

Southwestern states display growth but variety of maintenance problems

by David B. Hueber

For those who hunger for a unique golfing experience, the Southwestern United States has a menu of golf courses to appeal to every appetite. Southwestern golf is spiced with a variety of golf courses from the coastal links to the inland valleys, the low and high deserts, and the mountains.

The Southwest is a very active region for golf with accelerated growth anticipated in the number of golfers and rounds played as well as in the development of new golf courses. In southern California, southern Nevada, Arizona, and New Mexico there are over a million golfers annually playing around 23.5 million rounds on 436 courses. These estimates exclude the snowbird golfers who annually seek the southwest sunshine and winter golf.

Southern California has the greatest concentration of players and courses. Over 80 percent of all southwest golfing activity is in southern California. California and Arizona rank very high nationally in terms of the number of new golf courses opened, under construction, and in planning. During 1978, 14 new courses were opened, 21 were under construction, and 17 were in planning. A surge of new course openings is expected in the spring as some projects scheduled to open in 1978 were delayed by the weather.

Ironically, even though the Southwest is noted for its ideal golfing conditions, this region has not been excluded from the whims of Mother Nature. For nearly two years the



Jim Mercer (above and below left), superintendent at Estrella CC in San Clemente, and Dave Hueber examine part of a 1,000-foot-long crevice opened up on the golf course by a massive land shift.

Southwest endured a severe drought. Then the rains finally came, often in record amounts. Golf course superintendents who had watched their courses bake out for two years because of restrictive irrigation regulations watched them green up and, in some instances, watched them wash away.

Golf courses in southern Arizona experienced flash flooding in successive autumns of 1977 and 1978. In early 1978, washouts, debris on turf, and in some cases refugee rattlesnakes washed out of their native habitats kept golfers away in large numbers as the season opened for this part of the country.

Southern California suffered from severe rainfall in the spring of 1978, and 1979 is also starting out very wet. Many courses just get too soggy to permit play. In 1978, course closings were the rule rather than the exception for the first two months. The city of Los Angeles, for example, was forced to shut down its 14 courses from 25 to 38 days during the first quarter of the year. This is compared to the average annual loss of 11 playing days. National Golf Foundation surveys showed that due to the inclement weather, the total number of golf rounds played was down 14.8 percent for the first quarter compared with the same time period in 1977.

Unusual weather-related calamities affect operational revenues and golf course maintenance. The cost of maintaining a golf course does not decrease when the course is closed by the weather. These conditions can catch management and the superintendent off guard; it's not hard to get lulled into a sense of security with a 365-day season.

Year-round operations mean higher operational expenses. Often the maintenance budgets are twice the amount of their wintery counterparts. It is not uncommon for a well-groomed 18-hole golf course to have a maintenance budget in the \$300,000 to \$400,000 range. Some courses spend even more to keep the turf in top shape.

Labor consumes the lion's share of these budgets, as it does with all golf courses, but these are sometimes higher budget items because the maintenance crews usually have more full-time laborers and must pay higher wages. Water is also a very expensive budget item, depending upon the source and degree of water usage. For example, Don Rodvold, golf maintenance supervisor for Torrey Pines Golf Course in San Diego, reports that he must use city water to irrigate the 36-hole complex. Often up to one million gallons per night are used. Don Makie, golf superintendent for the City of San Diego, reports that the



David Hueber has been Southwest Region director for the National Golf Foundation since October of last year. He was previously NGF Mid-Central Region director.



ABOVE LEFT: Singing Hills CC, an inland valley 54-hole complex in El Cajon, Calif. ABOVE RIGHT: Don Makie, San Diego superintendent of golf, and Don Rodvold, golf maintenance supervisor for Torrey Pines GC, examine turf on 6th hole of the Torrey Pines north course.

annual water budget for Torrey Pines Golf Course is \$120,000. Water can be a precious commodity in the Southwest, and its availability, quality, and use are of particular concern to the superintendent.

Maintenance practices

Golf has a 365-day season for most areas of the Southwest. Unlike many golf courses north of the Mason-Dixie line, there is no period of golf course hibernation when the superintendent has the time to prepare for the next season. There is not time when the rolling stock sits dormant so that equipment overhauls can be made. Overhauls and other repairs are made when they are needed and when they can be fit into the regular operational schedule.

There are five distinct geographic variations in the Southwest. The climate in each area is influenced by its geographic setting, creating different maintenance problems for the superintendents.

Coastal areas

The ocean has a leveling influence on the temperature, keeping the days cool and the nights moderate. There is minimal day and night temperature fluctuation. The prevailing winds are westerly, and fog or night and morning clouds are common until about 11:00 a.m. and again at 5:00 p.m.

Turf diseases consist primarily of dollar spot, copper spot, and occasional problems with brown patch, pink snowmold, or leafspot. The moist conditions are ideal for *Poa annua* infestations, which normally result in an eventual takeover. As it is nationwide, the real problem is maintaining *Poa* during the stress months once it is established. The shallow *Poa annua* roots require daily syringing to lower the surface temperature.

Fairways and tees are predominately common bermuda, but a few

courses have gone to bluegrass. With cooler soil temperatures caused by the coastal influence, the bermuda provides an excellent playing surface with less vigorous growth than in the inland areas. During the summer months, nightly irrigation is required. Bermuda normally begins dormancy around November and shows signs of recovery in mid-March. Kikuyugrass is also common in fairway and rough areas. It is coarse-textured and vigorous, and it thrives in the moderate temperatures. Kikuyugrass has proven to be extremely difficult to control.

Routine maintenance procedures on most courses have the greens being mowed daily or a minimum of five times per week, while the fairways and tees are mowed two to three times a week. Greens typically receive about one pound of nitrogen per 1,000 square feet per month, with the rates increasing on those greens that have a higher sand content. Fungicides are usually applied on a preventative basis.

Fairways receive spring and autumn applications of nitrogen in the same concentration. Courses that overseed their fairways and tees usually provide one to two winter feedings of $\frac{1}{2}$ pound of nitrogen or more per application. The overseeding usually begins in October or November using annual ryegrass on the fairways and perennial on the tees.

Greens are aerified two to four times a year with one to two top dressings. A few courses have gone to light, frequent applications with sand. Greens are also verticut frequently and lightly during the spring, summer, and fall.

The most complex problem for the superintendent, as is true in all areas, is dealing with the inconsistencies of the soil. Coastal courses can be found in river bottoms with sand and/or silt soils, or resting on sandstone bluffs

overlooking the blue Pacific, or in areas of clay. This soil variety makes each course totally different when irrigation practices are considered.

Because of the excessive amount of moisture last year, along with above normal winter temperatures, crabgrass is a major problem this year. Applications of control materials are being applied at many courses in mid-February to prevent further spreading.

Inland valleys

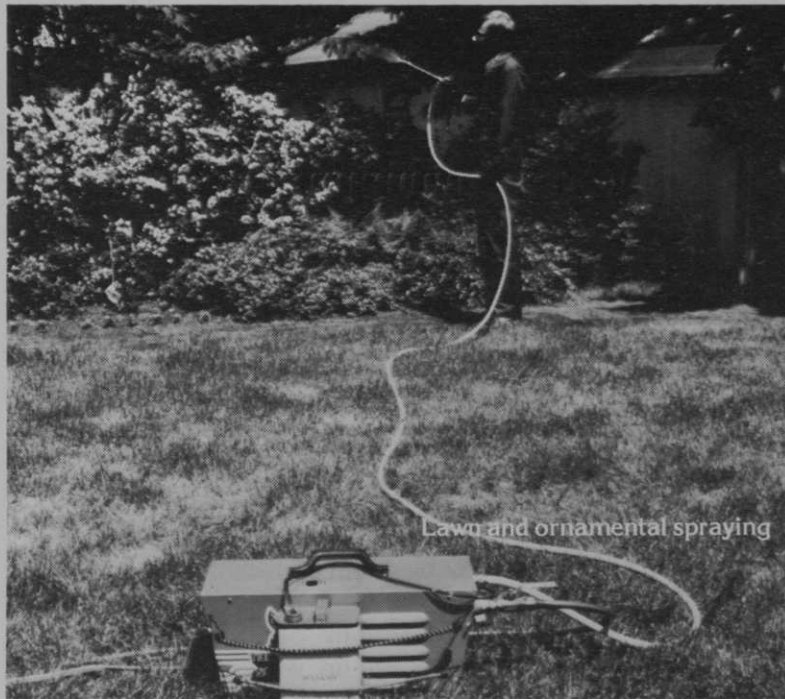
As close as 15 miles inland, the temperature range changes abruptly. Temperatures during the day in summer range from the high 80s to over 100, with night-time temperatures around 70. The higher temperatures with moderate humidity create maintenance demands different from the coastal climate.

Poa annua suffers more stress and higher mortality rates, and the incidence and spectrum of turf disease increases. Fertilization and irrigation practices must be carefully managed because of the higher potential for disease. Summer fertility is reduced to avoid unwanted lush growth, and the timing and amount of irrigation becomes an important factor in disease control. Syringing becomes a daily function and may be performed several times to keep surface temperatures down. Preventive applications of fungicides often exceed what is used on coastal courses.

Winter maintenance also differs from that on coastal courses. Frost, virtually nonexistent along the coast, is a frequent visitor inland from late November into March. Golfers must be delayed to prevent turf damage and give early morning sunshine a chance to melt the frost. Efforts to remove the frost by syringing occasionally result in freezing, adding to the already frozen leaf blades.

The cooler winter climate also affects the amount and frequency of

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irrigation as well as the spectrum and incidence of disease. Cool temperatures combined with overcast skies and humidity create a suitable environment for dollar spot, pink snowmold, cool climate leafspot, and other damaging diseases.

Mechanical operations differ slightly from the coastal climates. Vertical mowing is performed to remove thatch on a frequent but light schedule during the growing season. During the winter months the cold temperature slows turf recovery so this practice is not continued. Greens aerifications are normally performed two to four times annually, with occasional aerification during the heat of the summer to provide the proper air/water relationship in the turf root zone. Topdressing is usually avoided during the summer and limited to two of the annual aerifications.

Overseeding becomes more necessary inland because of the extremes in temperature. Coastal climates are able to maintain the winter color of bermuda, but when the first frost hits the inland valleys, the bermuda begins dormancy that will last until March or April. Fairway and tee overseedings take place between October and November with annual ryegrass in the fairways and the improved perennial ryegrasses becoming popular for the tees. Bermudagrass is normally scalped and/or verticut to prepare a good seedbed for rye. The superintendents must keep the courses wetter than usual to allow for sufficient seed germination.

Fairway feedings increase following the fall overseeding. The normal spring and fall applications require supplemental applications in the winter to stimulate ryegrass growth.

Low desert areas

Temperature ranges provide for three distinct seasons in the low deserts. Winter temperatures range from a daytime cool of 50 to a balmy 80. Night temperatures often dip below freezing. Recently, some freakish winter weather has invaded the desert. A surprising accumulation of snow greeted Palm Spring tourists in late January. The desert winter is usually a short season lasting from early December to February.

Spring brings low humidity, warm days with temperatures reaching 100, and cool nights with temperatures in the 50s. When July 4th arrives, summer is in full stride with daytime temperatures reaching 118, and the temperature only dropping down to

around 85 at night.

Summer climatic conditions create the most difficult turf maintenance tasks. With the intense heat both day and night, along with high localized humidity, disease conditions are always ideal. Damaging diseases such as leafspot, brown patch, and Pythium can strike so fast that a green can literally be lost in one day. Turf feeding (where bentgrass is used) is kept to a minimum, irrigation practices are reviewed daily, and a strong preventive disease control program is maintained. A constant level of moisture must be maintained in the thatch and root zone to aid the disease control program. Excessive wetting or drying combined with the extreme heat will activate disease organisms.

Adding to the problems of turf maintenance is the high incidence of insect activity in both the surface and subsurface. Frequent insecticide applications become mandatory.

Many of the low desert courses have converted their greens to hybrid bermuda (variety 328) which can withstand summer heat virtually disease free. These courses overseed with perennial ryegrass in October at rates of 30 to 40 pounds per 1,000 square feet. Pythium controlling fungicides are applied at the first signs of germination to prevent the blight from getting a foothold.

Fairways also go through conversion from bermuda to annual ryegrass, but in some cases growth retardants are applied to slow bermuda recovery from scalping and verticutting, and to allow less competition between bermuda and rye. Fairway feedings are more frequent, since most courses are planted on sand.

High desert areas

The high desert courses are characterized by hot summers with slightly cooler temperatures than the low deserts. The major differences are much colder winters, considerably more wind, and generally lower humidity.

Incidence of disease is low because the humidity is low and the air movement is excellent. Irrigation is difficult because of the blustery conditions.

The greens are predominately bentgrass and the fairways are bermuda. The overseeding practices for the fairways are similar, and in general, the same maintenance procedures apply as in the low deserts.

Mountain areas

Summer daytime temperatures can be

in the 80s with the nights getting down into the cool 50s. Snow and frost slow winter play to a standstill, so maintenance is primarily April through November.

Cool season grasses are the norm with bentgrass on the greens and bluegrass or a bluegrass mix on the fairways and tees. Disease control is directly related to humidity levels during the summer months. Winter disease control is directly related to the amount of snowfall and the temperature.

Maintenance practices pretty much follow the standard practices employed by the northern courses.

An unusual maintenance problem

The problem experienced by Jim Mercer, superintendent at Estrella Country Club in San Clemente, Calif., should in no way be interpreted as being typical for the sometimes shakey state of California. Geologists are still studying the land shift that struck suddenly around 6:30 on a cool December evening.

With a massive thud, the land shifted, vibrating windows in a ½ mile radius. Two fissures ripped the earth open, connecting to create a 1,000-foot crevice, 60 feet deep in some places. The earthen tear encircled the 15th fairway as the entire 15th fairway slid toward the adjacent 16th fairway. Rows of stately 30-foot eucalyptus trees managed to stay perfectly upright as they also slid 8 feet closer to the 16th fairway. The golf car path which had bisected the two fairways was crumbled in the landshift's wake as irrigation lines were stretched and then snapped.

Branching out from the main crevice in a spiderwebbing pattern are hundreds of smaller cracks scarring the fairways. The 15th green, which had formerly sloped away from the hillside, shifted 30 degrees and now slopes toward the hill.

The hole is still playable, but the extent and cost of the damage is undetermined.

"We still don't know how much pipe we'll have to replace," Mercer says, "and this will be a critical factor in our reconstruction costs."

Summing up southwest golf

Nowhere in the United States are golf course superintendents faced with a greater variety of turf maintenance challenges. As southwestern golf continues to grow, keeping pace with the ever-increasing population, there will be greater demand for golf courses, and greater demands on the golf course superintendents. □



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Chloride Inc. P.O. Box 1124 Tampa, FL 33601 813/248-3161	GC-2	Long Drive 85	85	19	polypropylene	10 3/8	7 3/16	11 1/4	62.3	45.5	no	241
	GC-2H	Long Drive 106	106	19	hard rubber	10 3/8	7 3/16	11 3/8	70	53.6	no	242
Douglas Battery Mfg. Co. 500 Battery Dr. Winston-Salem, NC 27107 919/788-7561	GC-2	DB-75	75	19	Formaplast	10 3/8	7 1/4	10 1/4	62	45	yes	243
	GC-2	DB-105	105	17	polypropylene	10 3/8	7 1/4	10 1/4	67.5	49	yes	244
	GC-2	DB-115	115	19	polypropylene	10 3/8	7 1/4	10 1/4	71	54	yes	245
ESB Brands, Inc. P.O. Box 6949 Cleveland, OH 44101 216/861-7100	GC-2	EV-1	75	19	polypropylene	10 3/8	7 3/16	11 11/12	60.2	—	no	246
	GC-2	EV-88	88	19	polypropylene	10 3/8	7 3/16	11 11/12	60.2	40.8	no	247
	GC-2	EV-106	106	19	polypropylene	10 3/8	7 3/16	11 11/32	65.5	47.6	no	248
Firestone Tire & Rubber Co. 1200 Firestone Parkway Akron, OH 44317 216/379-6047	GC-2	GC-2	88	19	plastic	10 3/8	7 3/16	11 7/32	60	40	yes	249
	GC-2H	GC-2H	106	19	plastic	10 3/8	7 3/16	11 7/32	65	47	yes	250
General Battery Corp. P.O. Box 1262 Reading, PA 19603 215/929-0771	GC-2	Titan EVP Power	90	19	polypropylene	10 5/16	7 1/8	9 5/8	62	—	yes	251
	GC-2	Titan EVP Power	107	19	polypropylene	10 5/16	7 1/8	9 5/8	65	—	yes	252
Gould, Inc. P.O. Box 43140 St. Paul, MN 55164 612/452-1500	GC-2	PB 220	100	21	plastic	10 9/32	7 1/8	10 13/16	62.8	54.7	no	253
	GC-2	PB 180	82	17	plastic	10 9/32	7 1/8	10 13/16	56.8	44.9	no	254
Prestolite Co. 511 Hamilton St. Toledo, OH 43694 419/244-2811	GC-2H	9915X	110	17	plastic	10.38	7.14	11.59	65	47.3	yes	255
	GC-2H	9914X	90	15	plastic	10.38	7.14	11.59	60.8	42.3	yes	256
SGL Batteries Mfg. Co. 14650 Dequindre Detroit, MI 48212 313/868-6410	GC-2H	2-HGC	85	17	polypropylene	10 5/16	7 1/8	10 1/4	66	(only ship wet)	yes	257
	GC-2H	2-HGC	85	17	hard rubber	10 5/16	7 1/8	10 1/4	66		yes	258
	GC-2H	2-HGC-HC	100	17	polypropylene	10 5/16	7 1/8	10 1/4	69		yes	259
Trojan Battery Co. 9440 Ann St. Santa Fe Springs, CA 90670 800/423-6569 or 213/945-1471	GC-1	T90	90	17	rubber	10 3/8	7 1/16	10 1/4	58	46	yes	260
	GC-1	T105	105	17	rubber	10 3/8	7 1/16	11 1/2	66	51	yes	261
	GC-1	T135	135	19	ABS plastic	10 3/8	7 1/16	11 1/2	73	—	yes	262
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Firestone Tire & Rubber Co.



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Douglas Battery Mfg. Co.



Trojan Battery Co.



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Products



Low-profile tractor

Engineering Products Co.'s Power King model 1618 tractor is now offered with 16-inch rear wheels to provide greater stability for earth removal work. The tractor, which is powered by an 18-horsepower engine, may be equipped with lug-type or lawn tires. All Power King models are available with manual or hydraulic lift and three-point hitch for rear implements, along with more than 20 attachments.

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Quarter-ton hauler

Carl Heald, Inc. offers a 1/4-ton hauler in easy-to-build semi-kit form. The vehicle is priced under \$1,000 but features large flotation tires, a dumping bed, and a tilt seat for easy engine access. It also comes with either a gas or electric engine.

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Pickup bed liner

Z-Liner, a seamless one-piece liner for pickup truck bed protection, is manufactured by Zefflamb Industries, Inc. The liner, made of tough polyethylene, doesn't stain or rust, resists fertilizers, and is easy to clean. Available in short and long lengths which fit most pickups.

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Standard lockers

The Industrial Products Division of Republic Steel manufactures standard lockers in a wide variety of styles, colors, and sizes to meet specific clubhouse needs. Before painting, the steel is phosphatized to inhibit corrosion and to increase the durability of the applied enamel. There are 19 decorator colors available.

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Aromatic golf ball wash

Dolco Pine Ball Wash, from C. B. Dolge Co., is an aromatic cleaning liquid for golf ball washers. The solution has a pleasant pine aroma and contains nothing to damage aluminum. It is recommended for use in rotary, paddle, and other golf ball washing equipment and is also acceptable for general cleaning.

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Pickup cover

A convertible top for pickup truck beds called Push-Over has been introduced by Chalfant Sewing Fabricators, Inc. The top protects cargo from the elements, yet easily pushes out

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Hand-held sprayers

Two lightweight, hand-held sprayers which distribute chemicals accurately have been designed by R&D Sprayers. The sprayers are corrosion resistant, available in 1- and 3-gallon sizes, and equipped with CO₂ cylinders. Other features include aluminum multi-nozzle

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Aluminum arch bridges

Easy-to-assemble aluminum arch bridges are available in lengths of from 12 to 60 feet from OME, Inc. The bridges, engineered to withstand a 10,000-pound concentrated load and a 30-pound wind load, are wide enough for golf cars (6 feet), but narrow enough to prevent larger vehicles from crossing. Both wood and aluminum decks are available.

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Steel golf shelter

Breeze Port, an easily assembled 10- by 20-foot steel shelter, is manufactured by Kwik-Bilt, Inc. It has a 16-gauge galvanized steel frame and a 26-gauge roof engineered to withstand a 22-pound roof load and 70-mile winds. Further, Breeze Port is cooler than some other shelters because heat and wind pressures are released through the open gables of the roof sheet.

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Product literature

Turf care equipment

A full-color, 16-page brochure from the Jacobsen Division of Textron Inc. describes a complete line of turf care equipment. Gang, rotary, and reel mowers are featured along with the Jacobsen collection of greens equipment, sweepers, seeders and aerators, turf tractors, specialty equipment, and an off-road utility vehicle.

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Electric golf cars

An 8-page, full-color brochure pictorially describes Nordco Marketeer's three- and four-wheel electric golf cars. Comprehensive details of all features are listed, along with a description of the integral parts designed for each car.

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Trencher/vibratory plow

A brochure from Ditch Witch, a division of Charles Machine Works, Inc. carries complete descriptions and vehicle specifications of the R100 Modularmatic Trencher/Vibratory Plow.

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Wood shelters

A 4-page brochure from the Koppers Co. describes a variety of prefabricated wood shelters suitable for golf courses and other recreational facilities. The brochure also contains building specifications and shelter diagrams.

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Aluminized steel pipes

A 6-page folder describes Armco Steel Corp.'s HEL-COR pipe fabricated from aluminized steel. The brochure contains a

number of test results including a graph describing typical corrosion losses for aluminized steel. HEL-COR pipe has been successfully used in thousands of storm sewer and culvert installations.

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Heavy equipment

A full-color, accordion-shaped product guide from International Harvester provides fingertip information about more than 60 Payline Group machines. The guide lists all models in nine different product categories including wheel loaders, excavators, tractors, and loaders/backhoes. The literature also contains machine specifications and graphic art demonstrating size relation.

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Sprayer parts

A 1979 Sprayer Parts Catalog is offered by the Broyhill Co., manufacturers of agricultural, turf, and industrial sprayers. The catalog features a wide variety of parts plus general sprayer information.

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Course marking guide

The Dayton Stencil Works Co.'s line of golf course marking products is pictured in full color in a 20-page buyer's guide. Included are Datono brand golf course signs, tee markers, flags, golf bag tags, badges, and other marking products.

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Pre-fab wood products

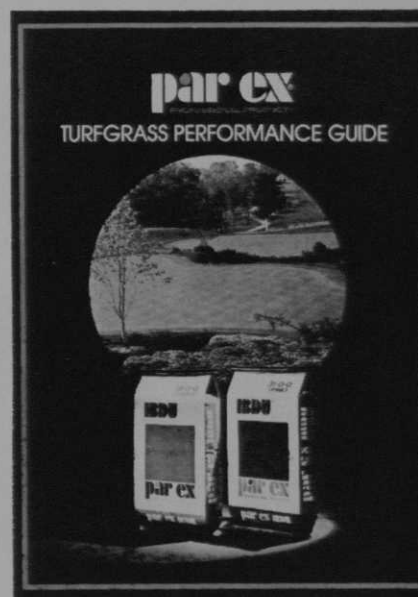
A variety of pre-fabricated wood recreational facility products are featured in a full-color, 8-page brochure from Milroy Manufacturing, Inc. Included are product descriptions and specifications of benches, golf shelters, picnic tables, pavilions, and litter receptacles.

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Transportable gang mower

A 4-page brochure from Brouwer Turf Equipment Ltd. describes the transportable P.T.O. gang mower. Included is information about maintenance costs, available options, mechanical specifications, and mower maneuverability and transportability.

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Slow release fertilizer

A 24-page booklet from Swift Agricultural Chemicals Corp. contains articles from university and private researchers plus other data regarding slow release nitrogen materials. The publication, entitled *Par Ex Professional Products Turfgrass Performance Guide*, also contains a fertilizer program planning guide and a data sheet for figuring fertilizer application and spreader calibration.

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