

"PAINT MULE"

Randy Dvorak, manager of the Cedar Rapids (IA) Tuma Soccer Complex, says, "I used to spend on the average 35 hours using our old walk-behind sprayer to line our 30-field complex. Using the RS-500 'Paint Mule' I'm able to line the same fields in 12 hours. We're very pleased with its efficiency and performance."

Randy is now spraying lines at more than 250 ft. per minute, says manufacturer TruMark. The RS-500's spray shoe allows a high ground speed while laying down a straight line. The 20-ft. hose & wand facilitates stenciling, hash marks, and other applications.

TruMark/800-553-6275
For information, circle 163



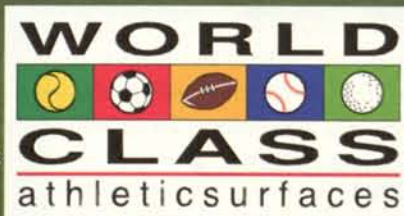
RESOURCE CENTER

World Class Athletic Surfaces has built its reputation as the reliable manufacturer of premium quality bulk and aerosol paints and custom stencils. Made of 100% acrylic, World Class super concentrate paints are guaranteed to be brighter, last longer and are kinder to turf. After all, the last thing a groundskeeper needs is field paint that kills or damages the playing surface.

For athletic programs that cannot find specific colors, World Class can create custom colors. The company supplies custom color paints and coatings for field marking, traffic, goal posts, non-slip floors and artificial turf surfaces.

The company also provides the means to apply its premium paints. In addition to standard kits for field marking, the production department can supply high quality, affordable custom-made field stencils.

World Class Athletic Surfaces/800-748-9649
For information, circle 173



BRIGHT WHITE

Pioneer's BRITE STRIPE athletic field marking paint produces lines up to 400 percent brighter than standard paints under UV lights for night games, thanks to its exclusive formulation of Halogen 2000 and OPTIWITE optical brighteners. The extra bright look not only ensures compliments but results in more accurate spotting of field positions for all, says Pioneer.

BRITE STRIPE can be applied with any bulk paint striper and dries ready to play in less than 1 hour. Custom color blending is available in addition to 16 standard colors, to make team logos pop off the field.

Pioneer Manufacturing/800-877-1500
For information, circle 167



ONE-STEP IRRIGATION CEMENT

"Pro-Green" One Step irrigation cement is a fast set, low V.O.C., medium bodied solvent weld cement specifically formulated for the irrigation and sprinkler maintenance. Pro-Green works on wet or dry pipe and requires no primer before assembly of pipe and fittings. Because of its bonding strength, the product is excellent for "pulling" PVC pipe and allowing for immediate pressure testing of the system. "Pro-Green" is recommended for all classes of

PVC pressure pipe and fittings through 3 in. and PVC non-pressure solvent weld pipe and fittings through 6 in.

Whitlam Paint Co./800-321-8358
For information, circle 159

Managing Bermudagrass Turf

Selection, Construction, Cultural Practices, and Pest Management Strategies



L.B. McCarty and Grady Miller



PAINT STAYS SUSPENDED FOR 14 DAYS

The Fastliner Super Concentrate Paint, with its 5 to 1 dilution, can stay in suspension for up to 14 days. This means you can leave it in the application tank until you need to use it again; and when you do, simply agitate and resume painting.

Sold in 4 gal. containers for clean, easy handling, Fastliner can be combined with color additives to create yellow, red, blue, and green lines. It resists rain while ensuring brilliant white lines, even on poor surfaces.

Broyhill/800-228-1003 ext. 34

For information, circle 161

MANAGING BERMUDAGRASS BOOK

Co-authored by SPORTSTURF magazine's "Q&A" columnist Dr. Grady Miller, *Managing Bermudagrass Turf: Selection, Construction, Cultural Practices, and Pest Management Strategies* is now available from Ann Arbor Press. This complete reference guide provides a broad introduction to types and characteristics of bermudagrasses, gives fundamental guidelines for green construction and growing-in processes, shows step-by-step cultural practices, and covers critical techniques for controlling weeds, insects, diseases, and nematodes.

Ann Arbor Press/800-487-2323

For information, circle 175



Offering you
3 Levels of Great
ZAP
Field Marking Paint!



Easy clean-up

Lasting opacity

Safe, non-toxic

Bright distinct color

Cost effective

Ship anywhere!!
Free freight with
orders of 20 (5 gallon)
buckets or more.

ZAP-1
(good)

ZAP PRO
(better)

ZAP Super White
(best)

Purchase
10 (5 gallon) buckets
of white and get
4 (5 gallon) buckets
FREE!

• Ask about our NEW colors: bright red & yellow •

Zeke's Athletic Paint • 3629 S. Noland Rd. • Independence, MO 64055 • TOLL FREE 888/430-4076 • FAX 816/254-8647

Circle 108 on card or www.OneRS.net/205sp-108

The Turf of Champions



From the Super Bowl to Texas A & M



Lone Star Conference
www.lonestarconference.org

SOUTH DIVISION – Football

Texas A&M-Commerce
Tarleton State
Texas A&M-Kingsville
Abilene Christian
Angelo State
West Texas A&M
Eastern New Mexico

NORTH DIVISION – Football

Midwestern State
Southwestern Oklahoma State
Central Oklahoma
East Central
Southeastern Oklahoma State
Northeastern State

Cebeco International Seeds has been the foremost supplier of quality sports turf for decades. With 30,000 sports facilities crisscrossing North America we are proud to have cut our teeth on America's gridiron. Cebeco provides state of the art varieties and safe natural playing surfaces. Just ask "Big John" Weatherford of Texas A&M Commerce in Commerce, Texas.



"In 2001-2002 we overseeded Memorial Stadium with the new and improved Axcella ryegrass from Cebeco International Seeds. Our administration, athletic director, fans and ball players couldn't be happier. It looks good, feels great and plays well."

"Big John" Weatherford
Outdoor Sports Facilities Manager



Developed by and licensed from
The Texas A&M University System

For product information or local retailers please contact
Estes, Inc., John Cabori, 800-234-9790.

Outside of Texas or Oklahoma contact:

CEBECO
INTERNATIONAL SEEDS

Post Office Box 229 • Halsey, Oregon 97348

Telephone: (541) 369-2251 • Toll Free: 1-800-445-2251

FAX (541) 369-2640 • www.intlseed.com



ATHLETIC FIELD MARKING PAINT

Game Day 8050 Super White Athletic Field Marking Paint is a new product by Suntec Paint that is specifically developed with the needs of the sports turf professional in mind. Game Day 8050 is highly pigmented with concentrated amounts of titanium dioxide and optical brighteners to give an extremely brilliant white finish. The

pigment loading contains no calcium carbonate, eliminating a limestone buildup on the field and drastically reducing settling after mixing.

Game Day 8050 also contains more latex resin, which gives added durability for a longer lasting job. This environmentally friendly product contains no harmful ingredients, allowing grass to grow back vibrantly and healthy. Its highly concentrated formula allows the user to dilute two to three parts water to one part paint to achieve the desired level of brightness. It stays in suspension longer after mixing, with no hard settling. It is easy to mix and clean up is with soap and water.

Suntec Paint/800-333-1104

For information, circle 171



EASY STRIPING

PVIP aerosol athletic field marking paint from Pioneer has unique 24-oz. cans that are a value because they save money by holding 22% more paint than ordinary cans, which means fewer changes are needed to stripe a field. PVIP contains Halogen 2000 and Optiwite optical brighteners for lines that are brighter and whiter under natural light or stadium floodlights.

The product comes ready to use and won't wash away in rain or harm turf. Arctic White, Yellow-Gold, Red, Blue, Black and Fluorescent Orange colors are available.

Pioneer Manufacturing/800-877-1500

For information, circle 165

*Beam Clay proudly announces
the 2001-2002 winners of the
16th Annual*

BEAM CLAY® BASEBALL DIAMOND of the YEAR AWARDS

PROFESSIONAL
KEYSPAN PARK
Brooklyn (NY) Cyclones

COLLEGE
SCORPION FIELD
University of Texas at Brownsville

SCHOOL, MUNICIPAL, OR PARK
LINDSTROM FIELD
City of Cambridge, Massachusetts

The BEAM CLAY® Baseball Diamond of the Year Awards are sponsored by BEAM CLAY® and Baseball America® to honor excellence and professionalism in maintaining outstanding, safe, professional quality baseball diamonds. Winners are selected by a special awards committee of major league head groundskeepers.

We wish to thank this year's judges: Al Capitos (Baltimore Orioles), Brandon Koehnke (Cleveland Indians), Luke Yoder (Pittsburgh Pirates), and Eric Hansen (Los Angeles Dodgers).

For more information, call:

800/247-BEAM
908/637-4191



Baseball
america®

Circle 110 on card or www.OneRS.net/205sp-110



OPTIMUM ROOTZONE TEMPERATURE

TrueLeaf Technologies has improved its TurfTemp system, which is designed to create the optimum root-zone temperature by circulating water through high performance tubing. Turf managers can monitor and control healthy growth patterns for turf by the touch of their fingertips.

The system design is guided by regional seasons and surrounding turf conditions. During colder months where shade or frost can keep soil temperatures too low, the Heat Module increases the system's water temperature and conversely, during the warmer months, circulates colder water to keep the turf at the desired temperature.

TrueLeaf Technologies/800-438-4328

For information, circle 170



Let us help your business ride off into the green.

Happy trails are in store for you when you go with ProSource One. No one else rounds up products and services as focused on growing your success as we do. Saddle up with us and we'll take your business to the kind of green everyone envies.

Welcome to a Greener World

www.prosourceone.com

Circle 111 on card or www.OneRS.net/205st-111





WHEN IT HAS TO BE PERFECT

For grounds maintenance professionals, Becker Underwood's Green Lawngr turf paint provides an effective, environmentally friendly, proven alternative to the problem of discoloration of worn, overplayed, or otherwise stressed turf.

Green Lawngr isn't a dye; rather, it is a permanent green pigment, containing no hazardous chemicals, heavy metals, or any other inert ingredients harmful to turf. Formulated for a rich, natural green color, Green Lawngr keeps turf looking fresh and resists wear brilliantly for 10-14 weeks, or until mowing removes the treated surfaces. It can be applied with a variety of different types of sprayers and is available as a liquid concentrate. Depending on the particular ratio of Green Lawngr to water, the intensity of color will vary, so color depth and coverage is always within the applicator's control.

Grounds maintenance professionals in the athletic community also appreciate Green Lawngr's versatility and ease of application. Whether blending in worn areas of stadium turf, brightening stressed or overplayed fields, or keeping dormant grass vivid all season, Green Lawngr is part of many sports turf maintenance regimens, and is key in preparing surfaces for major events.

Becker-Underwood/800-232-5907
For information, circle 164



SAVE MARBLE DUST REFILLING TIME

The Starliner line marking system by Broyhill uses a large poly hopper to save marble dust refilling time. The system also features a snap-on wind skirt and slanted handlebar design that allows a full stride operation. These characteristics help make this one of the ultimate machines for dry marking base lines and infield surfaces.

With its stainless steel frame, 4-wheel construction and accurate swing-down sighter guide, the Starliner system allows for more even lines and no gate operation. Also fitted with a brush auger and ground driven internal hopper brush, the product feeds evenly every time.

Broyhill/800-228-1003 ext. 34
For information, circle 162



LINE MARKER

The Bannerman Wet Line marker is a simple, practical tool for line marking on grass surfaces using low-cost latex paint. The machine is sturdy and well-balanced, with tires at the base of the handle that create a comfortable fulcrum for raising the marking belt off the ground for easy turning. Positive alignment for easy turning on straight lines or curves. Use a stake and tether line to produce perfect circles.

Bannerman/800-665-2696
For information, circle 152

NEXT GENERATION CREEPING BENTGRASS

After amassing a large collection of creeping bentgrass plants, and years of selection for improvements, Lebanon Turf Products has introduced Independence Creeping bentgrass, a completely new, cutting edge bentgrass. Independence was bred for improved turf quality and overall disease resistance, and specifically to exhibit improved resistance to dollar spot, the most costly disease in bentgrass management.

Independence has also been developed with the optimum density, superior traffic tolerance, improved mowing qualities, and brightness of color. Independence is an upright, aggressive variety that establishes rapidly and recovers quickly from ball marks and divots. Its mowing height flexibility allows for its use on fairways, tees, and greens.

Independence Creeping Bentgrass will be available September 1 exclusively from select Lebanon Turf Products distributors.
Lebanon Turf Products/800-233-0628
For information, circle 150



INDEPENDENCE

CREEPING BENTGRASS



FIELD DRAG WORKHORSE

Beacon Premium Nail Drags combine welded steel construction (powder-coated) with plastic lumber nail supports and 5 1/2 in. x 1/4 in. spikes to create the great performing and durable daily grooming machines that can be shipped via UPS. Add the wheel/tow-tongue package and make drag handling and transport a snap.

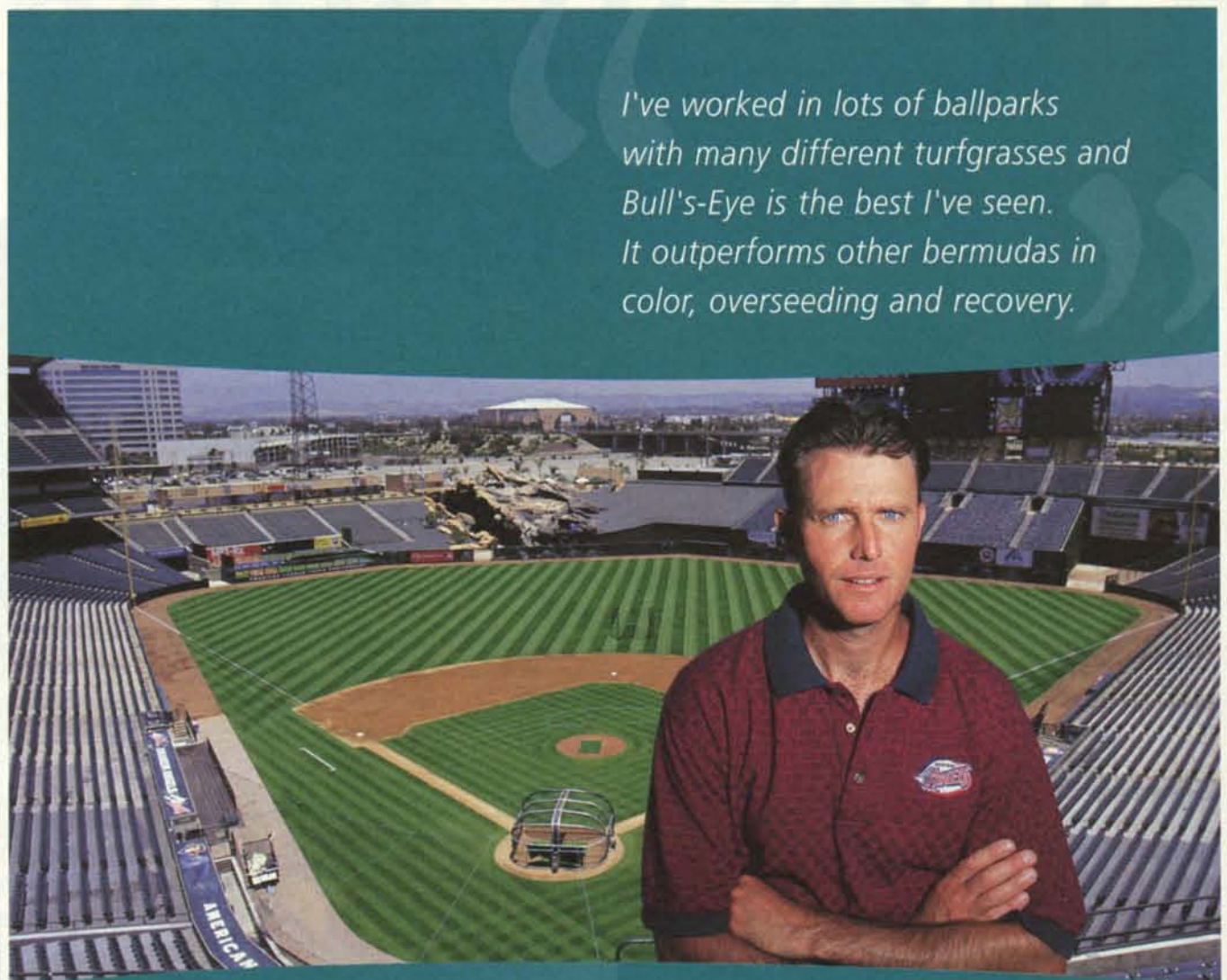
Beacon Ballfields/800-747-5985
For information, circle 172



MARKING FLAGS

Both custom printed and plain marking flags are available from Blackburn in weather-resistant, 4-mil. plastic. Choose from traditional style, bent staff banner flags and rigid markers. Sizes include 2 1/2 x 3 1/2 in., 4 x 5 in., 5 x 6 in., and 5 x 8 in. Staff lengths range from 15 to 36 in. wire, plastic, or fiberglass. The 14 colors available include all standard APWA colors for marking underground utility lines and four fluorescent colors. No screen charge for industry messages already in stock.

Blackburn Manufacturing/
800-942-5816
For information, circle 168



I've worked in lots of ballparks with many different turfgrasses and Bull's-Eye is the best I've seen. It outperforms other bermudas in color, overseeding and recovery.

Let's Talk Turf.

Bull's-Eye sets a new standard for bermudas with improved performance in every category. It's tougher, has improved shade tolerance and returns from overseeding with a vengeance. And the color? Other bermudas pale in comparison. Ideal for sports fields of any kind—just ask the pros.



—Barney Lopas
Field Manager
Edison International Field,
home of the Anaheim Angels
Anaheim, CA.

**WEST COAST
TURF**

Life is short. Sod it!

For details call 800/447-1840, or visit www.westcoastturf.com

Creating safe, playable infield surfaces

BY RENE ASPRION

Groundskeeping is an art and groundskeepers around the world take different approaches to building and maintaining baseball or softball infields. However, the overall goal should be the same: To create a safe, playable surface day and night, rain or shine.

There are two basic ways to topdress infields, also known as the skinned area, the playing surface or the dirt portion, including the pitching mound, baselines and homeplate. The first method is to simply topdress the playing surface with a quality infield conditioner by creating a thin top layer that acts as a blanket over the dirt. The second is to work an infield conditioner into the skinned area, followed by a topdressing application. This procedure is usually recommended for poorly graded or slow-draining infields and hard, over-compacted playing surfaces. The work requires more time and is typically performed during the off-season.

To properly topdress an infield using either of these methods, refer to the following application instructions and remember that these techniques may not fit every situation. It's best to work with an experienced, professional groundskeeper for the best application techniques for your particular field(s).

First steps in topdressing

The first step in planning any infield work is to know your infield(s). A regulation baseball (Major/Minor League, Collegiate, High School) infield, with an infield arc of 95 feet will have approximately 11,500 square feet of skinned area, which includes the baselines, mound, and homeplate. A regulation softball (Professional, Collegiate, High School) field with a 60-foot arc will have approximately 8,300 square feet of skinned area. Once you know how much surface you're working, follow these basic instructions:

1. **Do preliminary work on the infield.** Lightly water the skinned area and allow some drying time so the water will soak into the dirt. Next, nail drag the infield arc (no deeper than 1/2 inch) to provide some pre-leveling and give the skinned surface a good blend when the infield conditioner is added.
2. **Apply a thin layer of infield conditioner.** Use approximately 1/4 inch to 1/2 inch of conditioner and place on all infield dirt areas, including baselines, mound, and home plate. How you apply the material is determined by how you purchased it (either bags or bulk—bulk is usually cheaper and saves money over time), as well as the equipment and manpower available. The most common application methods include: a topdressing machine, a front-end loader, wheelbarrows, and by hand from bags.
3. **Level the conditioner.** Use a flat board (a nail drag turned over on its flat side), a screen drag with a leveling bar, or with good old-fashioned rakes.
4. **Finish drag the infield.** Use a screen or mat drag, and then lightly water again. The infield should now be ready for safe play.

Pre-Season infield renovation

For poorly-graded or slow-draining infields and hard, over-compacted playing surfaces, use the following application techniques to renovate your infield(s) before a season begins:

1. **Prepare the field.** Lightly water the skinned area and allow the water to soak into the dirt.
2. **Till infield conditioner into the infield arc.** Some groundskeepers will nail drag or roto-till the infield before placing the conditioner to re-mix or re-level the infield mix (the dirt portion of the infield that is made up of a combination of sand, silt, and clay). Be advised that tilling the infield too deep, or overworking it with a nail drag, makes it more difficult to apply the conditioner because the



Top-dressing infields can be done fairly quickly and easy with bulk infield conditioners, saving time and money.

skinned area will be too loose. (Note: An overworked infield, or one that is tilled too deep, will take more time and effort to make level and compact.)

3. **Apply 1/4 inch to 1 inch of infield conditioner.** Cover all skinned areas as evenly as possible, using the topdressing procedure described earlier. The depth of conditioner will depend on how deep you roto-till or nail drag the infield. For example, if the manufacturer's instructions recommend an application of 1/4 inch of conditioner per 1 inch of tilled infield dirt, and you roto-till 2 inches deep, apply 1/2 inch of conditioner.
4. **Roto-till or nail drag the infield.** This helps incorporate the conditioner with the existing infield mix.
5. **Level the conditioner.** Use a box blade, a flat board (a nail drag turned over on its flat side), or good leveling rakes. After leveling, your field should have a fairly loose surface that needs to be compacted and leveled again.
6. **Compact and level the infield to your players' preferences.** This can be achieved using a small roller or a compacting/leveling machine. Some coaches and players prefer a fast, firm surface, while others prefer a slower, looser playing surface. Ideally, your players should be able to play on the infield without slipping or cutting, thus creating ruts, or sliding and creating deep holes. The real test, of course, is when a ball is thrown or hit. The infield should provide a true and even hop or roll. Bad hops are everybody's nightmare.
7. **Apply a topdressing application.** Follow the steps outlined for the topdressing procedure.

In summary, use good, clean, quality materials for both your infield mix and infield conditioner. Don't be afraid to experiment and make mistakes, and ask questions along the way. Remember groundskeeping is an art, not a science. Play ball on a safe infield!

ST

Rene Asprion is sales and marketing coordinator for Diamond Pro Professional Groundskeeping Products, a division of TXI-ESC, and is past president of the North Texas Sports Turf Managers Association. For more information about Diamond Pro, call 800-228-2987.

Tips for maintaining skinned infields

About 90 percent of the game is played on the infield dirt. With 7 of the 10 players (including the batter, but not the 3 potential base runners) occupying the skinned area, it takes a pounding and can develop problems without regular maintenance.

After every game or practice:

1. Remove the bases to avoid creating any low or high areas.
2. Screen drag the infield level, keeping at least 1 foot from the edge of the grass to avoid build-up or "lips" on the edge.
3. Retaining moisture and regular watering are key to healthy infields. During dry spells, water the skinned area to allow it to retain some moisture, thus improving the workability and playability. Always keep the dirt underneath your top layer moist and do not allow it to dry out, crack and become too hard.
4. If your infield is too firm, use water and/or a nail drag to loosen up the playing surface. Nail dragging should be done at least once a week, sometimes more, depending on the weather and condition of your infield.
5. Apply infield mix and infield conditioner as soon as needed. Avoid letting problem spots grow larger and possibly becoming a safety issue.

Pitcher's mound, homeplate, & baselines

1. Top-dress these areas with 1/4 inch of infield conditioner.
2. Use a good mound clay to fill any holes in the pitching/batter's boxes, as needed.
3. *Do not* till unless you are adding clay and building up the area. These areas should be firm with a natural slope, allowing excess rainwater to run off.
4. Water these areas after games and practices to keep them moist.
5. Use tarps on your pitcher's mound, homeplate and even bullpens, whenever not in use. This will keep the moisture in the clay to allow for better play, wear and tear.

Excess rain

Infield conditioners eliminate much of the maintenance that would be required on the infield, so be sure the conditioners are



in place *before* the rain comes. After a heavy or long rain, it is important to:

1. Stay off the infield. Let the conditioner and Mother Nature do the work for you. More damage is usually done to an infield by walking/working on it too soon after a rain.
2. Take a good look at your infield to see whether you have high and low areas that need to be leveled. Depending on the area and the depth of a problem spot, a deeper, larger area usually requires adding infield mix, or if the area is not too deep (less than 1/4 inch), simply add some more conditioner.
3. In good weather conditions, if the sun is out and/or the wind is blowing and it's before a game or practice, let the field dry naturally for as long as possible. When the field is dry enough to work on it without causing damage (such as, rutting or clay balls forming when using a nail drag), nail drag the infield to allow the air to permeate into the dirt.
4. In poor weather conditions, do not nail drag, if there is still a chance of rain, you will make matters worse. If you cannot nail drag, but can walk on the infield, lightly rake open the surface.
5. Let it dry naturally. Allow the infield to sit as long as possible before a game or practice.
6. Add infield conditioner. Give yourself just enough time before the game or practice to topdress the field or, if needed, add drying agents (specialized products for faster drying, compared to normal infield conditioners).
7. Finish drag (screen or mat) the infield. Play ball!—Rene Asprien

What's Wrong with this picture?

BY DR. JEFF KRANS

The turf on the football field in the photo on this page has excellent density, outstanding color, great uniformity, and no sign of any disease or insect problems. So, what's wrong?

The answer can be found in the picture, but not easily recognized without another piece of information—the game schedule. This turf has peaked 2 months before the first sporting event. Now you may not see this as a problem. After all, we all know that a manager is better off to have the turf ready early than late. Early turf beats late in most situations, but does early beat “on time” or “peak” turf performance?

Peak performance refers to turf growth and quality that maximizes (peaks) immediately before or at the start of play. The management strategy of peaking turf is not new to golf course superintendents, who will adjust cultural practices, nutrition, and water to peak turf just before a tournament, then readjust for everyday golf. The superintendent's adjustments in management are designed to match turf quality with player expectations over a season.

In sports turf, the common management strategy appears to be one of peaking the turf early, then holding quality. Both approaches have been successful and there is no doubt that golf and sport turfs are very different and may not even be comparable. The pressure on the sports turf manager to maintain quality turf at all times is intense and trying. The early peak, then hold strategy is a compelling choice given the high expectations of players, fans, coaches, and administrators for high quality turf no matter what the circumstance or season.

So, what is the best management strategy for growing turf on sports fields? The response may not lie in a comparison of golf and sports turf management, but in understanding the limits and biology of the turfgrass plant.

Knowledge of turfgrass growth and development is a fundamental requirement of good management. The first step in gaining this knowledge lies in the sequence of turfgrass growth and development. All grasses, including turf-types, have a continual pattern or expression of growth. In other words, when temperature, moisture, and light levels are adequate for plant activity, all structures grow continually. The continual growth of turf is especially true for turfgrass leaves and stems. In contrast to grasses, other plant types such as deciduous trees express flushes of growth. In trees, all of the leaf growth occurs in the spring, commonly referred to as a “spring flush.” This flush is followed by the summer-long presence of the same leaves, then leaf senescence (growing old) and detachment in the fall. The tree example represents a single season of growth lasting 6-8 months depending on climate.

The continual and repeated growth sequence of the turfgrass leaf is a key factor in addressing how to peak turf. The turfgrass plant will follow a continual and repeated (old leaves are replaced by new leaves) as well as short (individual leaf longevity is only 2-4 weeks) growth sequence of (a) emergence, (b) function (c) senescence (growing old), and (d) detachment.

Emergence is the growth of the leaf blade and sheath from their respective growing points until both segments have fully expanded. The function sequence refers to a fully expanded leaf engaged in high photosynthesis (manufacture of plant food) and export of photosynthate (distribution of plant food). Senescence is a leaf growing old with low photosynthesis and no export of photosynthate. Detachment is the death stage with no contribution to plant health. The sequence of leaf emergence to detachment in grass is difficult to visualize because all events occur continually and concurrently among during a short time period (2-4 weeks).



A bermudagrass football field with excellent quality turf, but 2 months away from the first game.

For example, new turfgrass leaves are continually emerging from their growing points while existing leaves (originated from the same growing point) are passing through the other sequences of growth. Leaves that emerge from a single growing point arise in concert with other leaves and the number of leaves exposed at any one time per growing point is limited to 4 to 8 depending on conditions. In addition, the lifetime of an individual leaf is short, ranging from only 2-4 weeks depending on species, cultural practices, and environmental conditions. The pattern of leaf emergence to detachment from a single growing point can go on indefinitely provided the growing point remains alive or viable. To gain a sense of the sequence and pattern of leaf growth, leaves of tall fescue and bermudagrass are labeled to illustrate the different stages of growth (See next page).

These pictures represent only a snap shot in time that identifies the growth sequence of each leaf and do not demonstrate the dynamic and continual process of leaf growth. In practical terms, the individual leaves mowed today will not be the same leaves mowed 3-4 weeks in the future. The future leaves will be new leaves and today's leaves will be dead.

Management can affect the continual sequence of turfgrass leaf growth. In fact, the manipulation of the number of leaves can be a useful and powerful tool in managing quality turf. One direct means to manipulate the number and sequence of leaves is nitrogen fertilizer. Nitrogen will stimulate the frequency, alter the sequence, and change the size of leaves. Multiple applications of nitrogen stimulate leaf emergence resulting in a greater than normal number of leaves exposed from a single growing point (an increase in shoot density). This response can be used to peak turf. Peaking turf with high nitrogen will have consequences however, which fall into two categories