

overseeding. Many of the post emergence herbicides will have preemergence effects on the ryegrass if applied too close to overseeding.

Prior to Christmas we will apply Kerb in all other bermuda grass areas at 2 pounds per acre. This will get any poa annua that has emerged, as well as hold back any that is coming. This will keep us very clean through February.

We will pre-emerge all bunker faces in October/November for winter annuals. We use a Gallery/Surflan combination for this and it will help keep us clean through spring.

The bermuda grass fairways on the New Course are spot treated with post emergence products just like the others in the summer. It is good for the environment (less chemical) and good for our budget. Again, weekly applications are a must to keep the populations to a minimum.

These are our simple programs at Grand Cypress Golf Club. We have been lucky to start clean and keep clean. I think this is why we get away with limited preemergence programs.

Tom Alex

Grand Cypress Club
Orlando, Fla.

How Weeds Gain a Foothold

Emerald Dunes is surrounded by open fields of disturbed soil that provide a constant source of potential weed contamination to the golf turf. Seed is carried by wind, carts and water across virtually the entire playing surface. A dense stand of turfgrass, healthy enough to resist weed intrusion, is our goal. Unfortunately factors such as poor environmental conditions, compaction, renovation procedures, insect or disease pressure, and inefficient irrigation often cause turf to thin, allowing seed to soil contact. Usually the weed seed germinates unhindered or even encouraged by the very conditions that slow the growth of the turf. As with any "pest," the weed is only a symptom, and we make every effort to



Weak or disturbed turf creates a niche for weeds to sprout.

identify and correct the underlying problem that encourages its establishment.

The next line of defense for us is the use of preemergent herbicides. This year we applied fertilizer with Ronstar to all areas except greens in the spring, and fertilizer with Surflan in the fall and winter. The Surflan is not applied to tee or green slopes to avoid effecting our overseed, and these areas are carefully sprayed with Barricade.

As to the use of post-emergent herbicides, we first try to positively identify the weed, then use the IFAS Florida Weed Control Guide to select our treatment procedures. The book *Weeds of Southern Turfgrasses*, published by the Florida Cooperative Extension Service IFAS, has been a great help to us in weed identification.

We find our biggest failure in post-emergent weed control to be missed or improperly timed follow up applications. This was a problem this year because of the numerous rain days that made spraying impossible. We hope next year to time our post-emergent applications to better avoid months of high rain probability. The single most persistent weed for us this year was Alexander grass. We originally treated it like crabgrass and had little or no success and found that is not listed on any selective herbicide labels. It was brought to our attention that some successful control had been

achieved using Trimec Plus and we found this very effective when applied with a silicon surfactant and iron sulphate.

Chip Fowkes

Emerald Dunes C.C.
West Palm Beach, Fla.

A Weed is a Weed — or is it?

The American Heritage Dictionary defines a "weed" as a plant considered undesirable, unattractive, or troublesome, especially one growing where it is not wanted, as in a garden. This highlights the fact that even the finest most stress-resistant Tifdwarf bermudagrass could be considered a weed. The inverse of this statement is that a plant cannot always be considered a weed.

The Fort Myers Country Club was built in 1917. The fairway turf is a combination of common bermudagrass and other stuff. Many of the fairways are lined with huge eucalyptus trees and have extensive areas of heavy shade.

When I started working for the City of Fort Myers in the spring of 1991, I saw many things that I thought I could improve. Near the top of this list was the removal of all of that obnoxious *Poa annua*. What an ugly mess! I knew that

my efforts to remove that universally accepted weed would be applauded.

I was still riding high the following fall when I applied my pre-emerge herbicide. I could still clearly envision all of those ugly white seedheads blowing in the breeze. Wow! I was going to make the place even better for the heavy winter play. As the year progressed and the holidays came and went, it became clear I had been successful. I had eliminated the vast majority of those obnoxious weed patches.

A funny thing happened to me on the way to the turfgrass Hall of Fame. At the end of December, I realized that the heavily shaded areas were getting a little thin. After another 8,000 rounds for the month of January, thin would have been very acceptable to me. A more accurate description would have been simply "dirt." It had sure been a quick change from riding high to laying low. The members were all quite concerned. There had never been a problem with grass in these areas. That new Greenskeeper had sure screwed it up.

Rest assured the next winter I did not cringe when I saw those white seedheads blowing in the breeze. I had learned an important lesson — a weed is not always a weed.

*Mike Mongoven, CGCS
Fort Myers C.C.
Fort Myers, Fla.*

Mapping Pays Off!

Here at Lake Region we only use pre-emergents in two different applications. We primarily use them for our winter weed program mainly for control of *Poa annua*.

We will come in with Surflan at a full rate and will do the golf course wall to wall. We begin this application in the middle of October and try to have it done by the end of the month. We ring all tee and green surfaces first and then proceed to finish the rest of the golf course from there.

We will come back in February and March and begin post treatments from there for any secondary rye or *Poa*. We



This goosegrass plant needs pulling — not spraying.

are still trying to find the best product for that application but have tried many other avenues. I have used Sencor in some fairway areas at that time with some degree of success. Of course, I think everyone has their own ideas on post treatments. This basically is our strategy for the winter months.

As for the spring and into the summer we will map hot spots mainly for goose grass and will spot treat these areas. This is a very limited application due to years of keeping up with the problem of goose grass.

We seem to be able to keep goose down to a very minimal issue due to products like Illoxan that do such a good job with a post treatment. Also with some of the environmental issues about pre-emergents staying the soil longer we do try to keep their use down to the most extreme limits as possible.

Here at Lake Region if we can survive without them we definitely try to. We are very involved with the concerns of the environmental issues ahead of us and are a Registered Audubon Cooperative Sanctuary. We try to keep all our chemical uses to the most minimal use as possible.

*Alan Puckett, CGCS
Lake Region Y. & C.C.
Winter Haven, Fla.*

Weed Control with a Real 'Hands On' Approach

At Collier's Reserve, nearly all of our weed control is done by hand and it has been that way since grow-in started. Occasionally, we spray yellow nut sedge that has emerged since grow-in. There are two situations that require manual weed control programs. First is grow-in; manual weed removal gives you control over the weed population from the beginning. The second situation is an established golf course with a substantial weed population.

Weed Control During Grow-In

Prior to sprigging, at the Reserve, soil samples were taken to help us determine the proper fertility levels needed for grow-in. This was important to us because we needed all the necessary elements in our fertilizer blends to complete a healthy, rapid grow-in. One of the best natural weed control programs is a tight, healthy turf.

We waited three weeks after sprigging to begin our manual weed control program. We would have, as our Golf Course Manager Tim Hiers would call, "tiger hunts." A "tiger hunt" consists of up to four men, starting at the tee and working

toward the green, spread out, with five-gallon buckets and weed forks, and making sure they get the root and the top of the weed plants. Our "tiger hunts" went on throughout grow-in and for the first month of operation. Initially, the "tiger hunts" required at least a two to four man crew to hand pull the weeds.

However, once we established and maintained a schedule, we were able to cut to a two-man crew doing the manual weed control. If we occasionally got behind on a few holes, maintenance crew members who finished daily tasks early would give special attention to the weed areas, or we would spend some time on Saturdays doing manual weed control.

As grow-in ended, we developed guidelines for weed control to assure we would remain weed-free. We began by creating a healthy turf and we keep it that way. We adhere to a strict Integrated Plant Management (IPM) Program that reinforces the healthy turf program. We have frequent soil and turf tissue testing to monitor proper fertility levels.

Our irrigation water is on a scheduled test program to monitor bicarbonate and sodium levels, and those levels are adjusted to evapotranspiration (ET) rates and are monitored by an on-site weather station to assure proper soil moisture level is maintained. Mowing our turf on a proper frequency schedule, at correct height and with sharp, properly adjusted reels helps maintain a tight, healthy turf that means better weed control.

The weed control guidelines also include a program for manual weed control (except yellow nut sedge). We have a daily weed quota system for some of the golf course maintenance crew. The IPM specialist has a quota of 25 weeds per day (if he can find that many), the irrigation specialist has a six per day quota, as well as the set-up person. Each crew member has a specific area to concentrate on.

The set-up person takes care of the greens, tee banks and tee tops; the IPM specialist covers the fairways and roughs; and the irrigation specialist maintains the areas around the irrigation controllers.

Even the equipment manager is asked to pull at least two weeds per day when he

goes into the field

If "hot spots" develop anywhere on the golf course, crew members who finish daily assignments early go work on them.

When the golf course is weed-free, we turn our attention to pulling weeds from the native grass areas such as tee slopes or in the natural area beds.

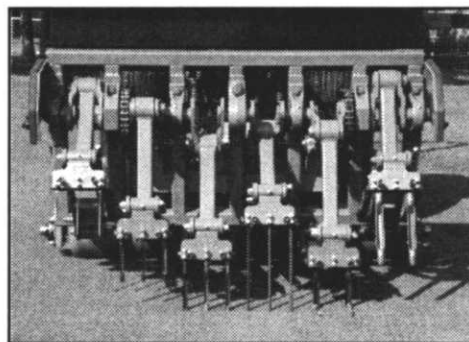
Weed Control for an Established Golf Course

In the second situation, manual weed control is also required for a golf course that is well established but has a weed population problem. The tactics used to bring it to a weed-free status are not much different than during a grow-in. Using the "tiger hunt" method, sound

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Manual Weed Control versus Spraying (when appropriate)

Here are some of the advantages of manual weed control versus spraying: herbicides cost money, you reduce the amount of pesticides used (again saving money), and most of all, it makes good, common sense. For example: figure the time and materials cost for a spray technician to spot spray goosegrass plants; spend that amount for manual removal of them, and it would not take as long, or cost as much, to rid the fairways of the goosegrass. When you spot spray, you can certainly count on several repeat ap-

plications to kill the goosegrass, not to mention possible interference from rain. The seed head remains viable even when the goosegrass is dead.

You also chance severely damaging or, at the least, yellowing the surrounding turf for several days. The advantage to manual removal... the goosegrass is gone... no root, no seed head, no need for repeated herbicide applications... no more goosegrass!

Summary of Weed Control Practices

Through good cultural practices, using the components of IPM, and a disciplined approach to limit the amount of herbicides used on the golf course, we have become almost weed free. It may take more time if the weed problem is severe, but it can be accomplished. Irrigation timing and frequency, controlling pests and disease, using proper fertility levels and frequencies, and proper mowing practices, all contribute to a healthy turf, which contributes to good weed

control. As a student, preparing for a career in turf management, I remember an old saying that still holds today: "Weeds are not the cause of unhealthy turf, they are the result of it."

Matt Taylor
Collier's Reserve
Naples, Fla.

Split Applications for Sedge

Our number one weed problem this year has been purple and yellow nutsedge. The reason it was such a problem was that the rainy summer made our control efforts less effective. We also have some crabgrass and goosegrass to contend with on a small scale.

We found that a split application of Image at 3/4 ounce per 1,000 square feet followed up with 1/2 ounce per 1,000 square feet gave us satisfactory control of purple nutsedge when conditions were favorable. The 1.0 ounce rate of Image seemed to shut down our bermuda so we



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use the combination of the lighter rates. We also use Basagran for our yellow nutsedge areas.

For our other grassy weeds we spot spray with MSMA at a rate of 2 pounds of active ingredient per acre. A second application two weeks later is usually necessary, but is also usually effective. We apply MSMA only from June to September to avoid affecting the vitality of the bermudagrass in the spring and fall.

At Isleworth we overseed our fairways so we make a preemergent application of Barricade to our slopes and roughs. This prevents germination of Poa annua and any ryegrass seed that may be scattered by carts or equipment. We make three half-pound per acre applications of Barricade: October, Mid-January, and June or July.

Buck Buckner, CGCS
Isleworth C.C.
Winderemere, Fla.

Planning, Patience, and Prudence

Weed control has been a tough proposition this year because the constant rainfall either prevented initial spraying or necessary scheduled follow up treatments. Sedge, our biggest weed problem, loves moist conditions so it flourished. We have populations of the traditional yellow and purple nutsedge and some kyllinga. A tank mix of Basagran at (2 qt/A), with MSMA at (1 qt/A), and Horticulture Oil at (1 Qt/A) to be effective when conditions permit us to spray. A new product called "Manage" is due out next month for use in Florida and is reportedly dynamite on sedge!

I like to stop all contact herbicide spraying by October if possible to avoid damage to the bermuda in the cool season since it will not recover rapidly.

However, in the warm season we do battle with crabgrass, paspalum, and doveweed on the driving range. We use MSMA on the crabgrass, DMC on the paspalum., and 2+2 on the doveweed.

In the fall, we apply pendimethalin to our green and tee slopes to control stray overseed material and Poa annua. It is not very mobile so I have been happy

with the results. We use Kerb 50W at the 1 pound per acre rate on about 20-25 acres of fairways that have recurring Poa annua infestations. If we do get Poa germination later in the season, I take it out with Simazine.

If we spot goosegrass emerging, either my assistant or myself will spot spray with Sencor in a one quart spray bottle. We do not apply pre-emergents for crabgrass or goosegrass. If we do find a goosegrass area too large for the spray

bottle, we will spot spray with the boom sprayer and we will use Illoxan.

Stuart Leventhal, CGCS
Interlachen C.C.
Winter Park, Fla.

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ing the Rubigan program to prevent germination. On the rest of the course, we make a fall application of Barricade sparged on fertilizer around November 1st. I have eliminated the Spring preemergent application because the turf just didn't seem to be responding as well coming out of winter.

Now, instead of coring the turf stressed by much winter play, we spike two ways with a 6 inch deep spiker and fertilize to promote a healthy turf. The open coring holes in the spring were providing too many opportunities for weed invasion. We have a lot of localized wear areas caused by our walking golfers. We fertilize these areas monthly with high Potassium formulations to keep the turf roots healthy.

Like many of my peers, yellow nutsedge has been my biggest headache. One application of Basagran at 2 Quarts/Acre is usually sufficient unless it is a really thick patch. In that case, we re-treat at the prescribed interval. On some of our heavily infested ditch banks, we use a

tank mix of Image (1 Qt/A) and MSMA (1 Qt/A).

We spot treat goosegrass plants located through the green with Sencor. If we find unacceptable populations of goosegrass on the greens or tees, they are treated with Illoxan.

*Joe Ondo, CGCS
Winter Pines G.C.
Winter Park, Fla.*

Managing Weeds in Different Turf Types, Ornamental Grasses

We have two distinctly different golf courses here at Bonnet Creek which gives us different challenges in weed control. One element they share along with the clubhouse grounds is an extensive use of ornamental grasses like cordgrass and Gulf Muhly. Weed seeds sprout along the bed borders and in the grass clumps themselves. We use a tank mix of Basagran

and Pre-M or Round Up along the bed edges and we spray over the top with light rates of Southern Formula Trimec for broadleaf weeds.

The target golf concept on the Eagle Pines course means that there are large areas of bare ground or pine straw that offer potential breeding ground for weeds. A regular preemergent program is necessary to keep the weed populations down. We use Gallery and Snapshot in these areas as well as the sparse "natural" tee slopes that are planted in Gulf Muhly.

Part of the design concept of Eagle Pines was to use different grasses for textural contrasts. Delmar St. Augustine was used around all the bunker complexes in the fairways and around the greens. The St. Augustine requires different chemicals than the neighboring bermudagrass. Great care must be taken not to overspray one or the other turf types with the other's chemical. This can prove to be labor intensive. When we get bermudagrass invading the St. Augustine, there is not too much available that will take it out safely.



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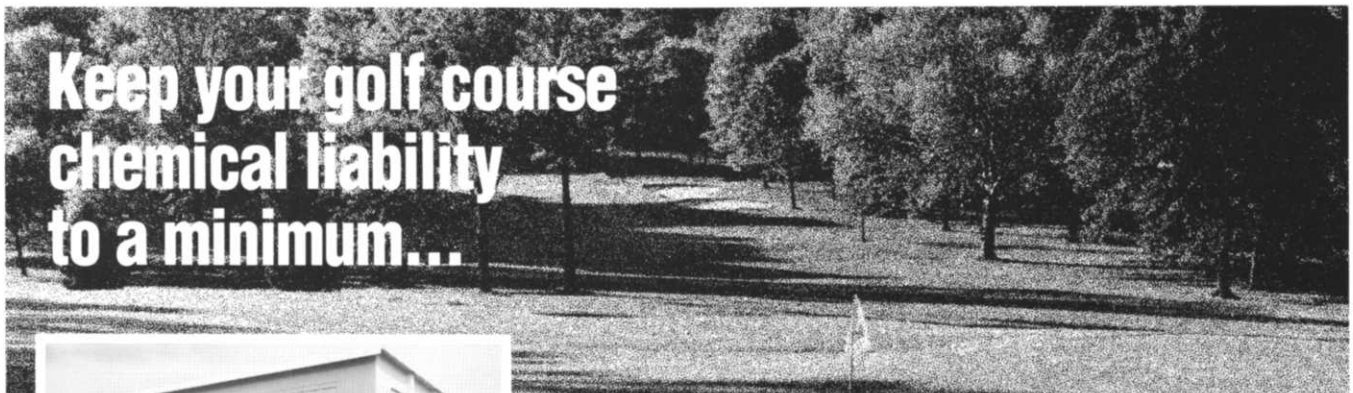
Weed encroachment in native grass plantings can be controlled with over-the-top spraying when necessary.

On the Osprey Ridge course, our biggest problem is crabgrass patches in the roughs, slopes, and bunker faces. The invasion by the weeds seems to follow animal and insect burrowing that creates bare ground situations. We spot treat with Sencor.

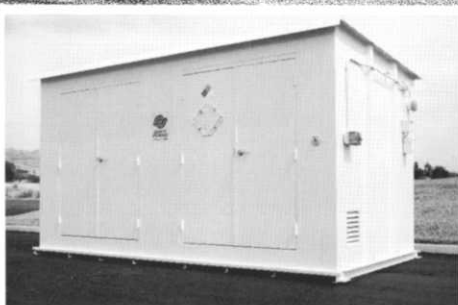
We apply a preemergent to our greens and tees slopes to eliminate germination by scattered overseeding. We have used Barricade in the past. This year we are trying Surflan. We treated all 36 fairways with Surflan because we overseeded our roughs for the first time since we opened. In previous years we Kerbed a few problem fairways that had *Poa annua*.

We have a large Confederate Jasmine bed on a steep slope behind the clubhouse. Weed encroachment was unmanageable until we started spraying over the top with Ornamec at 2.5 ounce per gallon.

Scott Welder
Bonnet Creek G.C.
Lake Buena Vista, Fla.



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We Don't Have a Big Weed Problem!

Editor's note: When I called Dave Portz to ask him about his weed control programs, he suggested that I might want to talk to someone else, because he didn't feel he really had a severe problem that would lend itself to an article about problem solving. I didn't let Dave off the hook! I asked him what he did that he felt kept his weed problems to a minimum.

I wasn't boasting when Joel called, but we haven't had a large scale weed infestation of any kind that required a far reaching herbicide program. We do have skirmishes with recurring dollarweed in the St. Augustine turf at the club. We apply light rates of Trimec or Threeway for suppression. We also apply Gallery in the Fall and atrazine in the Spring.

On the course, we do spot spray sedge on the green and tee slopes and some broadleaf weeds in the bare areas on the margins of the roughs. We have not used a preemergent herbicide in five years. We are in environmentally sensitive coastal marsh setting so we try to grow healthy turf to keep weed pressure to a minimum.

In the growing season we verticut greens bi-weekly. The tees are done monthly and the fairways three times each year. We aerify everything twice per year. The GA-60 has done a real good job for us on the fairways.

Our fertilizer program for the bermuda greens is no more than .5 pounds of nitrogen per month. I like to use a 1:2 ratio of nitrogen to potassium with additional straight potassium applications to supplement. Between granular applications, I use light liquid feedings with 12-0-8.

On our overseeding I make one granular nitrogen application of slow release 39-0-0. The rest of the winter I use liquid spray feedings alternating Iron, a root stimulator, and Agriplex without nitrogen every three weeks. I do apply a granular 0-0-28 at .25 - .5 pounds per 1,000 square feet every month.

David Portz, CGCS
Hammock Dunes Club
Flagler Beach, Fla.



Turfgrasses being sold under old established names are beginning to show a wide disparity in reacting to similar modern maintenance programs.

Is the daily demand for tournament conditions driving the entire golf industry into the ground?

BY MIKE BAILEY

There is a growing concern and possible controversy over the integrity of the bermudagrasses being used on our golf courses today. Turfgrasses being sold under old established names are beginning to show a wide disparity in reacting to similar modern maintenance programs. One course's healthy, tight, emerald green putting surfaces are another course's weak and struggling greens. All are built on USGA spec greens and all managed by competent professionals. What's going on? Is someone guilty of wrong doing?

Reflect back to the 1960s and analyze where the game of golf was at that time. Golfer demands and media pressure had not evolved into the pressure of today's demands. What type of hybrid bermudagrasses must have been available then?

The truth is there were not any hybrids in use then. The science of bermudagrass turf research was somewhat simple. Someone had this magical little spot of turf somewhere on his golf course. The "greenskeeper" would cultivate this "jewel plot" as being something better than the rest.

Maybe, he thought, this spot could be the grass of the future. That is exactly how modern bermudagrass evolved. Hence the names of these pocketed areas of the then "grass of the future" typically bore

the name of their geographic location. Ormond bermudagrass, as it became internationally known and planted successfully throughout the world, evolved from the lawn surrounding the Ormond Beach Hotel in Ormond Beach, Fla.

Dr. Glenn Burton, the father of bermudagrass research, and his staff collected samples from these "jewel plots" and took them to the Coastal Agricultural Research Station in Tifton, Georgia for testing. They successfully founded bermudagrass technology that stands even today. Tifway 419 bermuda was virtually created by Dr. Burton through radiation exposure that altered the original parent plant, and created a genetic change that created the hybrid as it is known today. It took many years of research to select from the many samples created to find a grass that would be considered the most acceptable turf for a golf course.

Dr. Burton has stated, "We did not design these grasses to ever consider they would be mowed so low as to what today's standards are." I distinctly remember attending more than one Tifton Turfgrass Conference the week following the Masters in the 1970s, believing we were pushing our grasses near the edge of survivability at mowing heights of 5/32 of an inch.

Now, many do not consider that ac-

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ceptable. Golfer pressure has demanded heights in the range of 1/8 of an inch, double cutting the greens, and rolling the greens in order to create a stimp meter speed unheard of in the 1970s. We all accepted those few days for that special tournament when you would "shave the greens" down just short of sheer desiccation. However, you usually did not lose your greens or your job because you knew that fine line of flirting with the edge for a short period of time. Now golfers want tournament conditions daily! You can't run the Indy 500 with a Chevy or even a Cadillac. You have to have a custom made race car!

I think the entire golf industry is driving itself into the ground. Some superintendents have planted the first seeds of destruction by actually trying to maintain their greens virtually year round at the edge of disaster. Modern technology allows us to keep the greens artificially alive, but as Dr. Burton, the originator, says, "These grasses just weren't designed to be maintained at these lower heights of cut." That is my first comment to the jury. Maybe you're not guilty of killing the golf course, but you're also not completely innocent. Maybe you're an accomplice!

As leaders of our industry, we must look ahead and say where the bermudagrass industry is going to be in the next five, ten and twenty years. When I got into this profession nearly twenty-five years ago, I never dreamed that our science would be digging our very own graves yet that is how I see the future unless we set up a long range plan now.

In order to effectively move forward, we must review our past. Over twenty years ago, quality bermudagrasses were secured for the golf course, namely Tift-dwarf for the greens and Tifway 419 for the fairways and roughs. If these grasses were acceptable back then, why are they not acceptable now? Quite simply, golfer's expectations have created a demand for a bermudagrass superior to what currently exists. In addition, we are not sure if the grass that we managed yesterday is actually what we're dealing with today. The state of Florida, during the economically stressful 1980s, reduced budgets and totally eliminated the state turfgrass certifi-

cation program.

Because of a cost competitive battle to effectively sell bushels of bermudagrass at the lowest price possible during the Florida building boom, propagators could not effectively certify a grass that the state abandoned. For the past ten years I have sat before more than one board meeting or committee meeting trying to conclude how we, as only superintendents, can convince the government to support us. Fortunately, now that the Florida Golf Economic Impact Survey has been completed, any politician can recognize the impact of golf on the state and the rest of the golfing world.

I see a real need for a council. Not the abandoned and failed Golf Council, but rather a council of superintendents, research specialists and, yes, legislators. People who can support our efforts to create an effective long range research plan to find or create the bermudagrass of the future, along with the economic support to regulate a certification program that will ensure quality for years to come. Idealistically, we are searching for the long range ultimate bermudagrass, or whatever else, that will fulfill the criteria of today's golfer.

With crossbreeding and research that is already completed in other branches of horticulture, we may be looking at the creation of "bentuda." Imagine the fine texture quality of bentgrass being united with the heat hardiness of bermuda. Is it possible? Could it be commercially available by the year 2000?

These type of genetic alterations are not farfetched. We are currently analyzing DNA research identification work for future projects that could prove valuable for long lasting retention of these proposed grasses. DNA identification has hit the fury of the media because of recent trial cases; yet in the world of horticulture, and most specifically, bermudagrass, we are about to explore a whole new world of research. Fingerprinting to identify grasses with unique positive traits will allow researchers to find characteristics that might never have been known about a certain variety.

By DNA identifying the grasses we currently maintain, we could develop an information bank of common denomi-

nators. This information could be pooled for each exact variety. For example, you might have a certain green with isolated mutations that stress out and nearly die during the middle of the summer rainy season. A fellow superintendent, hundreds of miles away or just on the other side of town, has the exact same problem, yet he applies a specific fungicide, making his problem less severe than yours. By sharing this information, you might gain valuable data that will help you endure your situation. As time allows researchers to develop the grass of the future, we could find ourselves going into a dimension that many of us have never dreamed possible.

We have a great deal of opportunity ahead of us. If we just sit here and do nothing, we may all be found guilty of neglect. Whom would you indict? The State for abandoning the certification process? Growers for selling grass that no longer had regulated standards? Clubs and developers buying the cheapest grass they could find? Golfers demanding PGA Tour conditions everyday? Superintendents trying to grow grasses to tolerances never intended? Everyone in the golfing world has a responsibility towards the game's future. The government will not be our financial base for this project. The money must come from the golfer. For too long I've heard there is not enough money available from any of the long list of turfgrass-related associations. I have a problem with this excuse because, ultimately, we work for the golfer. Now, the golfer must come through. There are far too many wealthy golfers out there with the resources immediately available to support the research work required. After all, who gains the most out of this project? The golfer!

Let's start now. Let's organize our current issues. Let's set up a criteria list for this future project and get the scientists working on it now, so we can accomplish our goals. Maybe no one is guilty per se, but we will not be found innocent either if we don't do something soon. Case closed.

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