Photo by R. H. Bailey.

This green, sixteen miles east of Palm Springs, Calif., shows Penncross creeping bentgrass doing well in 113° temperature. Photo was taken June 26, 1973. Mel Curci, golf director of Indian Wells Country Club commented on that day, "113° in the shade and growing strong." Indian Wells Country Club is one of four sponsoring courses in the Desert Classic.

CREEPING BENTGRASS RESEARCH

# Polycross Penncross "... the grass designed for golfers ..."

By W. SCOTT LAMB

THERE are many varieties of turfgrass being grown with an eye toward the golf trade. But, based on performance, none have come up to the reputation of Penncross Creeping Bentgrass.

Dr. Burt Musser and Dr. Joseph Duich, Pennsylvania State University developed the polycross bearing the Penncross name, by crossing three strains of creeping bentgrass for the express purpose of making a better bentgrass for golf greens. Their research spread through many lines of bentgrass before they developed the three-line cross with the qualities they were looking for in a putting green grass.

The parent lines developed by the researchers are kept in carefully maintained condition in Pennsylvania State University greenhouses. From these three varieties come stolons which are planted with great care by selected seed growers in Oregon.

The stolons are field-planted in rows, with the three components planted in separate rows so there are balanced populations throughout the field. The resulting cross pollination makes the polycross (3-plant crossing) throughout the field.

The process sounds simple enough, but the requirements for growing this certified seed are very rigid. No other plantings of bent can be grown near the Penncross, nor may other varieties of bentgrass be grown in the field for a number of years.

The fields are sanitized chemically to eliminate all growth of weeds or other grasses. The rows of stolons are hand planted and constantly patrolled through the early growing season to rogue weeds and unwanted grasses that may contaminate the field after planting.

Each field is registered for certification by the grower. Certification specialists from Oregon State University inspect each field to make sure it complies with planting regulations and to verify isolation from other plants which could cross pollinate.

Harvesting is carried out with immaculately clean combines and the seed is handled by lot number which indicates the field in which it was grown. Samples from the lot are taken by Oregon State University certification specialists to the official laboratory for careful inspection and

testing.

Oregon certification standards require 98% pure seed and 85% germination with minimum allowance for weed and crop seed. Penncross growers, through their association, have tightened these requirements even more. Putting green quality Penncross must meet the above standards plus be free of all objectionable weeds and crop seeds including Poa *annua*. This extra effort by the growers makes Penncross one of the purest turfgrass seeds available for putting greens.

Bentgrass seed is extremely small, with approximately 9-million seeds per pound. Since each seed produces a plant, the seeding rate for even new greens is light compared to larger turfgrass seeds sown on other areas of the golf course.

The general recommendation for seeding new greens is one to two pounds of seed per 1,000 square feet. For overseeding existing greens, one to one and a half pounds per thousand square feet is recommended. Rapid establishment of new greens is proven by letters from enthusiastic golf course superintendents who report newly seeded greens being in play from 60 to 90 days after seeding.

This bentgrass variety does receive scattered complaints from course superintendents who run into maintenance problems, such as the requirement for a tight mowing schedule. The hybrid qualities of Penncross require greater attention; brushing and verticutting are necessary to keep greens in top condition. When properly maintained, it will give that consistent texture required for true putting. The rapid growth also repairs the green from heavy traffic associated with today's courses.

The hybrid characteristics of Penncross testify to the ability of Penncross to crowd out Poa *annua* from greens. Where Poa is a problem, overseeding with this bentgrass on a regular program will indeed help. In fact, according to a letter from one golf course superintendent, it is the only cure he knows for ridding greens of Poa *annua*.

Penncross is deep rooted, a quality which must be considered in a golf green grass. This factor makes it both cold and heat tolerant. From the rigors of the Canadian and Alaska winters word comes to the Penncross Association that it came through in great shape. Conversely, a golf course superintendent in California reports an irrigation system breakdown for one week in over 100 degree weather and still the Penncross emerged with no visible harm.

The consistent demand for Penncross seed is evidence of its acceptance throughout the golf world and speaks well for this very special polycross developed by Dr. Musser and Dr. Duich. The Penncross Association has adopted the slogan, "the grass designed for golfers" and the reputation speaks well for that slogan.□

## Fertile Tiller Increase Noted By Open Field Burning

Open field burning after harvest has helped control disease and weeds and produce better yields in grass seed crops in Oregon's Willamette Valley since the practice began in the mid-1940s.

How does the heat improve yield?

Oregon State University crop scientists, working with red fescue, have found part of the answer. The answer is important because Willamette Valley growers, who produce 70 percent of the U.S. supply of red fescue and a large part of the world's supply of other grass seed, face a January 1975 deadline. That is when open field burning is scheduled to be banned in Oregon because of air pollution problems.

Dr. David O. Chilcote, OSU crop physiologist, recently reported on the red fescue results at the annual meeting of the American Society of Agronomy.

"The primary response to post-harvest residue burning was an increase in the number of fertile tillers (panicles)," he said.

"Not surprising is that competition for sunlight in the fall is one of the keys to plant growth and yield. With field burning, the plant does not elongate, seeking the sunlight. The shorter plant has more tillers in the fall and the tillers produce more seed heads in the spring."

In tests conducted by graduate student Phillip C. Stanwood, plants in a burned area produced 16 tillers per 10 primary shoots in the fall. The rate for the unburned area was one tiller per 10 primary shoots.

"Contrary to the belief that burning causes a shock in plants which stimulates growth, we found that burning, in addition to opening up the stand of plants, also exposes the soil more, so the plant roots and shoots experience a wider range of temperature each day." Chilcote said. This may favor floral induction.

Red fescue was picked for the plot experiments because it is particularly sensitive to burning in terms of seed yield. Similar results were produced in more limited tests with tall fescue, perennial ryegrass, bentgrass and bluegrass.

The importance of sunlight was established by shading burned and unburned plots through the winter. The shade, acting much like stubble left in an unburned field, stopped seed production.

"Our evidence points to light competition as being problably the most important single factor related to crop response and post harvest burning," said Chilcote.