

"Illinois Bentgrass:" 100 + 12 Years in the Making!

The "Illinois bentgrass" that emerged from efforts to develop a superior bentgrass for the game of golf that is highly adapted to Illinois conditions and management.

It has long been my understanding that to make a lasting difference in the performance of turf, you must work toward making genetic changes in the plant. You can only accomplish so much through cultural or chemical management. In other words, the potential of a grass plant to form a quality turf is more dependent on its genetic constitution than on a turf manager's ability, tools or budget.



In the article "Looking for Novel Turfgrasses" that appeared in the October 2005 issue of *On Course*, the famous Dr. R. Kane and I described how new turfgrasses are produced. One of the methods is "Mother Nature," or time to naturally select better turfgrasses. But what constitutes "better turf?" In my opinion, turf should be adapted for a given climatic area, such that it can withstand the various stresses that it will face there. In Illinois, for example, bentgrass must face extremes of temperature (-40° to 120°F), drought, disease, and golf turf management and use. With this philosophy in mind, my wife, Tess, a botanist and grass specialist, Mr. Shelby Henning, a turfgrass pathologist, and I started to identify old turfs (circa 80-100 years) that we could scout for Illinois-adapted bentgrasses.

During the early 1990s, we worked with other experienced turfgrass breeders, including Professors Reed Funk and Bill Meyer (Rutgers University) and Mr. Gerhard Klooster (Barenbrug-Holland). Bill and Gerhard traveled to Illinois and worked with our team, teaching us how to recognize new or different clones of turfgrasses, and how to process the plants. Once we were trained, we ventured out on our own and visited many golf courses,

(continued on page 8)

cemeteries, parks and roadways, collecting clones of bentgrasses.

What Is a Clone?

A clone is a plant that is identical to its mother plant. Clones spread vegetatively, forming a patch of uniform turf. Turf clones are recognized by their color, texture or some unusual trait, and also by the fact that they develop as a round patch or clump of grass. You all have seen patches or clumps of Kentucky31 tall fescue; this is a vegetative clone. This means that it has increased its diameter by vegetatively forming new plants, which are called tillers. In the case of bentgrass, bluegrass and zoysiagrass, a clone grows by stolons, rhizomes, and stolons and rhizomes, respectively.

How Does a Clone Form?

When a grass plant has an advantage over the other grass plants surrounding it, it will gradually "push" the other grasses out of the way and dominate the area. The frequency and rate at which clones form depends on a lot of different factors, including grass genetics, management

and climate. The first change required for a clone to form is a genetic change, and these occur very rarely in nature. They develop as a result of a change in the DNA, which can occur in a number of different ways (see "Looking for Novel Turfgrasses"). Not every DNA change is beneficial; nor do all of them last for long or confer an advantage to the plant over its neighbors. However, about one DNA change in a million could be important. Now, add in management (what you do!), and you can see that a plant with new or different DNA will also have to deal with how you treat it and how the local climate affects it. It is estimated to take 80 to 100 years for a clone to develop in a population of grasses.

How Did We Find "Better" Clones?

First, we identified areas inside and outside of Illinois that we thought were not evaluated for clones in the past 80 to 100 years, and that had not been overseeded or sodded. We collected single plants from thousands of different clones. Just because we col-


Turf clones are recognized by their color, texture or some unusual trait . . .

lected thousands of clones did not mean or guarantee any of them would be useful. However, we tried something a bit different—we collected plants during the most stressful time of the year: June, July and August. What we really wanted to find were plants that could take the heat, disease and stresses delivered to turf, not just the pretty ones. Some of you might recall our team visiting your course or site. After digging up little

(continued on page 10)

RTV900


The utility vehicle that's built as tough as a tractor.




Hard working, dependable and tough: the Kubota RTV900.

- 21.6 HP diesel engine - Designed by Kubota engineers
- Hydrostatic power steering - Handle tight turns with ease
- Variable Hydrostatic Transmission (VHT) - No belts. No maintenance. No loss of torque.
- Hydraulic wet disc brakes - Smooth braking, even in mud and water
- 4-wheel drive - Power through the roughest terrain
- Ground-hugging suspension - Fully independent front and semi-independent rear suspension
- 4 different models - General, worksite, turf and recreational

Tractor tough. Kubota smart.
Martin Implement, Inc.
 16400 104th. Ave.
 Orland Park, IL 60467
 (708) 349-8430



EVERYTHING YOU VALUE
www.kubota.com





Growers of Quality Sod

SERVICE!
 LOCAL GROWING FOR
 EASY PICKUP OR QUICK DELIVERY.
 DELIVERY ON TIME, EVERYTIME.


QUALITY!
 FEATURING
 ELITE KENTUCKY BLUEGRASS,
 BENTGRASS SOD, AND
 TURF-TYPE FESCUE

- LOWER MAINTENANCE
- MORE DROUGHT & SHADE TOLERANT
- BETTER WEAR RESISTANCE

PRICE!
 CALL FOR A QUOTE

630-557-2900

**MAIN STREET
 11 MILES WEST
 OF BATAVIA, IL**



NEW PRODUCT

pieces from clones, we would take the sample, wash off the dirt, separate the grass into individual plants and plant them. Once the plant was big enough to go outside, it was planted into a nursery. That took about one year, and we collected hard for five years. We ended up with thousands of single plants. But were these any better than those being used in Illinois?

Turf Evaluation!

The first evaluation was for turf quality. The single bentgrass plants were allowed to grow and spread to form a turf. At the same time, we developed a large single-plant nursery identical to the turf plots, but these were unmowed. This block was to become a polycrossing block. Polycrossing is a very interesting process, wherein each bentgrass plant is allowed to cross with any and all of its neighbors. The seed from the mother plant is then collected, and this becomes the initial seed for developing a variety.

Once the 1,000+ polycrossed plants were harvested, the seed was cleaned and sent to the very capable and experienced hands of Professors Reed Funk and Bill Meyer of Rutgers University. They planted the seed, established bentgrass turfs and evaluated each entry. I soon learned that to be a good plant breeder, you must be very critical and hardcore. It was a bit hard to swallow when they told me that more than 99% of the clones that we had collected were "not worth talking about!" It was a good thing that they were both my friends!

The good news was that they were very impressed with 11 plants of our collection. These 11 plants were polycrossed in various ways and further evaluated in Illinois during the next eight years. Eventually, five plant types were selected and polycrossed within each group. This then formed the basis for the first bentgrass that was seeded, harvested, cleaned and bagged for planting. That was two months ago, September 2005, after a total of 12 years in the making.

I have had the new bentgrass planted in a number of locations in Illinois to further evaluate it. It is very important now that this bentgrass be evaluated as a turf for putting greens, tees and fairways in Illinois. Our orig-

inal aim was to develop a superior bentgrass for the game of golf that is highly adapted to Illinois conditions and management. I am confident that this bentgrass forms a very nice golf turf, is tolerant to the Midwest climate and is disease-resistant. As it should be, the superintendents and sod growers of Illinois will have the final word as to whether this bentgrass is superior to other commercially available bentgrasses.

What will happen to the bentgrass? If it is well-received by the Midwest turf industry, it will be planted out west for production by the Barenbrug USA Corporation and prepared for sale. If it is not good enough, it will be used for additional development work.

What should we name it? Have an idea? Send it to me for consideration at hwilkins@uiuc.edu!



Sand daM™

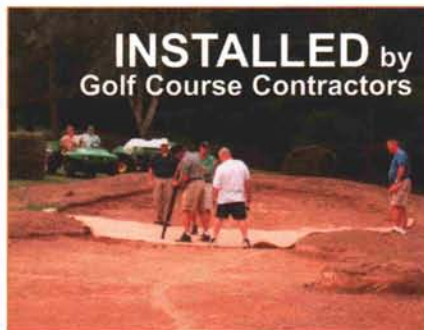
BLANKET SOLUTIONS
FOR BUNKER PROBLEMS

The most effective and easiest to install of all bunker blankets!

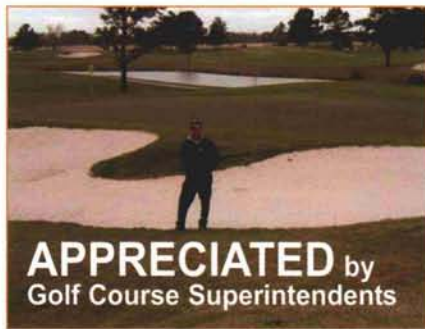
SPECIFIED by
Golf Course Architects



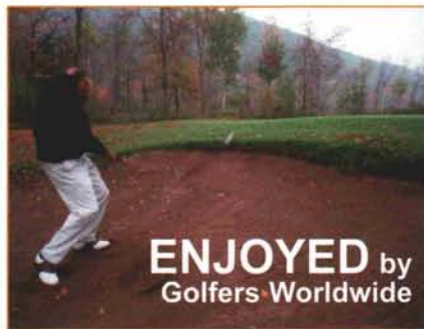
INSTALLED by
Golf Course Contractors



APPRECIATED by
Golf Course Superintendents



ENJOYED by
Golfers Worldwide



- Hi Performance Sand daM™ for slopes as steep as 60°
- Install Sand daM™ Lite in greenside bunkers with low angle slopes, or flat bottomed fairway bunkers!

JOHN DEERE GOLF & TURF

ONE SOURCE



Professional Turf Products LLC

Call 866-726-3326 toll-free or visit our website to find out why Sand daM is:
SPECIFIED, INSTALLED, APPRECIATED, and ENJOYED
by so many in the golf industry.

- **TOLL FREE** 866-726-3326
- **PHONE** 724-929-2111 • **FAX** 724-929-0282
- **EMAIL** info@proturfproducts.com • **WEB** www.proturfproducts.com