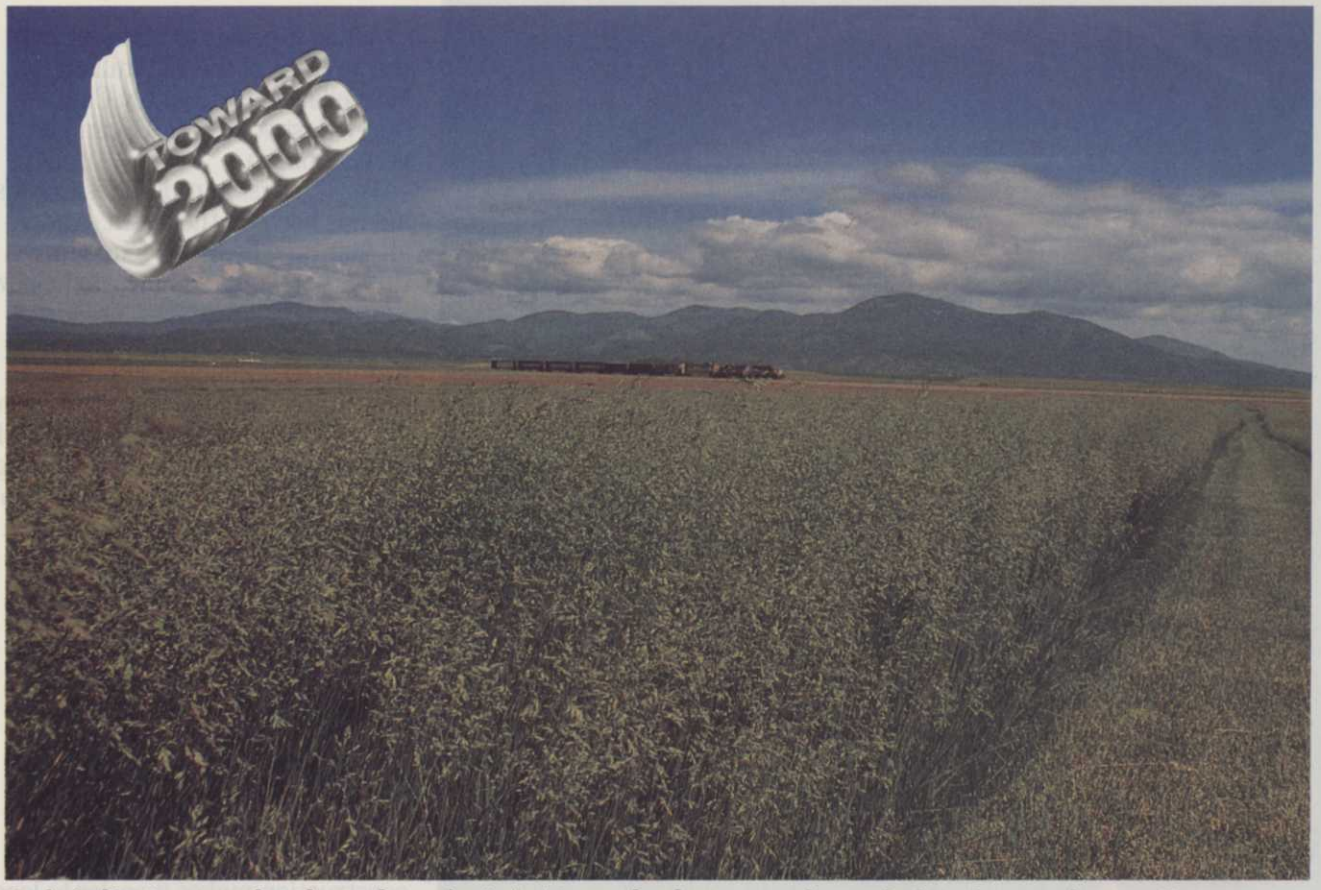

Early indications are that the 25 days of rain in May make the 1990 seed crop the best in several years. Oregon seedsmen say they'll need all the seed they can get to meet increasing demand.

SEED RESEARCH: OPENING NEW DOORS FOR THE TURF MARKET

A week in and around Oregon's Willamette Valley convinced our editor that already good turfseed is getting even better.

by Will Perry, managing editor

Three days and hundreds of turf plot squats into this year's annual trek through seed country, I began to wonder: *How many varieties of turf can there possibly be?*

My notebook was already full. I had traveled from Dawn to Midnight, across the Amazon to Aspen; I saw a Cowboy and an Apache; a Patriot near a Rebel; a Thoroughbred, Jaguar, Birdies and a Falcon. And for each there were dozens of other still nameless varieties waiting to compete for limited acreage this coming season.

Ongoing research in the Pacific Northwest—where most of the nation's turfseed is grown—may well mean denser, lower-growing, drought-, heat-, cold-, stress- and disease-resistant turf for landscapers and golf course superintendents.

Researchers insist the landscaper is, or will be, more likely to find a turf variety ideally suited for particular needs. And, unlike recent years, it appears as if there will be plenty of seed available in coming months (see LANDSCAPE MANAGEMENT's annual "Seed Availability Report" in the October issue).

New science

Proprietary seed is considered a new avenue of research, especially when compared to older agriculture research in crops such as corn and soybeans.

"When you look at turf breeding programs, you have to realize that they're only in their infancy," says Craig Edminster, marketing manager of International Seeds of Halsey, Ore. "Today's turf doesn't need as much fertilizer, requires less oxygen, can go for longer periods without mowing,

Seed researchers continue to seek turf with the growth, color, and tolerance characteristics needed in the various climates and conditions throughout North America and the world.

Colored markers tell the researcher that a particular plant demonstrated one or more desirable traits.

and is adapted to wider areas than ever before. In addition, buyer sophistication is leading the industry into more specialized turf."

An example, says Edminster, is tall fescue, which has become an ideal turf in the transition zone because of its favorable shade, drought and temperature resistance. "Seven to ten years ago, there was no market for tall fescue. Today, more than 100 million pounds are produced annually," says Edminster.

"Turf-type tall fescues are going to a lot of places where they really had to fight to have a nice bluegrass lawn, like Virginia, New Jersey and Kentucky," says International Seeds plant breeder Steve Witten. "People in the Northeast had bluegrass lawns and everyone said, 'That's what a lawn is supposed to look like.' So everyone had to fight, fight, fight to have a nice bluegrass lawn. Now, with the improved turf-type tall fescues, you can have a nice-looking lawn without nearly as much hassle."

High tech seed

International Seeds has employed a computer at its Halsey facility to document each variety's performance under a variety of tests. Test results and breeding information are stored in a databank for easy access.

"The results of our work will come out in the next five to ten years," says Witten. "They may be good or they may be bad, but we plan on surprising quite a few people."

Dr. Bill Meyer, President for Research of Turf-Seed, also feels tall fescue and ryegrass development has been impressive.

"I think an amazing development in the past five years has been the continual improvement we've seen in ryegrass and tall fescue," says Meyer. "I think were going to continue to see these two species and we're getting closer to putting fine fescue in that category too."

Turf-Seed's research farm stretches over 105 acres in Hubbard that hold more than 10,000 turf plots. Meyer is taking advantage of every one, it would seem, because he's seeking a broad genetic base in the tall fescues and perennial ryegeasses under development.

"A lot of breeding work that has been done in the last few years has been based on inbreeding and trying to limit the number of parents. We're tying to broaden the number of parents we use, hoping that the turf will be more adaptable and have higher tolerances."

Dr. Doug Brede, research director, welcomes visitors to the Jacklin Seed Company's Idaho ranch.

Researcher examines heat stress

One of today's leaders in bentgrass research is Virginia Lehman, who works with Dr. Milton Engelke at Texas A&M University.

The Texas bentgrass research program is in its fifth year. Lehman says it seeks to produce "new, seeded-type bentgrasses as opposed to older, vegetative types."

Speaking at the Loft's Seed Company 1990 Field Day, Lehman said the great challenge to herself and other bentgrass researchers has been the natural fact that bentgrass does best in mild climates, not the torrid conditions of many Southern golf courses.

"In Europe in July, the mean temperature is 60°," says Lehman, "whereas in the United States, the July mean is 70-75°.

"When grown at non-optimum temperatures," explains Lehman, "there is a drastic decline in tillers, which is then reflected in the inability of the plant to recover from damage: the roots no longer elongate, and you'll see the current roots begin to slough off. And when you lose the root system in bentgrass, you lose the ability to take in water, and the plant cannot cool itself."

The final result of bentgrass decline—or, the result most visible to the golfer—is a decline in putting quality.

"But the superintendent sees disease and weed invasion," Lehman says, "and more pesticides are then required to compensate for the biological deficiencies."

Lehman's quest is for cultivars genetically adapted to the environment, to reduce the dependency on management.

Concerned supers chip in

The Texas A & M research has been funded by the USGA and Bentgrass Research, Inc., a group of about 20 country clubs in the southern U.S. who want and need bentgrass that can stand up to the ravages of summer heat and drought.

"The ability of the plant to take up water is directly related to its actual heat tolerance," says Lehman, who also seeks a more traffic and salinity tolerant species, all the while retaining a quality putting surface.

Lehman recalls that five years ago, information on heat tolerant bentgrasses was lacking. "There was testimony, but from a scientific viewpoint, we needed to separate heat tolerance from dehydration tolerance.

"We have selected plants for their ability to maintain turgor under drought stress," says Lehman. "We've been able to increase the amount of water held in tissue by 10 percent; we're going to improve our drought resistance to ultimately improve our heat resistance."

Lehman's research continues, and she insists that testing is essential to determine plant adaptability; eyewitness testimony is not enough.

Lehman encourages independent research on golf course practice greens and nurseries. "Those are ideal places for turf managers to establish their own evaluations," says Lehman, "rather than rely solely on someone else's testimony."

—*Terry McIver* □

Meyer said that Turf-Seed likes its varieties to have five to fifty parents, not one or two. In one case, 200 parents were brought together in one synthetic variety under research.

"We're trying to work with color, growth habits and textures that are compatible when putting together types that mix well."

Meyer notes tall fescue's improved establishment rates and says better pythium resistance is in the works. "Last summer we were able to come up with about two clones out of about 500 tall fescues that had excellent resistance to pythium," says Meyer. "This has never been reported before, and now we're making crosses with that material."

Tomorrow's ryegrasses

Meyer also sees room for improvement in tomorrow's perennial ryegrasses. "We thought we were reaching a plateau on ryegrasses with Citation II and Manhattan II. We had a lot of density, good mowing quality in the heat and real good disease resistance. But this spring we're impressed by a new variety (GH89). This is an indication to us that maybe we can make another jump in ryegrass breeding."

Research is also under way to determine which grasses, if any, will maintain their yield levels without field burning. Field burning opponents are gathering signatures for two initiative petitions that would eliminate or drastically reduce the practice.

Lacking initiative?

"We (the seed industry) dodged a bullet last year when the legislature passed the field burning phase-out bill," says Jerry Pepin of Pickseed West in Corvalis, Ore. "The next battle is the initiative. If that gets on the ballot we're going to have to have a big advertising campaign to try to defeat it."

Fred Ledeboer of Turf Merchants has been researching the "dwarfness" of tall fescues to minimize clipping yields of turf on home lawns.

Field burning opponents are gathering signatures to place one of two initiatives on the November ballot. One would ban field burning, propane flaming and stack burning by Jan. 1, 1991. A second, sponsored by Oregon Gov. Neil Goldschmidt, would rapidly phase down field burning, propane flaming and ban stack burning.

"Without burning, the fine fescues and bluegrasses would suffer," says Pepin. "They're so thatchy that you'd really have to use some heavy duty mechanical work to clean up a fine fescue field. You really need to burn it."

Jacklin Seed researchers, under the guidance of Dr. Doug Brede, are keeping their eyes on 42 varieties of Kentucky bluegrass planted in 1987. They're evaluating the effect burning, herbicide and insecticide application have on seed yields. The company, located in Post Falls, Ida., moved its research facilities to an Idaho ranch.

Turf trials added

Jacklin has also added four new turf trials. In addition to its five-year-old national Kentucky bluegrass trial and perennial ryegrass trial, the company has added national fine fescue and bermudagrass trials.

Steve Witten (l) and Stephen Johnson incorporated a computer databank to track turf for International Seeds.

Jacklin's Virginia Kanikeberg is studying the feasibility of seed priming, a process that allows seed to germinate more quickly. Priming involves exposing the seed to a solution that allows them to imbibe just enough water to initiate the early stages of germination.

"In places where the growing season is short, grass seeds that germinate faster can take better advantage of the weather and produce more seed heads," says Kanikeberg.

In Tangent, Ore., Fred Ledeboer, researcher at Turf Merchants, asked field day attendents this now-familiar question: "What are we going to do with the clippings?"

Ledeboer has been comparing the clippings weight of tall fescue to determine growth rates and see which varieties produce the least amount of clippings.

"There are two phenomena that could be called 'dwarf,' says Ledeboer. "One is the total plant height at maturity. The other is in the turf, that is, reduced foliage elongation and reduced clippings. With the latter, the practice of mowing on a weekly schedule will change." **LM**