problems and will require applications of herbicides from the beginning. Late summer and early fall seedings have considerably fewer problems with weeds.

Proper applications of mulch can help reduce weeds in a new seeding and can hasten turf establishment. However, a mulch can often contain weed problems such as timothy, orchardgrass and thistle. Always specify weed-free mulch.

**Maintenance**

More weed problems on athletic fields develop due to improper maintenance than any other reason. Most important are mowing practices, fertilization, irrigation, aerification and scheduling field use.

Mowing too low or infrequently leads to weed encroachment. Sports turf managers often mow fields too low in order to satisfy a coach's or player's demands. In Maryland, reducing mowing heights from two to one inch on both Kentucky bluegrass and tall fescue can result in a change from virtually no weeds to 50 percent or more weeds. Infrequent mowing also stresses turf which eventually enhances the opportunity for weed encroachment. On many athletic fields, extremely dull mowers are used causing additional stress to the turf.

Turf density is largely dependent upon proper applications of nitrogen. Unfortunately, low budgets often don't allow for sufficient amounts of nitrogen and weed problems multiply as both turf density drops and the turf recovers from injury more slowly.

Timing of nitrogen applications is nearly as important as the rate. Poorly-timed applications often enhance the weeds more than the desired turf. Optimum timing varies with location, so it is important to contact local turf specialists for timing recommendations.

Potash is also critical for athletic turf. Potassium improves wear tolerance and turf performance during periods of environmental stress. Maintaining levels of potassium according to soil test recommendations can reduce weed populations. The same is true for applications of lime and phosphorus. Early spring greenup and growth are made possible with adequate levels of phosphorus. It's important to give turf a head start in the spring over the weeds.

While many athletic fields cannot be irrigated, proper irrigation can greatly improve turfgrass vigor and density. Improper irrigation, however, can have the opposite effect. Light, frequent irrigation may actually improve weed seed germination and growth. Excessive irrigation, particularly just before a field is to be used, can cause increased compaction as well as greater damage to the turf.

Although the athletic field manager usually has little control over field use, educating those who do can be of great benefit. Restricting use of fields when they are excessively wet or under stress from heat, cold or drought can greatly reduce field damage and resulting weed problems. Communication in this regard is vital to field condition.

**Herbicide Selection and Use**

Despite the best management, the heavy use of athletic fields often leads to conditions that favor weed encroachment. Herbicides then become necessary to regain control over weeds. Five factors influence selection of herbicides. They include weed species, turf species, weather or irrigation capability, seeding or sodding plans, and aerification.

Herbicides have been designed to have specific effects on specific plants. The common herbicides for control of broadleaf weeds are 2,4-D, dicamba, MCPP, triclopyr and 2,4-0P. Often a mixture of two or three of these are used for broad spectrum control.

By knowing the specific weed problem, money can be saved. For example, if dandelions are the only problem, 2,4-D alone will provide excellent control. Knotweed can also be controlled with 2,4-D alone if it is treated when in the two- to three-leaf stage. Many broadleaf weeds, however, are not controlled by 2,4-D. Continued on page 22.
For postemergence control of crabgrass, a new material called fenoxaprop (Acclaim) offers a new approach to annual grass control. If applied according to label directions, fenoxaprop usually gives excellent postemergence annual grass control with one application and with little or no phytotoxicity to the desired turf. This represents a major advantage over the previous alternative, the methanearsonates. This new chemical should prove to be very valuable in sports turf management, allowing for greater customization of crabgrass control.

Nutsedge, often misidentified as a broadleaf or annual grass weed, can only be successfully controlled with bentazon (Basagran). Even with this material, control will be poor and phytotoxicity can occur if label directions are not followed exactly.

Each turf species has different sensitivities to the various turf herbicides. For example, perennial ryegrass and tall fescue have a greater tolerance to fenoxaprop than Kentucky bluegrass. Rate and particularly timing of application are more critical on Kentucky bluegrass and label directions must be followed carefully. Also, fenoxaprop can be used on seedling perennial ryegrass and tall fescue, but Kentucky bluegrass should be at least one year old. To prevent possible problems, tailor your herbicide selection to the species being used on each field.

A weed control program for tall fescue fields should prove to be very valuable in sports turf management, allowing for greater customization of crabgrass control.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Weeks Before Reseeding Is Possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefin</td>
<td>6-8</td>
</tr>
<tr>
<td>Benefin + trifluralin (Team)</td>
<td>6-8</td>
</tr>
<tr>
<td>DCPA (Dacthal)</td>
<td>8-10</td>
</tr>
<tr>
<td>Bensulide</td>
<td>16</td>
</tr>
</tbody>
</table>

TABLE 1

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Weeks Before Reseeding Is Possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxadiazon</td>
<td>16-20</td>
</tr>
<tr>
<td>Pendimethalin</td>
<td>16</td>
</tr>
<tr>
<td>Siduron (Tupersan)</td>
<td>0</td>
</tr>
</tbody>
</table>
NEW PGMS PRESIDENT URGES JOINT SERVICES

Jeffrey Bourne, the new president of the Professional Grounds Management Society (PGMS), believes industry associations can expand their educational and lobbying services for their members by cooperating with each other. PGMS recently held a successful conference in Milwaukee, WI, in conjunction with the Landscape Maintenance Division of the Associated Landscape Contractors of America (ALCA). “By holding a joint conference,” Bourne states, “we were able to provide a broader range of speakers, to attract more members from both groups and to make the show more valuable for the exhibitors.”

Bourne, Bureau of Parks chief, for Howard County, MD, believes such joint services do not threaten the integrity of the participating associations, but allow them to concentrate more on day-to-day membership services. “The PGMS board of directors wants the staff to devote more time to activities for the regional branches,” he explains. “By sharing the work involved to put on a big conference with another group, we give the staff more time to get closer to the members.”

PGMS has 17 branches in six regions. Bourne says offices will be set up in each region sometime this year. “The directors will work more closely with the chapters and the staff will concentrate on serving each region.”

Other new officers include First Vice President Russell Studebaker, horticulturist of Tulsa, OK, Parks Department; Second Vice President Theodore H. Shull, grounds superintendent at Kettering Medical Center in Kettering, OH; Treasurer Thomas Smith, vice president of the Cemetery of Spring Grove in Cincinnati, OH; Director-at-Large John Michalko, superintendent of grounds at Case Western Reserve University in Cleveland, OH; Southeast Regional Director Doyle Watson, grounds superintendent of grounds at Case Western Reserve University in Cleveland, OH; Southeast Regional Director Doyle Watson, landscape superintendent at Belle Meade Country Club in Nashville, TN; and Mid-Atlantic Regional Director Robb Orndorff, horticulturist with Lakeforest Associates in Gaithersburg, MD.

TEXAS TURF CLINIC TO ADDRESS SPORTS-RELATED INJURIES

Speakers at the second Southwest Turf Clinic & Trade Show will concentrate heavily on sports injuries and school liability. The two-day event, February 18-19 at the Will Rogers Memorial Complex, is aimed toward managers of football, baseball, softball and soccer fields at public schools and parks.

“Providing the Playing Surface for America’s Athletes” is the theme of the conference says Dr. Bill Knoop, turfgrass specialist for the Texas Agricultural Extension Service.

Orthopedic surgeon and sports medicine specialist Dr. Carl Highgenboten will cover the types of injuries caused by poorly maintained fields. Two attorneys will then report on liability insurance claims and lawsuits resulting from sports injuries attributed to fields.

The clinic was planned by an advisory board utilizing results of a survey of 375 persons who attended the first clinic. The cost of the two-day conference and show is $15 per person. Those interested should contact the Athletic Turf Association, P.O. Box 1114, Hurst, TX 76053. (817) 282-4965.

DU PONT FIBERS DIVISION SOLD TO INTERTECH GROUP

The Fibers Division of Du Pont, which manufactures Remay and Typar turf blankets, has been sold to InterTech Group of Nashville, TN, reports Gary Anderson, director of marketing. InterTech is a group of independent producers of non-woven materials for a variety of applications.

Anderson said Du Pont’s fiber production and marketing staff will move from Wilmington, DE, to Nashville by the middle of this year.
SUCCESS WITH SOD

One of the hardest yet smartest things a sports turf manager can do when he is unable to keep turf on a playing field is to raise a white flag and quit spending money on maintaining mud. It’s hard because it’s admitting that with all his special knowledge he can only push natural turf so far. He is no longer a miracle worker.

It’s smart because it forces management to put a price on field maintenance and a limit on field use. Items that were once considered luxuries suddenly make more sense. One of those so-called luxuries is sod.

When a field keeps going bare in certain areas because of overuse, and that level of use is expected to continue, periodic renovation and resodding are necessary. It’s an investment to keep the field in use and safe for players.

Dr. Henry Indyk, turf specialist at Rutgers University and sports field consultant, believes every sports turf manager should be very familiar with proper sod installation. “It’s one of the skills every sports turf manager should have,” says Indyk, “even if the areas being resodded are small.”

Adequate drainage, irrigation, soil texture, fertilization and soil preparation are as important for sodding as they are for seeding. The whole idea is to get the sod’s roots to grow into the soil as fast and as deeply as possible. The field can then be put back into play and the turf will recover rapidly from heavy use.

“Correcting drainage and irrigation problems may cost more than the sod,” says Indyk, “but it is the only way to gain control over maintenance costs later.” Once the turf manager has control of maintenance, field use levels and weather are the only remaining variables.

Once drainage and irrigation are corrected, attention needs to be focused on the soil. Soil samples should be sent to a lab for testing to determine if they contain all major and minor nutrients, have a texture which permits water to percolate through them fairly rapidly, and are compatible with the soil the sod was grown in.

Compatibility—“Sod grown on heavy-textured soil will not perform well on a field that is mostly sand,” he points out. “A few sod growers have begun to grow sod on sandy soils just for installation on sand-based fields. The only other way to improve compatibility of heavy-textured sod on sand fields is to wash the sod prior to installation.”

Selecting a sod grower should be based upon the quality of sod and the compatibility of the sod compared to the field soil. Sod producers in some parts of the country will custom-grow sod to meet a sports turf manager’s needs. In such instances, the specifications for the sod must be clear during bidding since the price of the custom sod will be higher than standard sod.

Indyk encourages sports turf managers to incorporate sand into the soil of important playing fields. The sand portion should be at least 80 percent of the volume of the soil. Furthermore, sands vary greatly in size and shape. Dr. James Beard at Texas A&M University recommends sand with particles ranging from 0.25 to 1.2 mm in size for soil modification. The cost of such sand can be significant for an entire field.

Preparation—The same preparation for seeding is necessary for sodding. Even if the turf on a field is extremely thin, do not install sod over it. The soil needs to be cultivated to a depth of three inches and smooth-graded to the slope specified in the field design. If topsoil is going to be added to the field, the subgrade should first be loosened by disk ing or scarifying to a depth of at least two inches to permit bonding of the topsoil to the subsoil.

The soil test will show the pH (acidity/alkalinity). The proper range for soil pH is 6.0 to 7.0. In case of a problem, corrective materials should be mixed into the top four inches of soil.

Lime should be worked into the soil to correct highly acid soils (those with pH below 5.5). The American Sod Producers Association (ASPA) suggests that at least 50 percent of the lime be either magnesium oxide or calcium oxide. No more than 25 pounds of oxide forms of lime should be applied to 1,000 square feet per application.

Moderately alkaline soils (pH between 7.5 and 8.4) can be corrected with elemental sulfur applied at a rate of no more than five pounds per 1,000 square feet. Use of ammonium sulfate and iron sulfate fertilizers during maintenance can also modify alkaline soils. Use of these fertilizers should be avoided on acid soils.

Apply a starter fertilizer in addition to any nutrients that were deficient as indicated by the soil test. Pay special attention to potassium, phosphorus, iron, magnesium and calcium levels. Incorporate the fertilizer into the topsoil. The sod will contain sufficient nutrients to grow up to six weeks
was to find methods to speed up sod growth. Certain turf fungicides and seaweed extracts contain hormones called cytokinins, or chemicals closely resembling cytokinins. These materials stimulate cell division of plants. Bayleton by Mobay and Banner by Ciba Geigy are fungicides which increase root growth when applied to turf at a rate of one ounce per 1,000 square feet. These materials are not labelled for use as root stimulators, but are registered for application on turf for disease control. As long as the purpose of the application includes controlling disease, it is legal.

Root stimulation was also found after applications of the wetting agent Aqua-Gro by Aquatrols Corp., chelated iron, iron sulphate and seaweed extract. The greatest results were produced by combining one of the fungicides with one pound of iron per acre and 1/10 pound of urea per 1,000 square feet.

The original intent of Schmidt's research was to find methods to speed up sod growth so it can be harvested earlier. Post-installation rooting is a side benefit he discovered. Like anything else, the cost of the applications, estimated at $90-100 per acre, will be passed down to the buyer. The research is new and many sod producers may not be aware of it. Sod root growth and knitting are dependent on soil temperatures. A few field managers and golf course superintendents have accelerated the rooting of sod by raising soil temperatures with covers. By creating a greenhouse effect, soil temperature and moisture content are improved to help the sod knit faster.

Indyk reminds turf managers that thicker sod actually takes longer to root than thinner sod. Heavier, thick sod may provide better footing initially but the additional time it takes to root may be a problem for fields requiring well-established turf in four to six weeks. A heavy topdressing with sand is used by some field managers to help weight down fresh sod in emergency situations.

Installation — Protecting sod from shock during transportation, planting and after installation is very important. The period of time between harvesting and planting should be as short as possible. Some sod growers are treating sod with wetting agents to prevent shock from moisture loss during transportation.

The soil surface should be lightly moistened before sod is installed. Sod should be laid in sections with each section taking no longer than 30 minutes to install. Each section should be watered as soon as it is completed. Daily or more frequent irrigation may be required for the first two weeks to keep the sod beneath the sod moist.

Assuming a field is important enough to sod, it is also correct to assume it is important enough for a permanent underground irrigation system. The ultimate goal is to provide a uniform application of water to be stored by the soil beneath the sod. As the sod roots, irrigation frequency should be reduced to encourage the roots to search below the surface for their moisture needs. Too frequent irrigation discourages deep root growth and can cause conditions on the surface favorable to diseases. Wet surface soil also compacts much more quickly than drier soil.

Some people might think spending money on sod is foolish when a field is expected to be demolish by use during the season. On the other hand, sod is reliable and provides an excellent athletic surface. Resodding should not be an embarrassment to the sports turf manager if it is necessary under existing use conditions. It simply is what has to be done under those conditions for a field which is too valuable to keep out of play.
From Bucket Loader to Versatile Fork Lift in less Than 5 Minutes!

C.C. Bucket Forks can change a bucket-loader into a multi-purpose lifting vehicle. No drilling, welding or bolting. Easy-on, easy-off installation in less than 5 minutes.

Made in the U.S.A.
U.S. Patent No. 4,242,035
Canadian Patent Pending

A NEW CONCEPT IN MATERIAL HANDLING!

CHECK THESE SPECIAL FEATURES!

- Easy storage — tines are separate and flat
- Transports easily — no awkward angles
- Easy to handle — each fork weighs only 50 pounds
- Universal — fits most popular brands of loader buckets
- Easy-on, easy-off installation — in less than 5 minutes!
- Ideal for farm use or at construction sites
- Handles most materials — load capacity is 3,000 pounds
- Full money back guarantee!

$399.00
(delivered anywhere in U.S.)
CA Res. Add 6% Sales Tax
Send your check or money order to:
C.C. Bucket Forks, Inc.
P.O. Box 3796, Orange, CA 92665

FORD INCREASES SUPPORT OF PELE SOCCER PROGRAM

Ford Motor Company and international soccer star Pele’ are expanding a young adult soccer program first developed for Los Angeles County, CA, to Atlanta, GA, and perhaps other cities next year.

In 1984 the automobile manufacturer arranged with the Los Angeles County Parks Department for Pele’ to dedicate a two-field soccer center and tournament in Whittier Narrows Regional Park in South El Monte, CA. Pele’ cut the ribbon opening the soccer center and blew the whistle to start the first game of a tournament which included 16 teams from eight different area soccer leagues. He also presented ten $1,000 college scholarships to players that year.

The use of the Pele’ Soccer Center has snowballed ever since. More than 30 different leagues were represented at the last tournament and more are expected for the tournament this April. Players in these leagues range from 18-year-olds to adults over 30. “Now we have teams competing from outside the county,” says Bob Larsen, program coordinator for Ford’s agency, Marketing and Financial Management Enterprises of Encino, CA.

With Ford’s support LA County Parks have been able to build a pavilion to serve as a location for announcements and award presentations. Dressing rooms, showers, concessions and bleachers are on the drawing board for the park.

“All Ford’s money goes toward scholarships and improvements to the park,” says Bill Delegarza, assistant director of LA County Parks Department’s Eastern Region. The actual cost of maintenance to the park has increased, but the publicity and the increased use of the fields is worth it, says Delegarza.

The Pele’ Soccer Center is closed down twice a year for renovation of the fields. “With the current level of use there is just no way to keep turf in the goal mouth areas without shutting down,” says Delegarza. He hopes to improve six other general purpose fields in the park for soccer.

A similar facility is being constructed by the Fulton County, GA, Parks System this year. “We are currently exploring soccer parks in New York City, Chicago, San Antonio, Miami and Dallas,” says Larsen.

SUPERINTENDENTS TEAM UP WITH PROS AND MANAGERS FOR DEERE TOURNAMENT

A unique national golf championship teaming up superintendents with golf professionals and club managers across the country has been announced by Gary Gottschalk, manager of golf and turf at John Deere. The turf equipment manufacturer is sponsoring 41 qualifying tournaments this summer leading to a two-day, 36-hole national championship in November.

To pull the event off, Deere is cooperating with the Professional Golf Association (PGA) and the Golf Course Superintendents Association of America (GCSAA). “This program provides an opportunity for the club professional and club superintendent to play together on a team with other club officials," says Gottschalk. Each team will consist of a club’s PGA professional, superintendent, club president and club manager. These teams, says GCSAA President Riley Stottern, are the same ones responsible for keeping the nation’s golf courses enjoyable.

The regional tournaments begin in June and conclude in August. Deere has not yet announced the location of the championship in November.
SOIL WETTING AGENT

The #1 Solution
To Your
Water Management
Problems...

AQUA-GRO® soil wetting agents have become the best selling wetting agents for turf and landscape simply because they work. For more than 30 years AQUA-GRO has helped you solve the toughest water related problems—compaction, localized dry-spots, puddling, thatch and disease—while saving you labor, money and water.

• Saves labor by alleviating localized dry spots and compaction and reducing the need for aerifying, syringing and rebuilding.
• Saves money by increasing fertilizer and pesticide effectiveness because chemicals are distributed uniformly in the root zone.
• Saves water costs by 30-50% because more water uniformly penetrates the root zone...so plants get more and you waste less.

A patented blend of non-ionic organic wetting agents, AQUA-GRO is the only 100% active blend of wetting agents available. We don't believe you should pay for water. AQUA-GRO works by reducing water's natural tensions, ensuring more uniform penetration and drainage through all types of soils and thatch. AQUA-GRO lasts because it won't leach.

AQUA-GRO is available in liquid concentrate and spreadable granular formulations from your local distributor.

AQUATROLS CORP.
OF AMERICA, INC.
1432 Union Avenue, Pennsauken, NJ 08110
The Water Management People

For a free, illustrated brochure call:
1-800-257-7797 In NJ (609) 665-1130
A New Name on the Leader Board... from an "Old Pro"

Tough. Durable. Built to take a pounding from inside or out. The Swing Safe Triple Swing Joint withstands the hammer of quick-closing valves or the instant impact of an errant mower... without leaking.

Installation is quick and easy, too. The Swing Safe Triple Swing Joint eliminates the problem of over torquing or bottoming out. And O-rings at each joint guarantee no leaks after the job is completed.

Manufactured in five sizes (½", ¾", 1", 1¼" and 1½"), the Swing Safe Triple Swing Joint is available either as components or, for no additional cost, pre-assembled. The 1", 1¼" and 1½" models offer the extra strength of Schedule 80 PVC. All models are available in either slip or threaded design.

For additional information, contact
AMS Plastics
1515 Fayette, El Cajon, CA 92020 619/449-8570

Circle 114 on Reader Service Card
When George Toma (known affectionately as the Sod God) takes on a project like Super Bowl XIX, he takes along his OWN Parker Estate Master sweepers. Why?

"Because," says George, "the Estate Master is the only sweeper that gives me what I need." He counts the reasons off on his fingers:

"First, there's its general quality and toughness—I know I can depend on the Estate Master when I need it. Second, there's its versatility. I use it to pick up grass clippings, to dress the field between mowings, to shade the field right before a game, and to pick up debris at halftime."

"And third," says George, "there's what I call the 'speed factor.' The Estate Master is the only sweeper that lets you clean a swath over 8 feet with every pass."

Which is how George Toma and his "Sod Squad" raced through halftime cleanup at Super Bowl XIX. Using only a pair of Estate Masters, they made a clean sweep in 3 minutes.

You can put the same speed, versatility, and reliability to work on your own field. Just see your Parker dealer and ask him about the Parker Estate Master. In fact, ask him about Parker's full line of sweepers and vacuums. Tell him George Toma sent you.