	5.8
*Tifway	5.8	7.6	7.1	5.4	6.0	7.7	5.5	3.4	8.0	8.8	7.3	6.2	1.3	2.7	2.9	7.6	7.0	8.0	6.9	2.3	4.9	2.3	7.3	5.7
*Mirage	5.8	5.8	5.9	5.0	5.0	5.5	4.4	3.8	3.7	7.3	8.8	5.7	6.3	5.2	4.0	4.9	5.9	6.2	6.3	1.2	5.1	4.3	5.7	5.3
*Texturf 10	5.8	7.3	5.3	5.7	5.2	7.1	4.3	2.8	6.3	6.8	7.9	5.6	1.0	5.8	4.1	5.6	6.3	7.0	6.4	1.4	4.1	3.7	6.4	5.3
•OKS 91-11	5.9	6.5	6.7	5.5	5.2	5.4	4.0	3.6	4.4	8.0	8.0	5.3	7.0	4.4	3.4	4.7	5.9	5.8	6.1	1.0	5.6	3.5	5.4	5.3
STF-1	5.9	6.8	5.5	5.4	4.8	5.4	4.2	2.9	6.2	8.2	7.5	5.4	3.0	5.5	5.3	5.3	6.1	6.7	6.2	1.8	4.4	2.9	5.8	5.3
•J27	5.6	5.7	6.0	5.2	4.8	5.1	4.3	3.3	3.5	7.8	8.2	4.9	6.0	5.0	4.0	4.8	5.2	5.5	6.1	1.3	5.5	3.9	5.5	5.1
*•Guymon	5.7	5.9	5.9	5.2	4.9	5.1	4.4	3.2	3.3	7.6	8.0	5.3	6.0	4.9	3.2	4.9	6.0	5.8	6.1	1.1	4.9	3.9	5.2	5.1
*•Jackpot	5.6	5.9	5.4	5.0	4.7	5.5	4.3	3.3	5.2	7.3	7.8	5.4	2.7	3.4	2.8	5.1	5.0	6.0	5.7	1.1	4.5	3.6	5.9	4.8
*•Sundevil	5.8	5.4	5.3	4.6	4.7	4.6	4.2	3.3	3.6	7.1	7.8	5.2	4.7	3.8	3.3	4.8	4.4	5.3	5.9	1.0	4.1	2.5	5.7	4.7
•FMC5-91	5.6	5.8	4.9	4.7	4.7	5.4	4.5	3.5	4.5	7.5	6.6	5.5	3.0	2.1	1.6	4.9	5.3	6.2	5.9	1.1	5.1	2.0	5.5	4.6
•FMC 6-91	5.8	6.2	5.5	4.8	4.6	5.1	4.5	3.8	4.1	7.7	6.7	5.4	2.3	1.6	1.6	5.3	5.5	6.3	6.1	1.1	2.9	1.7	6.1	4.5
•OKS 91-1	5.7	5.3	4.7	4.3	4.5	4.7	4.3	3.5	3.4	7.0	7.1	5.3	3.3	2.8	2.9	4.9	5.1	5.7	6.0	1.1	2.1	2.1	5.7	4.4
Floradwarf	5.8	6.7	5.5	4.9	5.6	6.6	4.3	3.4	9.0	6.8	3.8	4.7	1.0	1.0	1.1	5.8	3.9	5.8	4.9	1.1	1.0	1.3	5.8	4.3
•FMC 2-90	5.6	5.5	4.8	4.9	4.5	5.0	4.4	3.8	3.1	7.3	6.6	5.3	2.0	1.4	1.0	4.9	4.9	5.8	6.0	1.0	3.4	2.5	5.7	4.3
•FMC 3-91	5.7	5.3	5.3	4.7	4.7	5.3	4.1	3.7	3.9	6.6	6.3	5.5	2.3	1.1	1.6	5.0	5.1	6.2	6.0	1.0	2.8	1.1	5.8	4.3
*•Sahara	5.8	5.7	5.3	4.7	4.8	4.9	4.2	3.6	4.0	6.5	6.3	5.5	2.0	1.3	1.4	4.8	4.3	5.7	6.0	1.0	3.5	2.2	5.7	4.3
*•Cheyenne	5.7	5.3	4.5	4.4	4.5	4.7	4.6	3.3	3.9	6.8	6.2	4.8	1.7	1.8	1.9	4.8	4.5	5.2	5.7	1.0	5.3	1.2	5.1	4.2
*•Sonesta	5.8	5.3	5.1	4.5	4.5	4.8	4.3	3.3	3.3	6.9	6.4	5.3	1.7	1.3	1.4	4.8	3.9	4.5	6.0	1.0	3.2	1.2	5.2	4.1
*•Primavera	5.8	5.5	4.5	4.3	4.5	4.7	4.3	3.4	3.6	6.8	6.1	5.1	1.7	1.3	1.2	4.7	3.3	4.3	5.8	1.0	2.3	1.3	5.2	3.9
*•Ariz. Common-Seed	5.6	5.3	4.9	4.3	4.5	4.6	4.1	3.5	3.3	6.9	5.8	5.3	2.0	1.1	1.1	4.9	3.4	4.3	5.8	1.1	1.7	1.2	5.1	3.9
*•Ariz. Common-Veg.	5.7	5.2	3.6	4.1	4.0	3.3	3.9	3.0	4.0	6.2	5.1	4.1	1.3	1.1	1.1	4.5	5.2	5.5	5.8	1.1	3.8	1.0	4.6	3.8
LSD Value	0.2	0.5	1.0	0.3	0.4	0.7	0.7	0.7	1.0	0.6	0.7	0.8	1.6	1.2	1.2	0.3	1.4	1.5	0.4	0.5	1.9	1.3	0.5	0.2

The following are conditions at the sites of the Bermudagrass national tests, including, in order, location, soil texture, soil pH, nitrogen applied (in pounds per 1,000 square feet), mowing height (in inches) and irrigation practiced:

- AL1 — Auburn University, Ala., N/A.
- AR1 — Fayetteville, Ark., N/A.
- AZ1 — Tucson, Ariz., sandy loam, 7.6-8.5, 2.1-3.0, 1.1-1.5, to prevent stress.
- CA2 — Santa Ana, Calif., sandy loam, 6.6-7.0, 3.1-4.0, 0.6-1.0, to prevent stress.
- CA3 — Riverside, Calif., sandy loam, 6.6-7.0, 3.1-4.0, 0.6-1.0, to prevent stress.
- FL1 — Gainesville, Fla., loamy sand, 6.6-7.0, 1.1-2.0, 0.6-1.0, to prevent stress.
- GA1 — Griffin, Ga. (high soil pH), sandy loam,

- 5.6-6.0, 3.1-4.0, 0.6-1.0, to prevent stress.
- GA2 — Griffin, Ga. (low soil pH), sandy loam, 4.6-5.5, 3.1-4.0, 0.6-1.0, to prevent dormancy.
- IL2 — Carbondale, Ill., silty clay loam, 6.1-6.5, 3.1-4.0, 1.1-1.5, no irrigation.
- KS2 — Wichita, Kan., sandy loam, 6.6-7.0, 3.1-4.0, 0.6-1.0, only during severe stress.
- KY1 — Lexington, Ky., silt loam and silt, 6.1-6.5, 1.1-2.0, 0.6-1.0, only during severe stress.
- LA2 — Calhoun, La., sandy loam, 5.6-6.0, 2.1-3.0, 1.1-1.5, to prevent stress.
- MD1 — Silver Spring, Md., sandy loam, 6.1-6.5, 3.1-4.0, 0.6-1.0, to prevent dormancy.
- MO1 — Columbia, Mo., silt loam and silt, 6.1-6.5, 2.1-3.0, 1.6-2.0, to prevent stress.
- MO2 — New Franklin, Mo., silt loam and silt, 6.1-6.5, 2.1-3.0, 1.6-2.0, to prevent stress.

- MS1 — Mississippi State, Miss., sandy clay loam, 6.6-7.0, 2.1-3.0, 2.1-2.5, to prevent dormancy.
- NE1 — Lincoln, Neb., sandy clay loam, 6.6-7.0, 3.1-4.0, 2.6-3.0, to prevent stress.
- OK1 — Stillwater, Okla., loam, 6.6-7.0, 1.1-2.0, 1.6-2.0, to prevent stress.
- TX1 — Dallas, Texas (full sun), silty clay and clay, 7.6-8.5, 3.1-4.0, 0.6-1.0, to prevent stress.
- TX2 — Dallas, Texas (partial shade), silty clay and clay, 7.6-8.5, 0.0-1.0, 2.1-2.5, to prevent stress.
- UB1 — Beltsville, Md. (high maintenance), loam, 5.6-6.0, 1.1-2.0, 0.6-1.0, to prevent stress.
- VA1 — Blacksburg, Va., silty loam and silt, 6.1-6.5, 3.1-4.0, 0.6-1.0, only during severe stress.
- VA4 — Virginia Beach, Va., sandy loam, 5.6-6.0, 4.1-5.0, 0.6-1.0, to prevent dormancy.

ket in two years."

"We're comparing everything to Tifway and Tifgreen," said Morris. "If the ultimate is fine texture, it will be difficult to beat Tifgreen."

Yet, Taliaferro feels a Bermudagrass variety suitable for tees and greens will be released "relatively quickly. Arden [Baltensburger] has very good looking seeded Bermudagrasses. There has been substantial improvement in forage-quality types that have been released, and seed will be on the market relatively soon."

Taliaferro, whose research is centering on the African Bermudagrass *Cynodon-transvaalensis*, said there is "substantial genetic variation within that species ... which can be used for genetic improvement. We are looking at selections for two basic purposes: one, potential use on putting greens in the deep South; and, two, their use in other applications in the transition zone because they do have quite good cold tolerance..."

"There is a good possibility we may release one or more African selections as cultivars for turf use, not necessarily initially for greens, but perhaps tee boxes or fairways in the upper South in particular. While we've not found selections we feel are candidates for release and use on putting greens in the deep South, their variations open up that possibility. They are extremely fine-textured and can withstand cutting at 3/16 inch, or as low as 1/8 inch for limited times."

Bermudas are aggressive, quick to recover, drought-, wear- and salt-tolerant, and stand up better to effluent than cool-season grasses. If fine-textured, they can be mowed low. So, researchers push ahead searching for the ultimate Bermudagrass. As seed pioneer Royce Richardson, then-Farmers Marketing president, said before he died in 1993: "Bermudagrass does some great things on a golf course."

For supers, 1995 could be a jackpot in buying Bermudas

Among the new grasses adding to the selection mix this year are:

- **Jackpot**, available in July from Jacklin. "What we've concentrated on with Jackpot," said Jacklin research director Dr. Doug Brede, "is to go for a real fine texture in a seeded Bermuda. Until this point, we were at a moderate texture, mainly because we wanted to get as cold-hardy as we could. Through testing in northern Idaho, we were able to find cold-tolerance. It goes against the belief that fine-textured Bermudas don't have cold tolerance."
- **Sundevil 2** from Medalist America. Developed by Jacklin, Sundevil 2 is a cultivar in the Jackpot series. Like Jackpot, it is a good seed yielder.
- **Primavera** from Seed Research of Oregon. Aimed mostly for golf course roughs in its current state, Primavera has shown "very good cold-hardiness and good dark green color," said Seed Research technical agronomist Skip Lynch. "The only thing it's not is fine-textured when compared to hybrids. Compared to other commons, it is significantly finer. It just is not what people expect for fairways."
- **Mirage** and **Pyramid** from International Seed. "Our objective is to take Mirage into the mid-South, the northern fringe of the Bermudagrass belt, in the fairways," said Director of Research Craig Edminster. "Pyramid is more of a warm-blooded type of Bermuda and is very fine-bladed."

Mirage has phenomenal cold toler-

ance, Edminster said, adding that means it survives well in Kentucky, Tennessee, the mid-South, and in areas where Bermudagrasses don't typically do well like southern regions of the Southern Hemisphere, Argentina, Brazil and Southern Australia.

- **Yuma** and **Cheyenne** from Pennington. Cheyenne, on the market for three years, "exhibits a lot of cold tolerance," said Stapp. "We've grown it as far north as Wichita, Kansas City, into the Washington, D.C., area with success."

New on the market this year, Yuma is finer-bladed and lower-growing, but without Cheyenne's cold tolerance.

- **Sultan**, a seeded variety, and a hybrid seeded variety from the Princess brand from Farmers Marketing. Sultan is coming out this fall, and in 1996 "we will be going full bore with it," said plant breeder Jeff Klingenberg. "It's not a massive improvement, but significant enough to quantify as a new variety. It's better in density, has a more uniform texture, is greener in color and has a better response to fertilizer."

The Princess brand hybrid, he said, "has the quality of a Tifway." It will be available in a very limited quantity this year, he said. "It is very hardy. The quality is as dense as and has the color of Tifgreen, and can be used on tees and fairways quite easily."