

Golf course superintendents don't all face the same on-the-job challenges. For the first time, WTT outlines the superintendent's job by type of course and location.

The Golf Battleground

by Bruce F. Shank, executive editor

The golf course superintendent's battle with man and nature is never the same from course to course. Superintendents who have worked in more than one part of the country or more than one type of course know the job can vary tremendously.

Northern superintendents lose turf to bitter winds and ice cover, transition superintendents struggle with dormancy to keep warm- and cool-season grasses playable, and southern superintendents have to manage two totally different types of grass without a slow season.

Daily fee and municipal course superintendents try to fulfill the public golfer's dream to play on courses like he sees on television with budgets less than half the size of tournament courses. Resort course superintendents adapt to volume golf while trying to make the golf course a carrot worth travelling hundreds of miles to play. Private course superintendents must satisfy the pickiest bosses who scream at the slightest sign of weeds or disease.

Up to now, data on golf courses and superintendents have been too general, lumped together by geographic regions and types of courses to provide average 'national all-course figures'.

Since *Weeds Trees & Turf* is the only organization, other than National Golf Foundation (NGF), possessing a list of virtually all golf facilities in the U.S., we thought our survey should produce specialized data. This report is the first specialized data on golf course maintenance to be published. We thank the



superintendents who gave us their cooperation to develop the report.

Major trends

NGF announced in its 1983 Statistical Profile of Golf in the United States that the number of public golf facilities (municipal and daily fee) now, for the first time, exceeds the number of private facilities.

This fact alone could have major impact on the future of the golf course superintendent. Rather than serving a small, privileged membership, more superintendents are competing with each other to attract an estimated 14 million golfers in the U.S. to their courses. Golfers spent more than \$43 million in greens fees and \$16 million

in equipment rental in 1983, or \$900 per golfer per year says NGF.

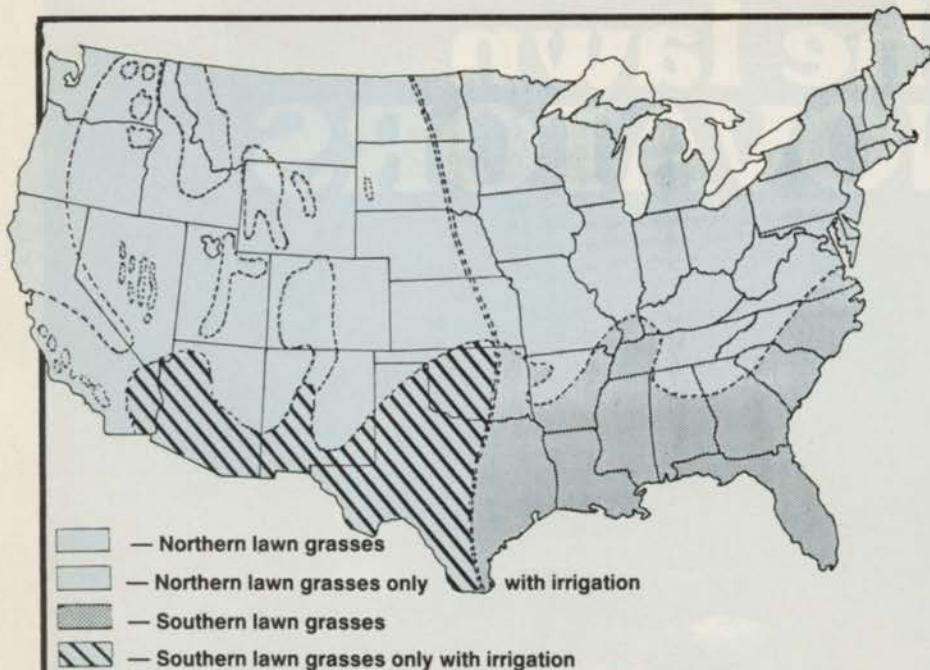
A major reason for the increase is the growth in daily fee courses. NGF says the number of new daily fee courses in 1983 was three times the number of new municipal or private courses.

Daily fee courses are the only segment of the golf market that is profit motivated. Superintendents of daily fee courses have to produce a course that attracts the public golfer at the least practical cost. The only other segment of the market approaching the profit motivation of daily fee is the contract operator of municipal or private courses.

Superintendent profile

Nearly 200 superintendents completed the survey questionnaire. Of these, 31% work for southern courses, 15% for courses in the transition zone, and 54% for northern courses. Also, of this total, 25% work for daily fee courses, 51% work for private courses, 20% for municipal courses, and 4% for resort courses.

The average respondent has 11.5 years of experience, with those superintendents working for private courses having the most, 12.7 years. Municipal course superintendents have 9.4 years experience, resort course superintendents 11.8 years, and daily fee superintendents 9.9 years. Northern superintendents have 12.9 years experience compared to 9.2 years for southern superintendents and 11.2 for transition superintendents.



NORTH SOUTH TRANSITION

Maintenance	\$150,724	\$335,236	\$156,340
Herbicide	\$ 2,866	\$ 9,156	\$ 4,766
Insecticide	\$ 2,563	\$ 6,769	\$ 3,057
Fungicide	\$ 8,828	\$ 6,024	\$ 8,100
Fertilizer	\$ 7,233	\$ 19,748	\$ 7,868

Rounds played

If you were a developer trying to figure out what type of course would get the most play, the answer is an 18-hole resort course in the South. The least play would come from a 9-hole private course in the transition zone.

The most play is experienced by daily fee courses in the summer. The next highest play is on resort courses in the winter. Third highest play goes to municipal courses in the summer.

As you might expect, private courses have the least play and resort courses and municipal courses have the most. Daily fee courses carry 20% less play than municipal courses in our survey.

Northern courses face considerably higher play in the summer than southern courses in their busiest spring and summer months. Nine-hole courses averaged one fourth the rounds of 18-hole courses.

Crews and budgets

From a superintendent's point of view, more play means more wear and the need for more maintenance. This is supported by our findings that 18-hole resort courses in the South also have the largest crews and the highest maintenance budgets.

Resort courses have an average of 13 maintenance workers. Private

courses are not far behind with an average of 10 employees. Municipal courses have the smallest average crew, 6 employees. Daily fee courses also have 6 workers.

Overall, 18-hole courses have average crews of 9 people and 9-hole courses 3.5 people. Southern courses average 10 crewmembers, transition courses average 7.5 crewmembers,

Now, for the first time, the number of public golf facilities exceeds the number of private.

and northern courses average 8 crewmembers.

Only 8.2% of superintendents responding have union crews. The greatest incidence of unions was in the municipal course category with 25.7 percent unionized. This is a major reason for the growth of contract maintenance for municipal golf courses.

There were no union crews reported by resort courses. Daily fee course crews are union in only 2% of the cases. Less than 4% of nine-hole

courses are unionized. Location makes little difference in union involvement.

Resort course superintendents have the highest maintenance budgets, averaging \$341,429. Daily fee supers have the lowest at \$131,038. Private course maintenance budgets averaged \$234,905. Municipal course budgets were greater than daily fee at \$194,089.

Southern golf courses understandably have budgets more than twice as high as transition zone or northern courses. Southern superintendents have an average of \$335,236 for maintenance, whereas transition zone and northern superintendents both have budgets of approximately \$155,000.

Eighteen hole courses have budgets averaging \$221,245 and 9-hole courses average \$54,209.

One way to find out who spends maintenance dollars most efficiently is to compare rounds played to maintenance budget. This method leaves out variables, such as course quality and other income generated by the course, but it supports some assumptions on how efficiently different types of courses are maintained.

Using this method, daily fee superintendents are the most efficient spenders. Municipal course superintendents, surprisingly, spend 15% more per round for maintenance than daily fee. Of course, private course superintendents spend the most per round for maintenance.

Northern superintendents squeeze more out of maintenance dollars per round than southern, 30% more. Transition superintendents spend 18% more per round than southern supers. Finally, 9-hole superintendents spend 6% less per round for maintenance than 18-hole superintendents.

Superintendents also provided data on budgets for types of chemicals in the survey. Superintendents responding spend an average of \$5,160 for herbicides per year. Daily fee courses averaged only \$2,586 for herbicides and 9-hole courses only \$1,198. Municipal courses spend nearly as much as private courses for herbicides, \$5,678 compared to \$5,909 for private. Southern courses spend the most per year for herbicides, \$9,166, compared to \$4,766 for transition courses and \$2,866 for northern courses.

Resort course superintendents spend the most for insecticides per year, \$7,286. Again, daily fee and 9-

Budgets by Type of Course (average of 183 responses)

Type of Course	Maintenance Budget	Herbicide Budget	Insecticide Budget	Fungicide Budget	Fertilizer Budget	Winter Overseed	Renovation Seed
9-Hole	\$54,209	\$1,198	\$1,323	\$3,648	\$4,368	\$117	\$547
18-Hole	\$221,245	\$5,568	\$4,164	\$8,413	\$11,039	\$4,298	\$2,083
Daily Fee	\$131,038	\$2,586	\$2,073	\$5,399	\$8,560	\$1,711	\$748
Private	\$234,905	\$5,909	\$4,645	\$10,059	\$11,700	\$4,943	\$2,435
Public	\$194,089	\$5,678	\$3,337	\$4,859	\$10,050	\$2,363	\$1,323
Resort	\$341,429	\$7,101	\$7,286	\$7,271	\$26,286	\$11,833	\$1,833
All Courses	\$208,798	\$5,160	\$3,957	\$7,855	\$11,178	\$4,201	\$1,829

hole supers spend the least for insecticides, \$2,073 for daily fee and \$1,323 for 9-hole. Private courses spend an average of \$4,645 per year for insecticides and municipal courses \$3,337.

Southern superintendents spend more than twice as much as either northern or transition zone superintendents for insecticides, \$6,769.

Fungicide expenses are more standard than other pesticide expenses by region and by course type. It was the only product that daily fee superintendents spend more for than municipal superintendents, \$5,399 compared to \$4,859. Also, northern and transition courses actually spend more for fungicides than southern courses, \$8,828 and \$8,100 compared to \$6,024 for the South. Some superintendents spend \$35,000 or more for fungicides each year. Nine-hole courses have an average fungicide bill of \$3,648.

Some of the biggest dollars spent by responding superintendents are for fertilizer, one spending \$80,000. Southern superintendents spend an average of \$19,748 per year on fertilizers. Resort courses took top prize spending \$26,286 per year on fertilizers. All other regions and types of courses averaged less than \$10,000 for fertilizers.

Equipment

Almost half the superintendents said they bought equipment in 1984 that they had put off buying previously. Using these answers to gauge budget sensitivity, it appears daily fee courses postponed buying equipment the least during the recession. Resort courses postponed buying more than the others.

Leasing is used to lighten the cash

blow of buying during hard times. On average, only 6% of the superintendents lease maintenance equipment. Southern superintendents lease the most, 10.7%, and transition supers the least. Resort supers didn't lease at all in our survey. Daily fee and municipal courses lease roughly to the same degree, 9%. Only 4% of private courses lease maintenance equipment.

When asked if they have increased the amount of leasing, 9% of the

In 1983, the number of new daily fee courses was three times the number of new municipal or private courses.

southern and municipal course superintendents said they had. Seven percent of the daily fee supers said they are leasing more.

1984 was a good year for irrigation suppliers with more than a fourth of the superintendents improving their systems.

All superintendents had some type of irrigation system. Sixty percent of municipal and 9-hole courses still have quick coupler systems. All resort courses reporting have automatic systems, with 25% of those solid state. Half the northern courses are still quick coupler while two thirds of southern, transition, and private courses now have automatic systems.

Fertigation, injection of fertilizers into the irrigation system, has taken hold in the South with 27% of the courses trying it. Maintenance-conscious daily fee superintendents are trying fertigation on 16% of their courses. Twelve percent of resort courses and 9% private are trying it. Fertigation is not a factor in 9-hole, municipal, transition and northern courses.

Only 14.2% of the superintendents manage the golf car concession. Maintenance of the golf car fleet is done by 20.2%. Sixty-five percent have nothing to do with the golf car concession.

Golf cars are leased in 27.3% of the cases with resort courses leasing the most, 37.5%. Private, membership restricted courses leased the least with 23.4%.

Of the 76.5% who own their fleet, each owns on the average 49 cars, with the largest having a 200 car-fleet.

E-Z-Go topped the list with 51.6% of the respondents owning cars by that manufacturer. Yamaha and Club Car tied for second with 18.5% of the respondents owning cars by those manufacturers and those clubs owning Harley-Davidsons were third with 16.3%.

Cultural practices

Municipal course superintendents still rely heavily on postemergence herbicides for weed problems. Slightly more than a third of the municipal superintendents use both pre- and postemergence herbicides. Another third use just preemergence herbicides.

Resort and private course supers are most inclined to use a complete

herbicide arsenal with 75% using both pre- and postemergence herbicides. Southern supers are also more inclined to use both.

Fairways on southern and public courses are the least likely to receive fungicide treatment. Half or more of municipal, resort, and southern superintendents apply fungicides only to greens. More than a third of northern and private courses use fungicides on greens, tees, and fairways. Twenty percent of daily fee courses apply fungicides to everything but greens.

Sulfur-coated urea (SCU) was the slow release fertilizer used most frequently by the respondents, 45%. Seventy-five percent of the resort courses use SCU. Resort courses, and also daily fee courses, are the biggest users of IBDU. Ureaform is used the most by resort courses and the least by 9-hole courses. Organic fertilizers (i.e. Milorganite) are most popular with 9-hole and daily fee courses.

Wetting agents were used by 70.5% of the respondents on localized dry spots. Resort and southern courses use wetting agents the most. Nine-hole and transition courses use them the least.

Aerification is firmly entrenched in golf course culture. An overwhelming 94% of all courses aerify greens. Fourteen percent even said they aerify roughs. Tees are the next target of aerifiers at 80% and fairways are cared at 66% of the courses.

Private courses lead in all categories of aerification with 80% of fairways and greater percentages for tees and greens. Location makes little difference, except for roughs, where 23% are aerified in the South.

The gang fairway mower, once pulled by horses in the early 1900's and by tractors today, is losing ground to the self propelled fairway mower. Self-propelled fairway mowing units were used by 99 percent of the superintendents answering the survey.

Forty-two percent still use the gang mowers for fairways. Municipal and daily fee courses are holding on to the gang mower more than other courses. Only 25% of resort courses use gangs, opting for self-propelled 75% of the time.

Twelve percent have tried light-weight triplex type mowers for fairways, mainly private and northern courses as a method to reduce *Poa annua*.

Riding greens mowers were preferred by 71.6% of the superinten-

dents to walk-behind greens mowers. Even 86% of the 9-hole supers favor riders. Private courses still use walkers 35% of the time.

A little more than half of the superintendents said they have tried to speed up their greens this year. Most of the quest for speed is at resort and private courses. Even 9-holers and daily fee courses made greens faster in more than a third of the courses.

Overseeding is a necessity today for golf courses with warm-season turf, with an average of \$7,215 spent each summer by southern superintendents for cool-season seed. Resort courses spend nearly \$12,000 per year for winterseed. Daily fee and 9-hole courses spend the least.

Seed for renovation averaged \$1,800 per year for all courses, so you can see winterseeding is a big boost for seed producers. Northern courses have begun to overseed fairways in the spring to push out *Poa annua*. This may prove to be a huge new market for seed companies, quadrupling sales in some northern states.

Weed, insect problems

Crabgrass takes the honors as the most troublesome weed for golf course superintendents, with annual bluegrass, dandelions, clover, and goosegrass not far behind. Private course superintendents are those most concerned with annual bluegrass. Goosegrass is a concern primarily in the South and transition zone. Dandelions are most troublesome in the North. Nutsedge is a problem mainly to resort courses.

Grubs, cutworms and sod webworms are the most persistent insects superintendents have to deal with. Chinchbugs were less of a problem than anticipated at 5%. Most southern and resort superintendents rate mole crickets as a major problem. Resort courses took more insects seriously than other types of courses.

Dollarspot and brown patch are the most bothersome diseases, followed by pythium, leaf spot, and snow mold.

The survey showed 66.7% of the superintendents belong to the Golf Course Superintendents Association of America.

Superintendents were also very specific about the type of information they want to be able to do their jobs better; 83.1% want technical information, 69.9% want new product information and 66% like to know how other superintendents do things and solve problems.

WT&T

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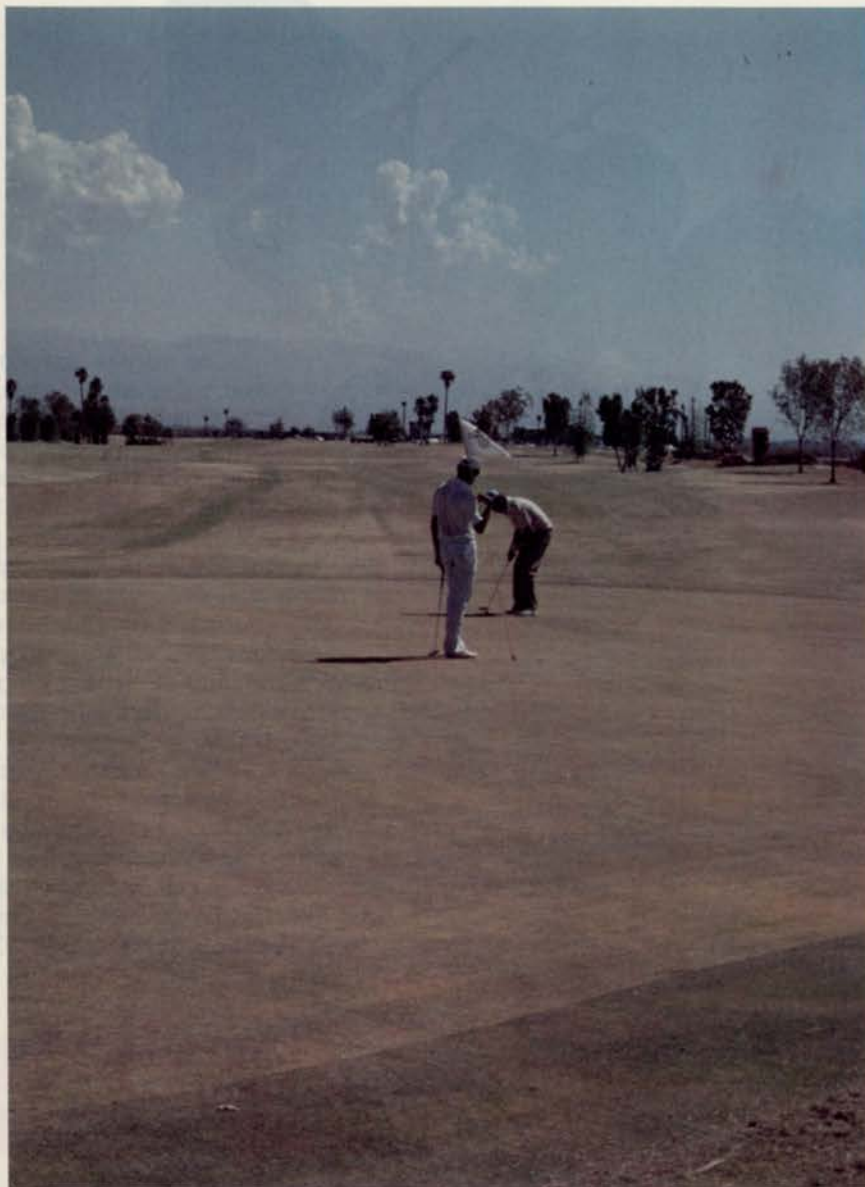
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RANSOMES

Pressure in Paradise

One of the poshest golfing meccas in the world is also one of the hardest to maintain. Perfection has a price. And the golf superintendents of the Palm Springs area are only too familiar with the intricacies and peculiarities of grooming the courses so many come to play.



by **Hartley Bennett**

In the middle of the California low desert sits an oasis—and a gold mine.

In an area 25 miles long and 5 miles wide, an enclave of approximately 60 golf courses form the crown jewel of golfdom known as Palm Springs.

Twenty-two more courses are in the planning stage. Six of the new courses are actually in the community of Palm Springs. The vast majority, though, occupy a strip in the Coachella Valley. The valley extends eastward from Palm Springs along the base of the San Jacinto Mountains and includes Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta and Bermuda Dunes. Current development is moving towards the community of Indio.

This Garden of Eden sits in an otherwise stark, dry wasteland.

The legacy began back in 1926 when California oilman Thomas O'Donnell opened a private nine-hole course in Palm Springs.

A high price

Today, creating and maintaining the top-notch playgrounds of the Palm Springs area well enough to satisfy the expectations of the world's most knowledgeable and demanding golfers requires a golf superintendent to wage a constant battle against the hostile desert environment.

Relaxation in the lush surroundings beckons vacationers, but pressure in paradise is nothing new to the

Natural vegetation and the mountains surround the beginning of another course under construction in Palm Desert.



Palm Valley Country Club, Palm Desert, CA. From left, Paul Quill, golf course construction manager, Gary Peterson, superintendent, Dennis Orsborn, director of golf course operations for the Sunrise Co. which owns the course.

The explosive growth of new recreational real estate development presents yet another demand on the superintendent.



At the Lakes Country Club, Palm Desert, CA, course renovation and construction of exclusive private villas go on simultaneously.

golf superintendents who work there. The explosive growth of new recreational real estate development presents yet another demand.

At the forefront of the most recent boom is the master plan concept of condominium development, and Dennis Orsborn, director of golf

course operations for the Sunrise Company of Palm Desert, is one of its biggest proponents.

In on the ground floor of planning for multi-million dollar country club communities, he supervises the creation and maintenance of challenging golf courses which are established

and playable five months after groundbreaking.

Speed and efficiency are essential as luxurious living units are simultaneously constructed next to emerging fairways with palm trees stacked like cordwood waiting for installation.

"We can never forget that the golf course is the homeowner's backyard before it is a golf course," says Orsborn. "Color is very critical. Construction and maintenance personnel must keep in mind that the visual appeal is of paramount importance and next the quality of the playing surface. We are in the business of selling condos and the golf course is a vehicle, secondary to sales."

Yet, he admits the course must provide outstanding playability.

The Old Guard

In contrast to the new community development concept, many private clubs exist which are among the oldest and most famous of the region.

"Perfection is the absolute requirement," says David Lozoya, superintendent of golf course and grounds for the Annenberg Estate.

The exclusive and superprivate country club courses both entertain and have as members some of the wealthiest and most influential clientele in the world.

Clubhouse grounds at these establishments are as important to the overall atmosphere as the course itself.

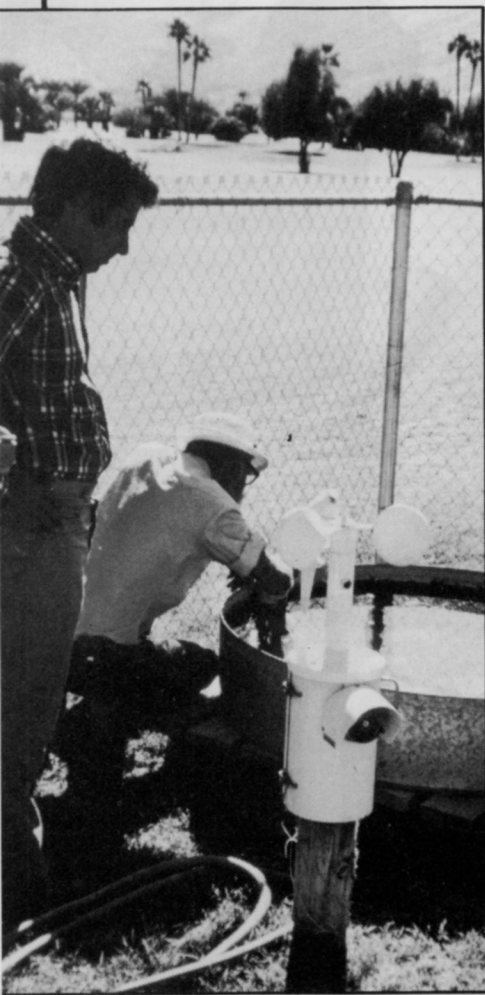
Mike Mongiello, superintendent of Eldorado, proudly points out the Desert Beautiful Award he won the last three years for the beauty of the total grounds area of his club.

In addition to maintaining a playing surface which is chosen as one of the outstanding courses for the nationally-televised Bob Hope Desert Classic, Mongiello designs and directs the installation of flower beds in the club house and entry area which are famous for their colorful display.

Hundreds of flats of annuals, over 60 varieties, are planted the third week in October. The spectacular display is completely replaced in the spring by thousands of First Lady marigolds for the Eisenhower Sunburst Tournament.

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Mike Caranci, superintendent of Canyon Country Club oversees some work being done at the course's weather station.



Middle-priced condominiums and hotels border the many semi-private courses in the area. Residents get preferential starting times, but a great number of memberships are held by individuals who find the dues reasonable and within their recreational budget.

Providing an attractive, playable course while operating within tight financial constraints is a constant challenge. More than one superintendent has lost his job when poor management practices caused utility and equipment costs to rise.

Key to success

Hard work and dedication have laid the foundation for Palm Spring's success.

Within an environment of extremes where summertime temperatures can reach 120 degrees and wind can uproot trees and fill the air with blowing sand, golf course superintendents are under constant pressure to innovate and adapt. Most courses either shut down or allow only minimal play during the hot summer months.

All plans focus on the opening date of each course, usually sometime between mid-October and the first week of November.

Bermudagrass is most widely used for fairways and roughs with hybrid on the tees and greens. Ryegrass is used as overseed to overcome the bermuda's tendency to become an unsightly brown in winter.

In early August and September more than three million pounds of seed are delivered to the Coachella Valley area. Superintendents breathe a bit easier when the bags of seed are safely stored in sheds.

Once begun, the overseeding process must progress on a closely timed schedule. Irrigation systems are checked and double checked to guard against breakdowns.

Terry Lortz, superintendent of Palm Springs Municipal Course, has to depend on the pool of city mechanics if he has any breakdown problems. Even in light of that, he proudly reports, "We've never failed to open on time."

Two months prior to overseeding, greens, tees and fairways are aerated and amended. Water is withheld and chemical growth retardants and defoliants are used.

Mechanical renovation is next with mowers operating 10 to 12 hours in the hot, dusty desert air. Seed is then applied and constantly watered. Daytime temperatures hover in the 100s and the sandy soil dries rapidly. Water is applied around the clock at carefully monitored intervals. Crews patrol the area on the lookout for sprinkler heads that may be stuck causing washouts.

If all goes well, the rye emerges a dramatic green within six days and is ready for the first mowing in two weeks.

A balancing act

Much can go wrong in the intervening time.

If the daytime and nighttime temperatures stay high the bermuda will reestablish and choke out the infant rye or an unexpected severe cold snap can kill it. Winds can blow the seed

away and thunderstorms can drown it. Pythium blight can develop with devastating suddenness.

Bud Lombard, longtime area turf specialist, notes that he can never remember a failure nor an inability to make the opening date.

"The change is awesome," he reports. "No golf courses in the world are lovelier or better manicured. They all produce perfection in six weeks."

During the spring transition, the ryegrass is maintained as long as possible in the rising temperatures to allow the emerging bermuda to reestablish before "scalping" the rye.

Bermudagrass is most widely used for fairways and roughs with hybrid on the tees and greens.

At Eldorado and Ironwood greens are bentgrass and only fairways and roughs need renovation. The bentgrass does present a challenge in keeping the cool season grass alive during the summer months in the extreme heat of the desert sun.

Water crunch

Water is always a problem in the Coachella Valley.

A blow-sand filled aquifer fed by mountain runoff and a scant four inches of yearly rainfall is the lifeblood of the area. Some feel this natural basin has unlimited potential. Many others, like Tom Caranci of Cathedral Canyon Country Club and his son, Mike, who supervises Canyon Country Club, are concerned not only about cost accountability to the club owners but also about conservation of this valuable resource for the future. They fear that without the evaluation and modification of some current management practices, demand may eventually exceed the recharge.

Working closely with the University of California, the Carancis have weather stations on their courses which are monitored daily and provide information which Tom Caranci reports has saved 25 percent of the water that was formerly being used. Other measures such as modified pumps and separately designed irriga-

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The artistic as well as the practical come together on a public golf course on Cape Cod. Dennis Highlands offers the old world feel of St. Andrews with an innovative Integrated Planting System using low maintenance grasses, wildflowers and ornamental plants. Golfer and superintendent get the best of both worlds.

Yankee Ingenuity

73 percent of the golf course site receives either no maintenance or low levels of maintenance.

Blend a little Yankee ingenuity with the time-tested golf course design of the Scots, and the product is one of the most unique golf courses in the country—Dennis Highlands in Massachusetts.

In recent years the design trend in American golf courses has been toward "the Scottish look." This has commonly been associated with a naturalized blend of native plants, existing in harmony with the environment, and requiring minimum maintenance.

In Scotland, this effect is a product of the forces of natural selection of plants, often over hundreds of years. Although many attempts have been made to realize "the Scottish look" in America, most have not been totally successful because of incorrect selection of plant materials, or due to a climate too hot to grow the desired species.

In Scotland the predominate plant materials are fine fescues i.e., chewings, creeping red or hard and brown top (Colonial bentgrasses), gorse, heather, and beach grass.

In the northern U.S., golf course fairways and roughs have been traditionally planted to creeping bentgrass or a mixture predominately of Kentucky bluegrasses and perennial ryegrass, which require intense maintenance practices. Fine fescues, the predominate turfgrass found in Scotland, is often used in the U.S. but does not normally persist when subjected to moderate to high fertilization and irrigation, common in today's maintenance techniques.

In fact, it is this high fertilization and heavy use of irrigation that environmentalists find the most objec-

tionable about golf course development. This is particularly true in ecologically-sensitive areas as Cape Cod, Long Island, and the shores of the Middle Atlantic states.

And it is because of this intense respect for the environment that Dr. Michael Hurdzan in particular, is proud of Dennis Highlands.

"We had the utmost respect for the fragile environment of Cape Cod in planning this project," he said, "and I

Hole No. 3 shows contrast between sheep fescue (unmowed) and hard fescue in the rough. The fairway is bluegrass, the green is bentgrass.





Hole No. 3 shows wildflowers and sheep fescue behind and beside Par 3 green.

believe we achieved our goal of being as ecologically responsible as we could. Because of what we planted we reduced pesticide, fertilizer and water use as well."

Unique and practical

The Town of Dennis, Massachusetts, wanted a public golf course that would be unique in its appearance yet functional in its operation and maintenance. It had a 178-acre site, of glacial origin, that featured sharply rolling, sandy hills covered with pine and scrub oak.

In addition, the town wanted to keep developmental and operational cost low so that it could provide cit-

The Town of Dennis, MA, wanted a public golf course that would be unique in its appearance yet functional in its operation and maintenance.

izens and visitors with moderately low cost golf. As with any development there were deep concerns about the availability of ground water and its possible pollution with nitrogen fertilizers.

Realizing these issues, golf course architect Hurdzan, of Kidwell & Hurdzan, Columbus, OH, and Dr. Richard Hurley, vice president and turfgrass and plant material specialist, Lofts Seed, worked together to select plants that would persist under low maintenance and would achieve instantly on Cape Cod what it took centuries to achieve in Scotland. Their objective was to develop an Integrated Planting System (IPS) using commercially available grasses, wildflowers, and ornamental plants.



Wildflowers provide spectacular color as well as low-maintenance groundcover for Hole No. 16 at Dennis Highlands.

TABLE A

Golf Course Maintenance

Vegetative Type	Maintenance Required	Acres	% of Site	Degree of Maintenance
Completely Natural	None	15	8%*	None
Wildflowers	Mow once/year in November	28	16%*	Token
Roughs	Mow occasionally	87	49%*	Low
Fairways and Tees	Minimal water & Fertilizer applied as needed-Mow 2-3/wk	45	25%	Moderate
Greens	Water-fertilize-spray for weeds, insects & diseases-aerate-Mow 6 times/week	2.5	2%	High

* = 73% of the golf course site receives either no maintenance or low levels of maintenance.

TABLE B

Wildflower planting used at Dennis Highlands Golf Course, Cape Cod, Massachusetts

Variety	Color	Life Cycle
Baby's Breath	White	Annual
Scarlet Flax	Red	Annual
Bachelor Button	Mixed	Annual
Calendula	Orange	Annual
Purple Coneflower	Purple	Perennial
Evening Primrose	Yellow	Annual
Catchfly	Pink	Annual
Corn Poppy	Mixed	Annual
Blackeyed Susan	Gold	Annual
Coreopsis, lance leaf	Yellow	Perennial
Baby Snapdragon	Mixed	Annual
Lewis Flax	Blue	Perennial
Sheep Fescue	Gray/blue	Perennial

Equally important was respecting the fragile environment and ecological balance of Cape Cod.

To do this first required analyzing the soils, the microclimate, and expected climatic factors, then selecting plants compatible with the design intent.

Hurdzan, current president of the American Society of Golf Course Architects and a member of the USGA Green Section Advisory Board, and

his partner Jack Kidwell, wanted to design a golf course that didn't just acknowledge the Scottish look, but rather achieved it. It was at this point they contacted Hurley who holds a Ph.D. in plant breeding.

They decided the best way to achieve the desired results was to make plant selections as the golf course was designed, and not simply follow the traditional seeding specifications. They considered the golf

course as being composed of five distinct areas;

- 1 Completely natural
- 2 Cleared land but out of play
- 3 Roughs
- 4 Fairways and tees, and
- 5 Greens

The only areas they wanted to have intensive maintenance was the greens, moderate maintenance on fairways and tees, low maintenance in rough, and no maintenance in the

The out-of-play areas were seeded to 13 different wildflower species with a companion turf of sheep fescue.

other cleared areas such as behind tees and greens, buffers between holes, and the entrance areas.

One reason why some attempts at the Scottish look have failed is that although they look low maintenance, they often require high expenditures of men, materials and equipment.

"Very few golf courses are built to make a visual impact," Hurley says referring to Hurdzan's desire to use esthetically-pleasing as well as durable varieties of turfgrass. "Most (golf course) designers seem to use a cookbook formula for designing a course. Mike was very interested in developing the character of the course. I'm surprised more architects don't do this."

Keys to success

The key to success, thought the planners, was to specify plant materials that had slow growth rates, require little or no fertilization, and are very drought tolerant.

Since all three men were at one time golf course superintendents, they realized that the greatest expense for fairway maintenance was fertilizing and mowing, and for roughs it is mowing alone, often on a bi-weekly basis. Therefore it seemed the logical solution was to plant the fairways to aggressive bluegrass types that would heal quickly when injured by traffic or pests, and reduce the fairway areas as much as possible by planting low maintenance roughs.

From his experience and research,



Dr. Michael Hurdzan, designer of Dennis Highlands, grade stakes a bunker.

Hurley knew that although bentgrass provides the most prestigious and nicest playing conditions, it is also the most expensive to maintain and is usually reserved for country club-type courses. For public or municipal courses such as the Town of Dennis, a bluegrass-perennial ryegrass turf was needed to withstand the wear of 50,000 rounds of golf per year.

The added benefit is that bluegrass turf requires less spraying of costly chemicals to control turf diseases.

Then came the problem of which of the 50-plus bluegrass varieties on the market should be selected for use on the wind swept, sandy hills of Cape Cod.

They chose a blend of Mystic, Touchdown, BenSun (A-34) and Ram I, supplemented with a small percentage of Palmer and Prelude perennial ryegrasses and Jamestown chewing fescue. This blend was selected because of like texture and color of the bluegrasses to each other, their

independent resistance to turf pests, and their observed ability to establish and spread rapidly.

The roughs were seeded by the Delfino Corporation, the golf course contractor, in true Scottish fashion using Reliant hard fescue and Jamestown chewing fescue. The mixture was chosen because of its slower growth rate, resulting in less mowing, while persisting on almost no fertilizer or water.

Further this meant that only a single row irrigation system was needed for fairways which saved money during construction as well as during normal maintenance. The out-of-play areas were seeded to 13 different wildflower species with a companion turf of sheep fescue.

Low maintenance

Thus the basis of the program was to seed as much of the in-play area of the golf course to low maintenance fescues like those found in Scotland, seed fair-

ways to aggressive bluegrass to provide the more-manicured American playing conditions, and other cleared areas to wildflowers and sheep fescue that require no maintenance. (See breakdown of the site, (Table 1).

Since Dennis Highlands has just opened recently, Director of Golf Tom Flaherty could not give exact dollars saved by this concept. However, compared to Town of Dennis' other golf course, (which Flaherty also main-

The designers decided the best way to achieve the desired results was to make plant selections as the golf course was designed, and not simply follow the traditional seeding specifications.

tains) the mowing, fertilizing, and watering could be one-third less once Dennis Highlands matures.

Other monetary rewards were more evident.

"In the first four months of operation, 30,000 rounds were played and \$200,000 in greens fees were collected," reports Flaherty.

Not only was this Integrated Planting System functional from a maintenance standpoint, it also permitted the golf course architects to be more artistically expressive as well.

Palate of color

The fescue roughs were visually different from the fairways in terms of color and texture of the leaf blades, and the wildflowers grew to a height of three feet and produced a rainbow of color from early summer until after several killing frosts in the fall.

These visual differences permitted Kidwell & Hurdzan to make permanent design statements by contour planting as opposed to the less permanent contour mowing.

In addition, the mixing of textures, colors, and heights seem to generate a visual movement of the golf course features, that makes them seem dynamic and flowing and not just

continued on page 62

earthworks frozen onto a landscape. Further each vegetative type became part of the overall strategy of each hole, defining safe passages and exacting equitable but unusual punishment for improperly played shots.

Hurdzan, realizing the power of this rediscovered palate of colors, began to experiment with techniques once reserved for art done at a smaller scale such as the type done by painters, photographers, and landscape designers.

One example was on the fifth hole at Dennis Highlands where he designed a series of eight mounds in a complex as part of and to protect the green. The largest mounds were closest to the green and they degraded in size as they were built back toward the impact area for the drive. This technique is not new, but planting each set of two mounds to one of four different fescues with the lightest colors furthest from the observer, and the darkest ones closest, to emulate a "Smokey Mountain" image may be new.

To insure that the fescues would persist near the heavily watered green, part circle heads were installed. The intent is to distort distance and the effect is subtle, but it does show the potential for experimentation without being expensive or extreme.

But were Kidwell, Hurdzan, Hurley, Delfino and Flaherty content with their evolving statement of golf course architecture? Not quite.

Ornamental grasses

To supplement the already attractive appearance of the native and planted vegetation, they developed a planting plan for 22 species of ornamental grasses; possibly another first.

Generally, ornamental grasses grow vegetatively through the sum-

mer reaching a height of 18 inches for some species to 10 feet for others by September, then they produce beautiful seedheads or plumes which might reach an additional 18 inches to three feet high.

In the south one frequently sees Weeping Lovegrass and Pampas grass on golf courses, but these are not normally winter hardy in the northern latitudes. Since Hurley's hobby is raising northern ornamental grasses,

... they developed a planting plan for 22 species of ornamental grasses, possibly another first.

he convinced the team to try them at Dennis Highlands.

At this writing, more than four hundred plants have been placed throughout the golf course to accent capes on bunkers, dress up tees, provide a mild hazard, and complement the existing natural vegetation. Most of the species used are expected to be compatible with the golf course operation and maintenance, forming another link in the Integrated Planting System of Dennis Highlands.

Because this is a first attempt by the men at applying this total system approach, they believe that the system may need fine tuning. But, the young turf is maturing well and the planting zones appear to be stabilized with each other.

Flaherty said some of the wildflowers didn't do as well as expected, but "we caused some of our own problems. The turf encroached too heavily on them," he said.

The need for water and fertilizer keeps the bluegrass confined to the fairway sprinkler pattern, the fescues love the droughty, minimal maintenance of the rough areas, and the wildflowers are, for the most part, thriving in place. However the real key to success of the system is the response of golfers. Will they like it?

For those who have had the good fortune to play golf in Scotland, they have learned to play golf shots off the softer bladed fine fescues used in the roughs, by taking one club longer than normal, swinging easy, and allowing for the ball to run once it lands. These shots are very predictable.

But since not everyone has developed this Scottish playing technique, and such a total immersion may not appeal to U.S. golfers, the fairways will provide the more normal American playing condition of the golf ball propped up by the stiff-bladed bluegrasses.

This two-turf system adds another subtle element that makes playing Dennis Highlands an even more exciting challenge than its middle distance of only 6,050 yards, par 71, would indicate.

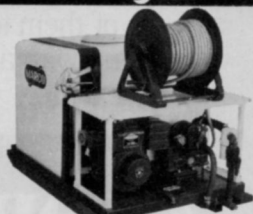
Throughout the design and construction process, the planners and builders wanted to provide a golf course that rewards excellent shot making without penalizing average golf play. They sought to match the penalty to the crime, and balance risk with reward for all skill level of golfers.

"The course is an absolute golfing pleasure," says Hurdzan. "It invites risk-taking; the rewards and punishments are commensurate to the risk taken."

The course is then set in a totally coordinated landscape that is esthetically pleasing no matter how well the golfer is playing.

It's hard to lose at Dennis Highlands. **WT&T**

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Keeping the new Tournament Players Club at Eagle Trace "tournament ready" is a 365-day-a-year job.

This south Florida course is one of the few stadium golf courses in the country. With Fred Klauk Jr.'s brand of course maintenance, Eagle Trace is a champ.

The Eagle Soars

by Ron Hall, assistant editor

Sunshine. Golf. The glamour of the likes of Nicklaus and Trevino.

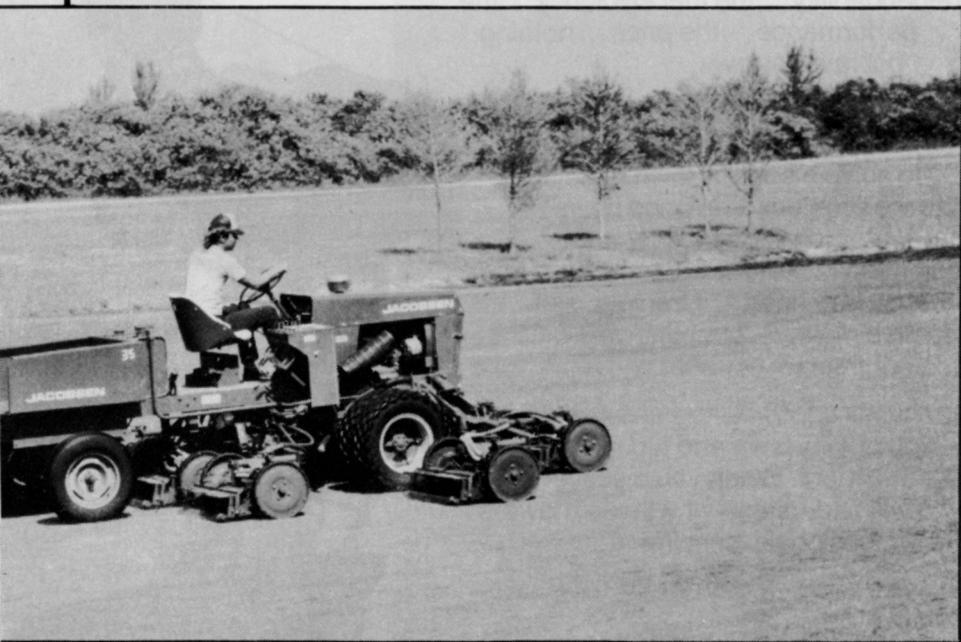
Fred Klauk, Jr., sometimes wonders if maybe, just maybe, he's getting too much of a good thing. Klauk is the superintendent of the year-old Tournament Players Club at Eagle Trace in Coral Springs, FL. It's the home of the

skimmer, isn't used to keep his ears from freezing and snapping off but to protect his crop of thinning blonde hair from the bright ball of the south Florida sun. His main defense against winter is a chapstick which he flourishes against the ravages of those soft ocean breezes from the east.

Golf is a seven-day-a-week, 12-month-a-year activity here 20 miles or so north of Fort Lauderdale. "We never shut down at all," Klauk explains. "Of course we wear out equipment a helluva lot faster than anybody else. We don't get an opportunity to rebuild our equipment over the winter like we would like to."

There simply is no down time at the Eagle Trace course where a golfer can stop his golf car on the tallest of the many spectator mounds and look out over the Everglades in one direction and back to the palm-lined suburbs of Coral Springs in another. And he'll see green, even in the middle of January. This is a new course, now in its second year. It incorporates

"We wear out equipment a helluva lot faster than anybody else."



The fairways are narrow at the Tournament Players Club at Eagle Trace and can be mowed with this Jacobsen mower in about five hours.

Honda Classic Tournament, one of the early stops for the touring pros. It's also one of the few clubs in the country that is a showcase for stadium golf—complete with spectator stands right on the course.

When winter dumps on most of us again and a wet snow swings in off the Great Lakes where everything is either brown or gray or some strange combination of both, Klauk prowls the green undulations of his manicured course in a powder blue golf shirt. His ever-present hat, a white

Somebody's got to do it. Somebody's got to make the sacrifice.

Why not Klauk? Afterall, he's never held a job that wasn't within a hefty pitch of a green.

Maintenance never ends

But, let's not downplay Klauk's task. Maintaining Eagle Trace is a fulltime job. That's *fulltime* as in 365 days a year. Or as Klauk, located smackdab in the middle of golf heaven, says as he looks upward seemingly in supplication, "It never ends. It just never ends."

new ideas. And it's the new home of the Honda Classic stop for the touring professionals in early March. It still takes some old-fashioned planning and elbow grease to keep it sharp year round.

Klauk knows golf

That's the challenge, but Klauk knows something about the game of golf.

Practically a native of South Florida, the 34-year-old Klauk once considered the tour himself, playing well in a number of junior tournaments before ending up at the University of Florida. He found himself in the company of some pretty heady golfing company, guys like Andy Bean and Andy North who, of course, have gone

on to make ripples in the professional ranks.

"I just like this end of the business better anyway," Klauk, a two handicap golfer says. Anyway, he consoles himself, there's the annual superintendent's tournament. He finished fourth once. Two good rounds in a row. Who knows? Fame on the links, however, finishes a distant second to his maintenance responsibilities. He served first as the superintendent at Johns Island Club, Vero Beach, FL, followed by an eight-year stint maintaining the Pine Tree Course at Boynton Beach. He came to the Tournament Players Club at Eagle Trace in 1983 and helped get the course in playing condition. The course, designed by Arthur Hills, Toledo, OH, opened for play in December 1982.

"I came here right after the Wadsworth Golf Company planted the course," Klauk remembers. "I took over when the TOUR took over in November 1983. The Honda Classic was only five months away. The grow-in process had to be finished and we had to get the greens in tournament condition."

Taking a new course and seeing it through its maturation while keeping it tournament ready for the big money Honda Classic as well as for club members who plunk down as much as

"An irrigation system should be a very simple system"

—Klauk

\$25,000 for memberships is a fair-sized responsibility even with a maintenance budget of \$440,000. The budget is a bit deceiving. It also includes maintenance of the new \$2.5 million club house. Klauk works with an 11-person crew.

Challenging course

The design of the course is both a blessing and a challenge for Klauk and his crew.

Playing just over 7,000 yards the



Fred Klauk, Jr., walks the 18th hole. The rows of seating will be filled for the Honda Classic in March.

fairways, planted exclusively with 419 Bermudagrass, are narrow, and approach the so-called "target golf" concept. Klauk's crew can mow the fairways with the Jacobsen HF-15 fairway mower in about five hours. "The turf is only one year old," Klauk explains, "so it has quite a bit of growth to do yet. Most Bermuda courses look their best after about three years of maturing." The large areas of rough can be easily handled with a Jake five-gang ramlift.

The greens are handwalked daily with Jake greensmowers, gradually being lowered through the winter so they'll be fast for the pros in early March. They are overseeded with a Penneagle, Penncross bentgrass combination. Klauk watches the overseeding carefully because of the drying winds off the Atlantic. "We've got to be careful because the bentgrass doesn't have an established root system yet," he says. A CBS blend of ryegrasses is used in the overseeding of tees and roughs, usually the first week of October.

In addition to the sand bunkers (the white, coarse-textured sand is trucked in from LaBelle 150 miles away), Eagle Trace has its share of confidence-breaking grass bunkers. Easier to maintain than their sand cousins, the grass traps first found favor at the Tournament Players Club at Sawgrass near Jacksonville.

Klauk says what few disease and insect problems he's encountered so far have not been major. Some leaf

spot and isolated occurrences of pythium and brown patch are controlled by the use of standard broad spectrum fungicides, while mole crickets are handled with Oftanol and sod webworms with Dursban.

Although Klauk's crew tried aerating the course with a pair of aerifiers manufactured in Australia, they found that equipment hard to control. They use a Ryan Greensaire in spite of the presence of large amounts of crushed coral rock in the soil. "We have to aerify as much as anyone up north," Klauk said of the course which was constructed over a former landfill site. Monthly light topdressing helps control thatch on the Eagle Trace greens.

Irrigation important

South Florida has rain, sometimes lots of it, maybe 60 inches a year. The problem is that it doesn't always fall when you want it too, the reason for the 1,000 Toro irrigation heads. The

Constructive criticism helps Klauk fine tune the Tournament Players Club at Eagle Trace

course is divided into four irrigation sections each with its own controls in the small building which houses the 220-hp pump capable of putting out 2200 gallons per minute. The water is drawn from 25 acres of lakes on the course. The amount of water falling on each green can also be controlled at the 54 control boxes located around the course.

Klauk is leery of the latest generation of computer-operated irrigation systems.

"An irrigation system should be a very simple system," he says. "I think they've (manufacturers) gotten a little bit too sophisticated with some things. I think you need something that is quick to maintain and repair. They've got to remember that we have to be doing this on a superinten-

dent's schedule. It has to be something we can repair ourselves."

Also falling within Klauk's responsibilities are the 3,000 trees planted as the course was being built. Species such as slash pine, live oak, cypress, buttonwood, and mastic are native to South Florida, while imports such as ficus benamina, pongram, and black olive give some of the spectator mounding areas a touch of the exotic. Orchid trees with their red flowers blossom several times during the year. Other flowering varieties include bottlebrush, poincianas, and pink tabebuias.

Stadium features

The most noticeable landmarks on the course (discounting the \$2.5 million colonial clubhouse and half-million dollar homes springing up in the adjacent private development) are the spectator viewing mounds evident at most of the greens. This allows spectators an unimpeded view of the action on the greens below. The concept, now being known as Stadium Golf, is taken to its ultimate on the 18th green where over mountains

earth and hundreds of railroad ties were sculpted into a grassy stadium capable of seating 30,000 viewers.

"Certainly it creates some problems when it comes to maintenance," Klauk says of the stadium 18th. Flymo mowers are handwalked in the seat-

Thousands of colorful annuals are worked into the rolling contours of the Eagle Trace course

ing areas and edges are trimmed with weed-eaters. It usually takes 3 1/2 to five hours to mow and trim the stadium, he points out. The use of slow-growing zoysia grass, however, reduces mowing to just once a month from October to May, maybe twice a month during the growing season.

How was Eagle Trace received in its first Honda Classic last march (Bruce Lietzke was the winner)?

"Close to 100,000 people saw the tournament in person," Klauk says. "We had rave reviews. The professionals were pleased with the overall course considering it was so new and their biggest recommendation was to rebuild the 12th green which we did. The criticism we received was very minor. We were extremely happy."

Klauk expects more changes in the future but nothing significant. He says, "I'm sure there'll be a few more changes as we receive constructive criticism from the professionals and the members, but I think Arthur Hills did a tremendous job in designing this course."

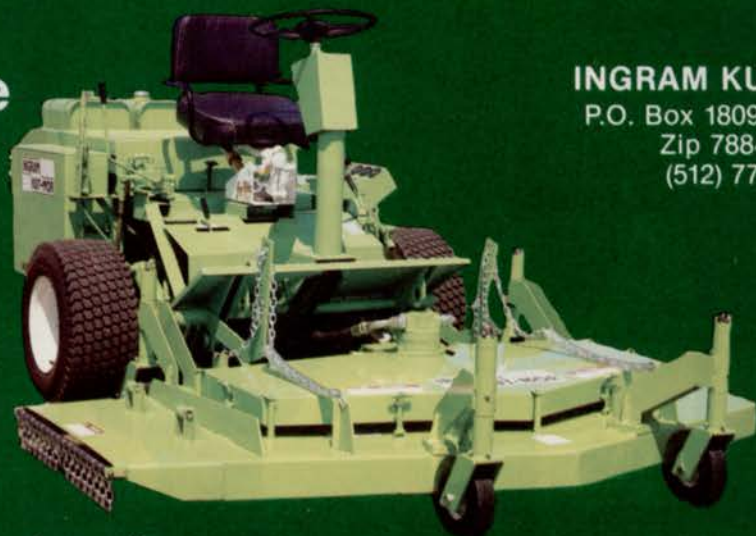
As for Klauk, the challenge of keeping Eagle Trace sharp ("We try to maintain the course year round as if we are going to have the Honda Classic tomorrow.") more than makes up 12-month-a-year grind. "I wanted to be associated with the PGA TOUR. Not too many people get to do that," he says. But, when his weeklong vacation rolls around, he usually leaves his clubs behind. He prefers to fish.

(See related stadium golf story, page 30). **WT&T**

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tion systems for each component of the course such as greens and tees, fairways and roughs, and trees allows each of these areas to be watered selectively and yet adequately.

Under the strictest conservation practices, an average three to four acre feet daily is required to maintain Cathedral Canyon's 191 acres and 20 lakes. This amount can increase to as much as eight to 10 acre feet daily during the initial 12 to 15 day period of

the overseeding process. Multiply that times the number of courses in the area, and water woes are justified.

Says Caranci, "The day is coming when that drop of water will be just like the food you put on the greens to keep them green. Water will be critical."

Labor

Skilled labor is plentiful in the region. Most crews are unionized, well-paid and so secure in their jobs that turnover

is minimal. An average tenure of 15 to 25 years is not uncommon. The average superintendent holds his position for about five years before moving on.

Salaries vary according to the wealth of the club and the background skills the individual possesses. Terry Lortz observes, "When a superintendent is a working superintendent and must be a jack-of-all-trades, they are underpaid."

Bud Lombard adds, "Here it is a 12 month job. In general, superintendents are paid a little more than in other areas, but, in most cases, it is probably not enough considering the hours they have to put in and the perfection that is expected."

Mongiello contends superintendents are a unique bunch of people, "they are highly critical and very creative. Everyone has different standards for reimbursement. Some want to be rewarded with tangible rewards like money. Vacationers pay high dollars to come here. I work here, in a Garden of Eden. Part of my reward is that when I drive out of here and I can look back and say 'isn't that something beautiful I've created.' Most successful superintendents are rewarded in many ways for their efforts."

The area is also fostering a new breed of superintendent; one as well-versed in budgets and management as he is in agronomics.

Mongiello of Eldorado typifies the best of both worlds. He holds a university degree and maintains a private research station at the course where he runs test plots and is capable of diagnosing and prescribing when disease and insect problems arise.

The Hi-Low Desert Golf Course Superintendents Association is a good example of the changes that have taken place over the last 10 to 15 years among golf course superintendents.

No longer principally a social organization, the members pride themselves on the quality of their educational programs and the camaraderie of the association's membership. Approximately 60 percent of the area's superintendents belong.

The association provides a monthly forum for sharing concerns and solving mutual problems. They are eager to help newcomers with the backlog of their experience. The success of any one of them reflects on them all.

WT&T

Hartley Bennett is a freelance writer living in Riverside, CA.

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