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Economy Athletic Field Care

- a. **Fertilize** in early fall (August 10 in Indianapolis). Use 60 pounds of nitrogen on a field or 100 pounds inside the oval track. Examples: 45-0-0 at 120-200 pounds or 16-4-8 at 300-500 pounds.
- b. **Water** as needed. Consider the use of traveling type irrigation equipment with automatic cutoff. These are available in the larger turf-types with 400 feet of cord and 1-inch plastic hose or the smaller lawn types with 100 feet of tape and 3/4 inch hose.
- c. **Mow** often at a two-inch height (as high as practical rather than as low as possible). Maintain adequate leaf surface that will tolerate increased wear and produce energy within plants. Bermudas should be cut closer.
- d. **Overseed** lightly before each home game. Spread 5 pounds of seed with broadcast seeder over the worn areas. Let the cleats push the seed into the soil.
- e. **Mulch** thin areas immediately following the last game of the season with crushed corncobs or other organic material which favors soil aggregation as it decomposes.
- f. **Fertilize** in late winter or early spring (April 1 in Indianapolis) to promote early grass growth.
- g. **Kill broadleaf weeds** and knotweed before they compete with turfgrass (before June 15). Use 2,-4-D and dicamba combined. Follow label instructions.
- h. **Prevent crabgrass**, etc. by the use of preemergent herbicides which can be applied (April) with fertilizer. Apply following the first mowing in the spring.
- i. **Mow often** but with a high cut during the summer. This favors the production of deeper roots and builds reserves of energy in the rhizome.
- j. **Spread wear** as much as possible to protect the center of field. Mark an extended 5-yard line where possible for optional practice (band and team).

Improved Care For Athletic Fields

- a. Use turfgrass fertilizer high in N, low in P, medium in K. (16-4-8, 18-5-9, 24-4-12). When using slow release nitrogen apply two to three pounds N for each 1000 sq. ft. in mid-August.
- b. Prior to August 15 irrigate (heavily) only when wilt starts to show. If in doubt, don't apply more water. After August 15, water lightly and frequently as needed to maintain optimum playing conditions.
- c. Mow at a two-inch height during summer, then one and one-half inches after the first fall home game for bluegrass and ryegrass.
- d. Overseed before each home game. Use newer, more disease resistant varieties of grasses.
- e. Fertilize mid-fall to encourage new plant growth.
- f. Mulch thin areas (immediately following the last home game) with one ton crushed corncobs or other organic material which, as it decomposes, favors soil aggregation and separation. However, additional fertilizer will be required the

following year to offset the nutrients tied up in decomposition.

- g. Fertilize lightly with a soluble nitrogen source to force growth in the early spring.
- h. Kill broadleaf weeds and knotweed as needed.
- i. Prevent crabgrass. See economy field care procedure.
- j. Mow frequently and high.
- k. Cultivate intensely once in mid-summer to loosen the soil, reduce compaction, bury crowns of the plants and aid in surface leveling (rental machines are available). Repeat treatments in one day; greensaire twice, aerify three to six times. Spread fine sand, shread the soil cores, drag, smooth and water as needed.
- l. Extend yard lines to fence for maximum practice area. Use center for pass patterns only. Minimize practice on the field. Mark off 5-yard lines in other turf areas for band practice and wet weather use.

Best Care Program for Athletic Fields

In addition to the "economy" and "improved" care programs there are other maintenance procedures that aid in producing the best turfgrass possible.

- a. Build up levels of N,P and K by the use of slow release fertilizers. Test composite 2-inch soil samples to determine needs. Use lime and gypsum only if needed.
- b. Install an automatic pop-up, padded head irrigation system (consult reliable irrigation suppliers). Consider the use of three rows of full circle, or four rows, including two part circles, for the edges of the field. Use only as needed.
- c. Mow frequently. Vertical cut and selectively thin, particularly at the edges of the field where thatch accumulates.
- d. Repair divots following each game. Overseed before each game with ten pounds of seed. Consider resodding the field to newer disease resistant grasses.
- e. Maintain a high nutrient reserve in the soil.
- f. Use clear, perforated plastic sheeting over the turfgrass area to conserve heat, hold moisture, and reduce freezing.
- g. Fertilize lightly with a soluble nitrogen source to promote early spring growth.
- h. Prevent crabgrass, etc. See economy procedure.
- i. Kill broadleaf weeds and knotweed as needed. Spray for leafspot control (four times a year) or as wet, humid weather dictates.
- j. Mow in alternate direction (football fields) every five yards to produce a contrasting pattern.
- k. Annually power slice as deep as possible; work from sideline to sideline; go up and down the slopes. Apply premixed top-dressing material or washed fine sand following the last game, then aerify and loosen the soil.
- l. To improve appearances the damaged areas of the field may be sprayed with colorants.
Note: It is reported that shorter shoe cleats, soccer types, less than one-half inch, are safer for players and do less damage to turfgrass.

covery (early summer). Cool season grasses may be vertically cut any time during the season in the outer areas of the athletic fields that receive less wear, provided there is time and conditions are favorable for recovery before heavy use or natural dormancy.

The wear tolerance of the turfgrass increases as the green vegetation increases per unit area. Moderate amounts of thatch provide protection to the turf by the cushion effect, which improves wear tolerance. Wear tolerance of turfgrass is favored by application of a moderate quantity of fertilizer rather than an excess, slow release nitrogen rather than soluble, medium moisture level rather than an excess wetness, adequate

potassium supply rather than low, open sunny area rather than shaded, and a balanced nutrient level.

Most turfgrass species have an optimum height at which they should be maintained for maximum quality turf. A turfgrass mowed at one inch (normal for species and conditions) may have several times the wear tolerance of the same grass mowed at one-half inch (stress).

Research by Beard, Anda, and others of Michigan State University, using a wear machine, has contributed information concerning species relationships.

In a specific wear tolerance test of 18 blue-

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Relative Wear Tolerance of Turfgrasses When Grown in Their Respective Regions of Adaptations:

Relative Ranking	Turfgrass Species	
	Warm Season	Cool Season
Excellent	zoysia bermuda bahia	—
Good	—	perennial ryegrass tall fescue Kentucky bluegrass red fescue
Medium	St. Augustine	—
Poor	carpetgrass centipede	creeping bentgrass colonial bentgrass <i>Poa annua</i> <i>Poa Trivildes</i>

grasses (five year old sod), the remaining verdure (green wet weight) ranged from 7.9 to 1.6 grams and the reduction in verdure varied from 18 to 66 per cent.

In areas where compaction is a problem, such as golf tees, centers of football fields, volleyball courts, etc., it is desirable to maintain sufficient crowns and stolons so that regrowth provides continuous and uniform turfgrass cover.

In heavily trafficked areas where the turfgrass is worn enough to destroy crowns of grass, resodding is generally the wise solution. Seedlings seldom survive in areas that are receiving heavy wear.

Topdressing

Many turfgrass areas for athletics are initially constructed with limited resources. As the area is used, demands or requirements for the area increase. Topdressing can be used to improve the surface. Organic materials (peat, manure, crushed cobs, fine barks, hulls or composts) can dilute tight soils and, as they decay, aid in granulation and structural improvement of the soil (when a hard surface is not required).

Apply topdressing materials to

1. protect the crowns of growing grass,
2. level the surface,
3. increase resiliency of the playing surface,
4. improve soil structure,
5. increase water holding capacity of the soil,
6. increase water infiltration and percolation rates,
7. improve the nutrient level of the soil,
8. increase cation exchange capacity of the soil.

Topdressing materials should be spread

evenly over the field or the portion of the field as needed. After the topdressing is spread, the field should be intensely cored. Depending on design, coring machines can be used over an area 2-6 times in one day. The cores should be shredded and distributed by dragging, to aid in smoothing and leveling the surface.

Extra nitrogen fertilizer may be required as the organic matter decomposes, but nitrogen will later be released as the organisms causing decay die.

Soil Warming

Heating the turfgrass from below the soil surface will extend the length of the turfgrass growing season and allow increased use of an area. The benefits include (a) enhancement of root and shoot growth, (b) reduction in frozen soil (c) protection from light frost, (d) aid in snow removal, and (e) improved winter grass color.

Soil warming research began in England and Sweden about 1960, and at Purdue University (Indiana) in 1963. Hot liquids, hot air and electric resistance cable have been used. The resistance cable is preferred since it offers greater convenience in installation and maintenance.

Heating cable providing resistance of 5 watts per foot or 16 watts per meter has been adequate when placed 6 inches (15 cm) deep and one foot (30 cm) apart in the center of an athletic field. Spacings of 18-24 inches are used in the outer portions of the field where the turf wear is less, and a normal turfgrass cover is easier to maintain.

The fields at the Air Force Academy, Colorado, and Lambeau Field at Green Bay, Wisconsin, are two of the earlier installations of soil heating in the United States. More recently heating systems have been installed at Foreman Field, Goshen Indiana; Ross Ade Stadium, Purdue University; Mile High Stadium, Denver, Colorado; Kennedy Stadium, Washington, D.C.; and University of Wisconsin at Milwaukee, Wisconsin. Three Michigan fields also have installed soil heating equipment.

Since some athletic events are scheduled in spite of weather conditions, anything that helps counteract the weather extremes and provides improved playing conditions is beneficial.

In fields that have soil warming equipment, frost action is minimized, playing surfaces remain firmer, snow melts from below and creates less wetness. Roots and crowns of cool season grasses grow when temperatures are above 40°F (5°C), so replacement or growth of plant parts is favored. Seed germination and new sod rooting is also favored.

The increased demand for sports facilities will create a greater need for soil warming. The increasing costs of energy could restrict this.

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AWARD WINNING PARK SYSTEM DEPENDS ON EFFICIENCY FOR GROWTH

The Sunshine State may be a haven for outdoor enthusiasts, but the leisure needs of Palm Beach County's 620,090 residents and 1.6 million annual visitors are met by more than Florida's tropical weather.

Over the last ten years, George Irvin Jr., horticulturist for Palm Beach County Parks and Recreation Department, has helped institute a whole host of programs designed to appeal to the area's diverse, recreation-oriented population. Along with these new programs has come a parallel concern for upgrading and improving the park areas themselves.

"Because we are one of the fastest growing counties in the United States, we have had to do a lot of planning and experimenting, both facility- and maintenance-wise," the native Floridian explains, noting that acquisition and development of publicly-owned land and facilities for recreational use have almost doubled since 1973. "Year-round usage also necessitates a strong maintenance program that keeps the parks lush, beautiful and available to the public.

"The Parks Department is so large and diverse that my responsibilities range from landscaping and resodding, to tree and hedge trimming, running the spray department and nursery management," says the Florida State University graduate. Maintenance of baseball fields, tennis courts, buildings, signs, plumbing and the like is handled by other divisions within the department, he adds.

The 48 parks and recreation areas in The Palm Beach County Park System cover more than 4,000 acres of inland and beach front property. The average park covers about 50 to 75 acres, and is designed to fit the specific needs of the local community. "Many of our parks are geared toward neighborhood activities and are



Neatly groomed area in Japanese garden is maintained year-round by use of chemicals.

comprised of ball fields, play equipment and sitting areas," observes Irvin. "Others, like 1,053-acre John Prince Park in Lake Worth, have full-scale recreational facilities that include boating, tennis, picnic areas, and jogging and bike trails."

Ten New Parks

Maintaining parks for the largest county east of the Mississippi River is a challenge George Irvin has enjoyed for more than a decade. And, it's destined to become even more of a challenge with ten new parks slated for completion within the next five years. This expansion, together with little or no increases expected in his one-million dollar maintenance budget, has made cost efficiency one of George's overriding management considerations.

With an extensive background in professional landscaping that dates back to his ownership of a landscape business, Irvin is well-aware of the importance of an effective program to control undesirable vegetation. "Most of our parks were constructed with unsterilized soil, and I'd estimate every square foot of soil contains close to 10,000 weed seeds," says Irvin.

Over the years, Irvin and his crew have tried more would-be weed remedies than they care to remember. "Hand weeding proved totally ineffective," recalls Irvin, who cites torpedograss as his main weed menace. "We'd have a man out weeding all day, and 24 hours later two weeds had taken the place of the one he removed. We needed a better solution, so we turned to chemicals."

Seeking a different approach to weed control, the County Parks and Recreation Department started experimenting with Roundup herbicide in 1976. The product was applied at the rate of four quarts/acre on several 10 x 10 foot plots in sectors of John Prince Park that were off limits to the public. "We concentrate our maintenance efforts in areas of public use, so you can imagine the kind of jungle we had growing in these restricted areas," Irvin observes.

Using two men and one spray unit with a 300-gallon fiberglass spray tank, he experimented with both spot and broadcast applications, around signs, plant beds, tennis courts, baseball fields, and just about everywhere else in the parks.

Having eliminated much of the expense of hand labor, George Irvin proudly notes that he has cut his department's labor and herbicide costs in half.

Continues on page 50

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\$500,000 Nursery

As if the parks weren't enough for Irvin and his staff of 25 full-time employees to handle, his division is also responsible for Palm Beach County's 5-acre nursery. The \$500,000 nursery, one of the largest in southern Florida, is the starting point for such semi-tropical trees as Live Oaks, Black Olives, Pines and various Palms. Also growing in the nursery are such exotic trees as Orchids, Golden Rain, Royal Poincianas, Seaside Mahoes and Roseapples.

Surrounded by natural vegetation, the nursery has long been a catalyst for the proliferation of Irvin's worst weed nemesis, torpedograss. "Every weed that goes to seed is blown into the nursery by the wind. So our weed control program is predicated on eliminating weeds growing alongside the nursery and in the roadways," he states.

This overall maintenance and weed control program has proved successful not only from a cost standpoint, but from a beautification standpoint, as well. The department was a finalist in 1978 and again in 1979 for the National Gold Medal Award, an annual honor bestowed on parks and recreation departments who have es-

tablished themselves within the community and captured the imagination of local residents with unique, well-maintained facilities.

New Park

Obviously, the beauty of the County's parks is not simply in the eye of the beholder. And recent construction of Morikami Museum west of Delray Beach further confirms that observation. The 140-acre spread, donated to the County in 1975 by George Morikami, a Japanese immigrant, is a magical wonderland of Japanese culture. But, as George Irvin points out, it hasn't always been this way.

When construction began in 1975, the first step was to eliminate all the weeds that had overrun

Palm Beach County Parks draws from efficiency to meet growing demand for recreational facilities by visitors and residents.

the park site. "Torpedograss has been growing for so many years the roots were 5-10 feet long. We controlled the weeds by broadcast applying four qts. of Roundup mixed in 20 gallons of water per acre, and set to work building."

Today, the one-time swamp is a tribute to Mr. Morikami's heritage, complete with a cultural museum and tranquil Bonsai gardens. Constructed of materials resembling the rice paper walls and tatami mats traditional to Japanese architecture, the museum gives visitors a sense of having just arrived in the Orient. The newly constructed picnic area—with shelters resembling Japanese tea houses and accompanied by such exotic plant materials as Water Lillies and Cat Tails and such trees as Bamboo, Holly, Silk Oak, Spanish Cherry, Jasmine and Japanese Black Pines—contributes to the theme, as well.

Proud of the beauty of Morikami, George allows himself the pleasure of maintaining the gardens with his crew. Somehow, he manages to find time to constantly prune the trees in strict Bonsai tradition.

"Our growth is based on an ongoing evaluation of the community's interests and needs," he states, adding that five years ago recreational and athletic programming was non-existent. "Morikami is one example of this attitude; another is the recently-constructed Heart Trail in John Prince Park." The trail is one mile long, and features 20 stations that prescribe exercises to benefit the entire body.

With the implementation of \$56 million in bond issue funding, and more than \$20 million in state and federal grants, Palm Beach County parks are rapidly becoming the most utilized and admired in the southeast.

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