

Pocket-Size Slide Chart Developed By Toro

The Irrigation Division of the Toro Company has developed a handy pocket-size slide chart to help contractors design residential and commercial irrigation systems. Made of sturdy paperboard, it can be purchased for 40 cents from any Toro irrigation distributor.

The slide chart can be easily used to calculate friction loss in pounds per square inch/per hundred feet for the four most commonly used types of pipe: Class 200 p.v.c., polyethylene, Type K copper and galvanized steel; losses for water flow in pipe sizes of 1/2"-1 1/4" and up to 36 gallons per minute are shown on the slide chart.

A sliding scale also provides for direct reading of friction loss in 5/8", 3/4" and 1" water meters with a water flow up to 50 gallons per minute.

It also has a scale to show the arc, radius or diameter, pressure at the base of the head, gallons per minute, recommended spacing, and the precipitation rate in inches per hour for 34 different models of Toro sprinklers.

A fixed scale shows friction loss for seven different models of Toro's Series 200 automatic valves.

Comparison Of Irrigation Methods Discussed

Putt on a bentgrass green when the grass is being watered and never get wet?

You bet, using a system discussed by Dr. Gordon V. Johnson, soil scientist in the University of Arizona.

He described three irrigation methods under comparison, sprinkler irrigation; sub-surface irrigation with a stable water table one foot below the putting surface; and sub-surface irrigation with a fluctuating water table. In the case of both sub-surface methods, a plastic sheet lies buried two feet below the surface and water is piped into the built-up green below its surface. Bentgrass was used in his tests.

"Like growing grass in a bathtub," described Johnson.

In the University of Arizona trials, Johnson said sub-surface irrigation using a fluctuating water table has panned out best. This method calls

for filling the basin formed by the plastic tarp periodically to within two inches of the green surface. Then, when the grass roots have almost exhausted the supply of water, you refill it.

"We find the green needs refilling every two weeks during the summer months; about once each three months the winter season," he said.

With a stable water table held that way with an automatic float valve system, the scientist found it hinders nitrogen nutrition.

As well as disrupting golfers when the above ground sprinklers are turned on, the scientist said bentgrass needs cooling by watering 1 or 2 times daily during the hottest afternoons to keep it from wilting.

There was no color difference in the grass with any of the three irrigation systems so long as nitrogen fertilizer was applied directly on the putting surface.

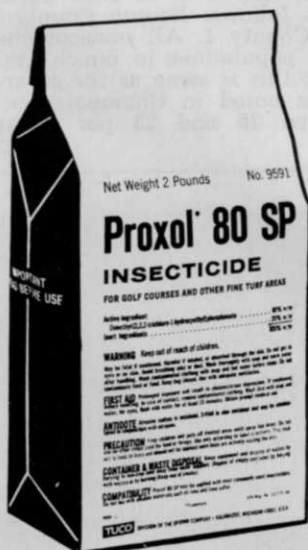
Earlier, he attempted to add nitrogen using the buried pipe system, but this resulted in a pale green putting surface.

"With sub-surface irrigation, there is less chance of losing bentgrass greens through drying," Johnson concluded.

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TUCO

Division of The Upjohn Company, Kalamazoo, Michigan 49001



—insect report—

INSECTS OF ORNAMENTALS

TORTRICID MOTH

(*Platynota rostrana*)

ALABAMA: Larvae observed leaf rolling and stem feeding on 5-10 percent of several hundred potted gloxinia in commercial greenhouse at Columbia, Houston County. This is a new county record.

SOFT SCALE

(*Pulvinaria mesembryanthemi*)

CALIFORNIA: Nymphs and adults infested *Mesembryanthemum* (ice plant) ground cover at Napa, Napa County. Scale increasing range and has unlimited host material as ice plant widely used on freeways plantings.

MEALYBUG

(*Spilococcus cactearum*)

OREGON: Light to very heavy on cactus plants (*Mammillaria* spp. and *Echinopsis* spp.) in 2 nurseries at Portland, Multnomah County. About 4,000 plants under hold order until infestation controlled. Infested material originated from 2 out-of-state nurseries. Recommended treatment ineffective, growers forced to hold material.

AZALEA LACE BUG

(*Stephanitis pyrioides*)

FLORIDA: All stages severe on leaves of 300 azalea plants at nursery in Apopka, Orange County.

HEMISPHERICAL SCALE

(*Saissetia coffeae*)

ALABAMA: Specimens collected from ferns at various locations during host plant survey. Taken from Morgan County greenhouse and in Purdue, Bibb County home. These are new county records.

TREE INSECTS

DOUGLAS FIR TUSsock MOTH

(*Hemerocampa pseudotsugata*)

OREGON: Egg mass surveys completed. Infestations expected to be economic in 1974 barring natural controls. Possible infested acreage, including area north of State line, estimated at about 600,000. About 121,000 acres of private timberlands expected to need treatment in 1974.

LINDEN LOOPER

(*Erannis tiliaria*)

WEST VIRGINIA: Seven male adults taken in blacklight trap in Dolly Sods area of Grant County. This is a new county record.

FALL WEBWORM

(*Hyphantria cunea*)

FLORIDA: Adults collected at blacklight trap in Belle

Glade, Palm Beach County. First report of season.

TIGER MOTH

(*Halisidota ingens*)

NEW MEXICO: Small colony collected from young pinyon pine north of Silver City, Grant County. This is a new forest district and new county record. Light scattered larval infestations of this species and *Phenacaspis pinifoliae* (pine needle scale) caused light to moderate damage to pinyon pine on 20,000+ acres of private land near Las Vegas, San Miguel County. Many tents of *H. ingens* contain only dead first to third-instar larvae; fewer tents with hibernating fourth to sixth-instar larvae. Heaviest *P. pinifoliae* damage on pines bordering dusty roads.

NANTUCKET PINE TIP MOTH

(*Rhyacionia frustrana*)

TEXAS: Heavy on Christmas trees in Orange County. Infested about 75 percent of trees in one planting. Infested terminals ranged 1-3 per tree.

VARIABLE OAKLEAF CATERPILLAR

(*Heterocampa manteo*)

MARYLAND: Overwintering larval populations in Frederick City Watershed area north of Frederick, Frederick County, ranged 8-10 per square foot. Oaks in these 10-15 square miles 60-100 percent defoliated in 1973.

TURF INSECTS

FALL ARMYWORM

(*Spodoptera frugiperda*)

OKLAHOMA: Heavy in Bermuda grass lawns in Washita County. Scattered damage to Bermuda grass still reported in Comanche County. TENNESSEE: Continued to damage newly sodded and seeded grasses in all areas of State where no controls applied to infested areas. Larval activity decreased.

SOD WEBWORM

(*Crambus trisetus*)

MARYLAND: Continued to cause heavy damage in home and commercial turf in Montgomery, Baltimore, Prince Georges, and Howard Counties. Ranged up to 17 per square foot of sod. Treatments not giving adequate control.

SOD FLY

(*Inopus rubriceps*)

CALIFORNIA: Adults collected in Alameda County. This is a new county record. Indicates fly is spreading out of San Francisco peninsula where it has been known since 1948.

CINCH BUG

(*Blissus leucopterus leucopterus*)

INDIANA: Adults taken in only 6 of 23 sites during annual 1973 fall survey as follows: Benton County 2, Jay County 3, Blackford County 1. All noneconomic. ILLINOIS: Over-wintering populations in bunch grass samples very light in 1973; this is same as for several years. Heaviest populations noted in Champaign and Iroquois Counties; averaged 25 and 23 per square foot, respectively.



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Plants Have Nerves Says Cornell Biologist

What do plants and man have in common? A Cornell University biologist has determined that certain plant cells act much like human nerve cells in transmitting nerve-like signals from one point to another.

Stephen E. Williams has found that the sundew plant, a carnivorous plant which grows in bogs and other swampy spots, actually "feels" its prey before making the catch. When an insect is caught, it often rubs the tips of neighboring tentacles causing the tentacles to bend over and hold the prey against the leaf. Insects are then digested by enzymes, providing nourishment to the plant.

The question is, how does the base of the hairlike tentacle "know" when to bend over and pin the prey against the leaf if all that the insect touches is the tentacle tip? That question also puzzled Charles Darwin about 100 years ago. Williams' discovery of the nerve-like activity satisfies the question that raised Darwin's curiosity.

Williams explains that the tentacle tip is made of layers of highly sensitive cells that are capable of converting a mechanical or physical stimulus, such as touching, into electrical impulses much like nerve signals.

The message travels down to the base of the tentacle when the tip is touched, much the same way human nerve cells relay signals throughout the body in the form of electrical pulses.

Using very small electrodes, the plant physiologist was able to measure how fast the "nerve" signal travels through these cells. He found that the signal in the sundew travels as much as 10,000 times slower than in animal systems.

"This is the major difference between the nerve-like processes of sundew cells and those of nerve cells in animals," he notes.

It also was found that the direction of the signal can be reversed. When the base of the tentacle is stimulated artificially with an electric shock, the signal will travel toward the tip.

Discussing implications of his findings, Williams says that study of this group of plants could shed much light on the evolution of sense organs.

"It is remarkable that these plants are totally unrelated to animals and yet they have developed very similar sense organs completely independently," he notes.

From a practical standpoint, his work could serve as a valuable research tool in exploring the possibility of such a phenomenon in other types of plants — a research other types of plants.

Does the sundew, Venus'-flytrap, pitcher plants, and other types of carnivorous plants depend on meat diets for their survival?

"Not necessarily," Williams says.

In another Cornell study conducted some years ago, in the same laboratory by coincidence, it was found that the sundew survived as long as eight years in complete isolation without receiving a single bite

of "meat."

"But, with insect diet supplements, the plant usually does better," Williams points out. "It makes its own food by means of photosynthesis, but insects apparently furnish vital mineral nutrients."

In his "Insectivorous Plants" published in 1875, Darwin reported that any tiny piece of meat or egg white was handled by the sundew in the same way it digested insects.

"This is still true, but home gardeners tend to feed the plant too much," Williams says.

Like all of us, plants need a proper diet.

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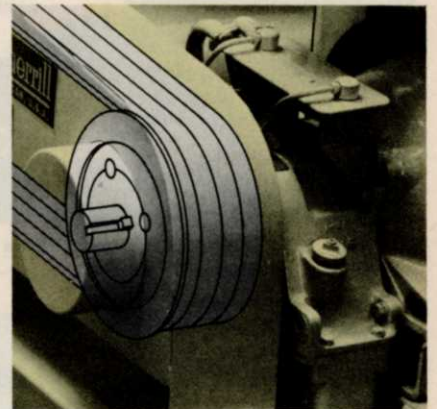


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Drip Irrigation Lessens Nitrate Runoff

Use of a different type of growing medium with trickle or drip irrigation systems may help solve an environmental pollution problem facing many nurserymen today—how to eliminate nitrate-laden runoff waters from their current operations.

Preliminary findings from research exploring this approach were reported by Dr. E. F. Wallihan, professor of soil science at the University of California, Riverside, during the American Society of Agronomy in Nov.

Sand-organic matter mixes are widely used by nurserymen as plant media because of desirable physical properties relating to bulk density, water release, aeration, and drainage. However, Dr. Wallihan noted, they have a low capacity for storing and delivering nutrients.

"To be certain that nutrient deficiencies do not occur," he explained, "nurserymen apply large amounts of fertilizers, most of which are carried into the soil beneath. A better plant medium and a better

irrigation system are needed to limit this source of environmental pollution."

He reported that new materials are available to bind clay soil into tiny clods that should provide a better plant growth medium than the present nursery mixes.

"From this study," the UCR soil scientist said, "it appears that use of such aggregates would be just as satisfactory with respect to weight, water storage and release, aeration and drainage as current mixes. When used with drip or trickle irrigation systems, the aggregates would provide for better distribution of water within each container. This would reduce the amount of water required for irrigation and, thereby, the amount of fertilizer needed."

Dr. Wallihan said that extensive tests are now under way at UCR to learn how best to use the aggregate cultures.

N.Y. Arborists Elect

New officers of the N.Y. State Arborists Association were elected

at the annual meeting in So. Fallsburg, N.Y.

They are: Carl Lundborg, vice president of F.A. Bartlett Tree Expert Co., president; D. W. Cadwalader, Hopewell Junction, N.Y., 1st vice president; James Taylor, Walden, N.Y., 2nd vice president; and Richard Wickey, Westbury, N.Y., 3rd vice president. George H. Callaway of Argyle, N.Y. continues as secretary-treasurer.

New board of directors includes: Jack A. Schultz, Merrick, N.Y.; Dave Kress, Schenectady, N.Y.; Ed Johnson, Hicksville, N.Y.; Jacob Bruinooog, Spring Valley; Sam Blakley, Mt. Vernon, N.Y.; Philip Brogan, Syracuse, N.Y.; David Williams, Clarence, N.Y.; Leo Cook, Vestal, N.Y.

Margaret Herbst was named executive secretary.

New Articulated Loader For Industry Market

New to the Green Industry is the multipurpose Bronco articulated loader, manufactured by Versatile Power Corporation, Grantsburg, Wisconsin. It is marketed by Conequip Sales, Inc. of Minneapolis, Minnesota.

Basically a hydrostatic true 4-wheel drive loader with articulated steering, the 3,400-lb. capacity Bronco is available with standard or heavy duty front ends and $\frac{3}{4}$ and 1 yard standard buckets.

The loader is powered by a 110 hp liquid cooled gasoline or a 93 hp diesel engine through a 55 gpm hydrostatic pump and separate hydraulic motors coupled to each of the four wheels. There are no drive gears, belts, chains, shafts, differential or axles.

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Topdressing Supplier Opens New Plant

E. & S. Soil and Peat Industries, Inc. has opened their new plant, located near Rocky Mount, North Carolina, to supply sterilized soil mixes for topdressing and greens construction. Their standard mix conforms to the U. S. G. A. specifications, but they can also supply custom mixes.

Will W. Eason, Jr. is president of the newly formed organization and John W. Strickland is vice-president. Strickland is a member of the Mid-Atlantic Golf Course Superintendents Association and also the Golf Course Superintendents Association of America. He has had considerable experience in supplying this type of topdressing mix. He is the president of Egypt Farms, Inc. located in White Marsh, Maryland, and this firm has been supplying topdressing to the industry since 1968.

Accessories For Greensmaster Available From Toro

At its recent annual convention in Mexico City, Mexico, members of the Sprinkler Irrigation Association elected officers for 1974 and four individuals to serve two-year terms on the SIA board of directors.

President of the 375-member international organization is John H. Stevens, general manager of the Pierce Corporation of Eugene, Oregon. He succeeds M. L. Rawson of Ogden, Utah.

Vice President (president-elect) is Jim Pichon, owner of J. L. and Associates of Zephyr Cove, Nevada, a new firm distributing sprinkler irrigation equipment throughout the west. Treasurer of the Association is W. J. (Jack) Ogle, vice president for manufacturing of Gifford Hill and Company, Inc., Lubbock, Texas.

Board of directors are: Paul B. Bohley, The Gorman-Rupp Co., Mansfield, Ohio; Joe Harris, Lockwood Company, Lubbock, Texas; Taylor Ramsey, United Pipe and Supply Co., Eugene, Oregon; and Gary Underhill, Rain Bird Sprinkler Manufacturing Co., Glendora, California.



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Pesticide Shortages Studied By Industry

H. L. Straube, vice president of Stauffer Chemical Company has been named to head an industry committee to determine the seriousness of the shortages of pesticide chemicals and to help alleviate the most critical situations.

Under Straube's direction, the group will endeavor to determine the critical shortages of feedstocks, intermediate chemicals, and other materials needed to manufacture pesticides. The committee will work to alleviate such shortages to avert, if possible, a reduction of food supplies which could result from current shortages.

— classifieds —

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: All classifications 50¢ per word. Box number, \$1. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment.

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POSITION WANTED — Grounds Superintendent — Age 38, married. 16 years experience; golf course construction and maintenance; parks construction and maintenance; heavy experience in all phases of irrigation; will relocate U.S. or Canada. Box 117, Weeds, Trees & Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

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BASKET TRUCK — 55 ft. working height, 1965 2 ton International truck propane engine, 1970 Reach-All boom, hydraulic outriggers, hydraulic controls top and bottom, safety features, hydraulic pruners and saw, cab guard, many extras, excellent condition, \$11,700.00. Phone 515 842-5569.

NEAR NEW Jacobson F-10 7 gang S.P. mower, \$7,950.00; 1970 Jacobson F-10 7 Gang S. P. mower, \$4,950.00; Ryan 18" sod cutter with sulky roller att., \$1,850.00; Deluxe Rol. Pac 1 ton roller for sod, \$1,250.00. Meyers Turf Farms, Inc., Stilwell, Kansas 66085. Phone 913 681-2667.

FOR SALE: Sprayers: used and new—Hydraulic and mist, all makes. Reconditioned pumps — Bean Royal 20, 35, and 55. Used Rotomist parts. Phone: Normandy 2-3507 or write: Ralph McFarland, 209 Pleasant Place, Ann Arbor, Michigan 48104.

FOR SALE: Sprayers: used and new; hydraulic and mist, all makes; Royal 20, 35, and 55 pumps. Used rotomist parts, big discount! Phone: 313 6655-338 or 313 662-3507. Write: Ralph McFarland, 209 Pleasant Place, Ann Arbor, Michigan 48103.

FOR SALE: Vermeer TS-44A Tree Spade, like new, available April 1, 1974, \$6,500.00. Terrapin Hills Golf Estates, Box 429, Fort Payne, Alabama 35967.

1971 VERMEER LOG CHIPPER model 604, diesel engine, 600 hours, like new, \$12,000.00. Bob's Tree Service, 5148 North Flora, Kansas City, Mo. 64118. Phone 816 454-2242.

WANTED — Used 6' Gill Spiker Seeder with seed box. Preferably in Ohio. Send price and condition to Jim Fox, R2, Fredericktown, Ohio 43019.

SKID-MOUNT SPRAYER, like new, 300 gallon, 12 horsepower B. S. engine, high pressure hose, electric reel, \$1,095.00. Phone 612 929-1070; 854-3508.

WANTED: Brouwer sod harvester. Send particulars to: Thornton's Turf Nursery, R2, Box 72, Elgin, Illinois 60120.

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trimmings

MULCH, MULCH, MULCH your weeds . . . has been recognized as an effective form of weed control under certain conditions for some time. Scientists apparently always on the lookout for a discovery have been wondering what to do with the old test tubes which once contained the promise of fortune and fame. May wonders never cease. The cleaning lady has made a discovery. Glass makes an effective mulch and aids in weed control. Well almost. A permanent fiberglass product has been produced from borosilicate fibers, bonded with resin, that permits moisture, air, and nutrients to enter the soil, but eliminates the emergence of weeds and grasses. The material will not rot, corrode or burn. It may be taken up and reused. Also, moisture evaporation is said to be reduced. Only the imagination limits where it could be used.

GRASS—A FAMILY FRIEND will probably play a more important role this year than ever before. The energy situation has forced families to stay home. And because the television offerings are becoming more limited, families will probably use outdoor living to a fuller degree. Just think of all the fun you can have on turfgrass lawn of Fylking, says Doyle Jacklin of Jacklin Seed. Football, badminton, softball, golf, even tag. Properly cared for turf will easily take these contact sports and more. And grass is one of nature's most prolific air conditioners as well as oxygen producers. Might not be a bad idea to encourage your customers to stay home more often.

SPRAY WITH A HEAD or foam is being considered a strong candidate in Ohio tests for the control of plant disease. Foam application of fungicides have shown promise in providing even greater protection to the environment than conventional sprays. Advantages include deposition of a greater proportion of the fungicide on plant leaves, uniform suspension of the material and treatment on days when wind prevent spraying by conventional methods.

DIAL-AN-ANSWER has a new number, says O.M. Scott & Sons, Marysville, Ohio. The current toll free number for answers on lawn care

problems are: 800-762-4010 in Ohio; 800-543-0091 in Arizona, California, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, Wyoming; an 800-543-1415 in all other states.

WOLF WOODS fools Mother Nature. That's what the Philadelphia Zoological Garden did. They have constructed a "wild" environment to help increase the population of two threatened species: North American timber wolves and South American maned wolves. The zoo actually improved on nature. Wolf Woods has an underground irrigation system to supplement rainfall to support a forest of transplanted trees and other vegetation. "We think Mother Nature would approve," says Charles Rogers, staff horticulturist. The irrigation system is Toro, designed by Jerry Purcell of Philadelphia Toro. It features automatic pop-up, pop-down heads. Trees include Douglas fir, white pine, locust, clump birch and dogwood. More than 20,000 square feet of sod was installed.

SOD GROWERS BEWARE! The common problem of vandalism experienced regularly by farmers and growers can also touch sod growers in a big way, too. Scattered reports of sod damage in Ohio, Maryland and New Jersey prompts action on the part of sod growers to keep their eyes open. Generally what happens is car tracks and litter—the awesome reminder of a previous night's party. Yet authorities also have reports of damaged irrigation systems, thefts of equipment, etc. It's a good idea to post your farm with "Keep Out" and "No Trespassing" signs. It won't stop the determined vandal, however.

WILL TRAVEL NO GAS may well become even more pronounced before the energy situation is cured. The Connecticut Tree Protective Association has come to the rescue of its members in a unique sort of way. They've posted the phone numbers of the executive directors of the various county offices of the USDA Agricultural Stabilization and Conservation Service (ASCS) for those engaged in tree service and other agricultural activities. This way members who need fuel oil, diesel fuel, etc. have a direct contact with those who can provide positive action. They have also provided members with other sources of information on fuel emergency.

NEED TO KEEP LABOR busier while on the job? It's true. Some labor crews just don't have enough work to keep them occupied. Lightning Protection Institute, 122 West Washington, Ave., Madison, Wis., 53703, suggests selling a lightning property. If it is a tree job, a little you discuss work to be done on the property. If it is a tree job, a little more time spent in the tree by the climber can pay a handsome dividend later.

IS HORTICULTURE considered agriculture? Yes, says a Washington spokesman. By definition, "agricultural production means the commercial farming, dairy, poultry, livestock, horticulture, forestry and fishing activities, and services directly related to the planting, cultivation, harvesting, processing and distribution of fiber, timber, tobacco, and food intended for human consumption and animal feed." All this means that nurserymen are now authorized 100 percent of their current needs for gasoline and probably will be allocated 110 percent of their needs for middle distillate during the 1972 base period.

NO NET GAIN. That's what EPA Administrator Russell E. Train says about removing the emission control systems from autos. "It is EPA's technical judgment that a mass program to remove or modify emission controls on existing cars would result in no net gain, and possible even some deterioration, in nationwide fuel economy," he says. "The only certain result of such a program would be a major increase in motor vehicle emissions."

Oseco Limited has announced that construction has started on an expansion of the company's office, warehouse, laboratory and processing complex.

The expansion, which will cost \$125,000, will double the capacity of the bagged-seed section of the warehouse, according to production manager Helmut Koops.

The head-office complex currently occupies about 45,000 square feet on 50 acres of land.

Oseco's products includes turf grass seeds for professional growers and retail markets, packaged flower and vegetable seeds, and forage and hybrid corn seeds.

The company ships seed to all parts of Canada and the United States, and exports grass and legume seed, including seed grown under contract in North America, to clients in Europe, Japan, Australia, Africa and South America.



Look at it this way

Before selecting an automatic irrigation system, consider the viewpoint of a blade of grass. It wants to see enough water coming its way often enough to keep it healthy. How much and how often depends on such variables as growing conditions, sun and shade, height, temperature, and course contour. That's why the happiest sight a blade of grass can see is a member of Rain Bird's exclusive Golf Team (six full time golf irrigation experts) consulting with a Rain Bird installer and the superintendent—right on the course. It means the best irrigation plan, tailored to your course, carried out with the most reliable equipment. Ask anyone with a Rain Bird system. Ask any blade of grass.

RAIN BIRD[®]
Glendora, California 91740

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