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tycrop (tə.krop) 

vt. 1. introducing new materials for improving or amending native soil conditions
n. 2. an important agronomic practice resulting in safe, consistent, healthy turf
vt. 3. something done to create great playing conditions
TRENCH DRAINS
ACO Sport trench drains provide a continuous line of drainage between the track and playing field to act as a barrier and prevent track run-off from draining onto the field. Playing field drainage systems generally cannot cope with large run-off volumes from adjacent running track surfaces, often resulting in flooding at the perimeter.
ACO Sport: 440-285-7000
For information, circle 081 or see www.oners.ims.ca/2086-080

SUBSURFACE DRAINAGE
Fielder's Choice just completed a three-field renovation at Mayde Creek High School in Katy, TX. The project consisted of two practice fields and one game field. Pictured is the subsurface drainage system installed in one of the practice fields. The company puts perforated pipe in trenches with a filter sock, and also adds a special rootzone sand mixture to create a base that will provide the drainage needed to make full use of the system.
Fielder's Choice: 713-466-9200
For information, circle 080 or see www.oners.ims.ca/2086-080

TRAY DRAINAGE
GreenTech module, 46 in. square and 8 1/2 in. deep, high-density polyethylene plastic container, in effect replace traditional drainage systems. On the bottom of each module, channels accommodate forklift arms on all four sides (pallet channels), and numerous small holes enable drainage and rootzone airflow capacity.
GreenTech: 804-965-0026
For information, circle 077 or see www.oners.ims.ca/2086-077

RED CLAY CONDITIONER
TURFACE Pro League Red is the first and only patented red calcined clay conditioner. It combines a rich red color with proven infield conditioning benefits, and requires about half the tonnage versus aggregates to obtain adequate coverage.
Profile Products: 847-215-3470
For information, circle 091 or see www.oners.ims.ca/2086-091

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Lane Stadium, Virginia Tech

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ELECTRICAL/IRRIGATION CATALOG
King Innovation, formerly King Safety Products, has a new catalog that details products including DryConn Waterproof Connectors, Proline, Safetyguard, and Easyguard connectors, irrigation products, hand tools, and electrical accessories. King Innovation/800-633-0232 For information, circle 088 or see www.oners.ims.ca/2086-088

SAFE PAINTS
World Class Athletic Surfaces manufactures quality bulk and aerosol paints and custom stencils. For athletic programs that cannot find specific colors, World Class will create a custom color. Company supplies custom color paints and coatings for field marking, traffic, goalposts, non-slip floors, and artificial turf surfaces. World Class Athletic Surfaces/800-748-9649 For information, circle 090 or see www.oners.ims.ca/2086-090

SOIL PENETRANT
JADA Corp. has introduced FloThru 2403 soil penetrant that reduces water loss from runoff and evaporation, evenly distributes water, and decreases channeling of water through soil profile. This can reduce your water and energy costs, says the company. FloThru can also be mixed with most surface applied chemicals. JADA Corp./973-762-8002 For information, circle 087 or see www.oners.ims.ca/2086-087

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Turf-Seed, Inc/800-247-6910
For information, circle 085 or see www.oners.ims.ca/2088-083

GREENS AERATION
Advanced Aer has improved its line of subsurface greens aeration products (previously known as Soil Air Technology). This automated sensor-based permanent system attaches to the network of drain tiles under a putting green and continually monitors oxygen, moisture, and temps in the root zone.
Advanced Aer/561-625-3301
For information, circle 083 or see www.oners.ims.ca/2086-083

GOLF BUILDER MOVES IN TO PARK & REC
Landscapes Unlimited has made the natural leap into recreational field and parks development. One of the world's largest builders of golf courses, Landscapes in June finished field renovation of Scottsdale Stadium, the training facility for the San Francisco Giants, and in late-summer Baylor University's 15-acre intramural fields.
The company's Construction Group's Sports Development Group is also targeting parks and recreational open spaces, including vertical construction.
Landscapes Unlimited/402-423-6653
For information, circle 082 or see www.oners.ims.ca/2086-082

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SPORTSTURF 25
### FIELD CONSTRUCTION COMPANY DIRECTORY

Here is a listing of companies that construct or renovate athletic fields:

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Location</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpine Services, Inc.</td>
<td>Gaithersburg, MD</td>
<td>800-292-8620, <a href="http://www.alpineservices.com">www.alpineservices.com</a></td>
</tr>
<tr>
<td>American Civil Constructors</td>
<td>Littleton, CO</td>
<td>303-795-2582, <a href="http://www.aconstructors.com">www.aconstructors.com</a></td>
</tr>
<tr>
<td>Archterra</td>
<td>Cooperstown, PA</td>
<td>610-282-1398, <a href="http://www.archterra.com">www.archterra.com</a></td>
</tr>
<tr>
<td>Athletic Fields, Inc.</td>
<td>Cartersville, GA</td>
<td>770-382-7284</td>
</tr>
<tr>
<td>Athletic Fields Tennessee</td>
<td>Humboldt, IL</td>
<td>866-287-4763, TN</td>
</tr>
<tr>
<td>Athletic Fields Tennessee</td>
<td>Harold, CT</td>
<td>607-746-2727, <a href="http://www.clarkcompanies.com">www.clarkcompanies.com</a></td>
</tr>
<tr>
<td>Colony Landscape &amp; Maintenance, Inc.</td>
<td>Alviso, CA</td>
<td>408-941-1090, <a href="http://www.colonylandscape.com">www.colonylandscape.com</a></td>
</tr>
<tr>
<td>Duraturf Service Corp.</td>
<td>Richmond, VA</td>
<td>800-358-8283, <a href="http://www.fielderschoiceinc.com">www.fielderschoiceinc.com</a></td>
</tr>
<tr>
<td>Fielder's Choice Inc.</td>
<td>Pearland, TX</td>
<td>832-432-4203, <a href="http://www.fielderschoiceteam.com">www.fielderschoiceteam.com</a></td>
</tr>
<tr>
<td>Grant Sports Fields</td>
<td>Columbus, OH</td>
<td>704-593-4235, <a href="http://www.grantsportsfields.com">www.grantsportsfields.com</a></td>
</tr>
<tr>
<td>Greenway Services</td>
<td>Horsham, PA</td>
<td>215-343-0110, <a href="http://www.greenway.com">www.greenway.com</a></td>
</tr>
<tr>
<td>Gregori International</td>
<td>Miami, FL</td>
<td>305-563-7393, <a href="http://www.gregori.com">www.gregori.com</a></td>
</tr>
<tr>
<td>Huffman Sportscape Inc.</td>
<td>Independence, KY</td>
<td>859-549-3000, <a href="http://www.huffmansportscapeinc.com">www.huffmansportscapeinc.com</a></td>
</tr>
<tr>
<td>Lawn Care Unlimited</td>
<td>Lebanon, KS</td>
<td>912-492-4706, <a href="http://www.lawncareservices.com">www.lawncareservices.com</a></td>
</tr>
<tr>
<td>Mercer Group, Inc.</td>
<td>Troy, NY</td>
<td>937-335-7100, <a href="http://www.mercer-group.com">www.mercer-group.com</a></td>
</tr>
<tr>
<td>Munie Outdoor Services</td>
<td>Carseyville, WA</td>
<td>618-352-5296, <a href="http://www.munieoutdoorservices.com">www.munieoutdoorservices.com</a></td>
</tr>
<tr>
<td>Rettier Corp.</td>
<td>Stevens Point, WI</td>
<td>716-361-6533, <a href="http://www.rettiercorporation.com">www.rettiercorporation.com</a></td>
</tr>
<tr>
<td>SRI Sports</td>
<td>Leander, TX</td>
<td>800-233-5714, <a href="http://www.srisports.com">www.srisports.com</a></td>
</tr>
<tr>
<td>Team All Sports</td>
<td>Cincinnati, OH</td>
<td>513-241-6210, <a href="http://www.teamalsports.com">www.teamalsports.com</a></td>
</tr>
<tr>
<td>Turf Services</td>
<td>Spring Lake, MI</td>
<td>616-542-4975, <a href="http://www.turfservices.com">www.turfservices.com</a></td>
</tr>
<tr>
<td>U.S. Athletic Fields</td>
<td>Skilledum, IL</td>
<td>609-466-2846, <a href="http://www.usathleticfields.com">www.usathleticfields.com</a></td>
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One is buried behind the mound of Baltimore's Oriole Park at Camden Yards, the other in right field. The crowd can't see them, nor can the players. In fact, only a handful of people know they are there, entrenched just 2 inches below the lush green ball field.

What are these objects buried beneath one of America's most beautiful ballparks? If you guessed Orioles season's tickets or Cal Ripken's old batting gloves, guess again. They are data loggers—tiny, battery-powered devices that Oriole Park groundskeepers use to continuously monitor soil temperature throughout the season. More specifically, the loggers are used to record and time-stamp field root-zone temperatures over month-long intervals, at which time the data is offloaded onto a PC for graphing and analysis.

"We try to track field conditions to the greatest extent possible, and part of our strategy is to use data loggers as a record-keeping mechanism," explains Al Capitos, head groundskeeper at Oriole Park. "By keeping track of the temperatures over time, we can establish trends, which ultimately puts us in a better position to proactively deal with turf diseases associated with high soil temperatures."

Capitos monitors the soil with HOBO H8 data loggers from Onset Computer Corp. The H8 incorporates a microprocessor, an internal temperature sensor, and a user-replaceable battery into a hard-plastic casing slightly larger than a matchbox. By burying one H8 behind the pitcher's mound and the other in the outfield, the groundskeeping team can profile two distinctly different microclimates that exist at the stadium. Each logger is housed in a moisture-resistant enclosure, and takes temperature readings every 30 minutes.

After a month's worth of data has been collected, groundskeepers "unearth" the data loggers and offload the data from each onto a PC. Using Onset's software, the data is immediately translated into easy-to-read graphs that clearly show spikes and drops in root zone temperature. The data is then matched up with soil temperature readings that are taken manually with a probe, a process that Capitos refers to as "double-measuring."

"Some people may think this is way too much information, but we believe that having as much temperature data as possible is key to really getting in touch with the field," he says.

One area where data loggers have really proved their value at Oriole Park is in crabgrass prevention. In order for a pre-emergent herbicide to be effective in preventing crabgrass, the field must be sprayed after the soil temperature has been 55 degrees F for at least 4 days. According to Capitos, historical data recorded by the loggers over the past several seasons helps them predict when this block of time is likely to occur.

"The year-to-year data allows us to almost predict exactly when the temperatures will break," he says. "Knowing this helps us make good decisions as to when we need to spray. After all, the chemicals we spray on the field are expensive, and we have an obligation to be responsible applicators. I sure wouldn't want to be the guy who goes out and puts down chemicals ineffectively."

Capitos now trains new turf management interns on using the products. "We have interns from a variety of schools, including Penn State and Iowa State, and it's great to get them involved with the equipment so they can visualize the collected data and begin learning how to predict trends. It's fun for the students, and they can take the knowledge and experience with them after they graduate and go on to manage their first field."

Since the data loggers were originally buried in the spring of 1999, they have been functioning without any problems. Capitos has been impressed with their durability, and feels that any ballfield, especially those with a variety of microclimates, could benefit from the technology.

He says, "The most important thing is that we can now manage our field proactively instead of having to catch up with problems that we didn't expect."

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Joint ventures with landscape architects include the Atlanta Falcons Training Facility, the Atlanta Beat WUSA Professional Soccer Stadium; Auburn University's Jordan-Hare Football Stadium.

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