Managers of both soil- and sand-based fields face a variety of challenges during and after field construction. SPORTSTURF recently spoke with Dr. Norman Hummel, president and owner of Hummel & Co. Inc., a professional consulting service and soil physical testing laboratory, about those challenges and the benefits of soil physical testing.

ST: What do you see as the overall benefits of soil testing?

Hummel: During field construction, soil testing can be used to evaluate sand-based mixes or soils to reduce the risk of problems after construction, and to make sure that the sand-based mix or soil conforms to a specification or standard. Once the field is built, if there are any problems, soil testing can be used for diagnostic purposes to try to evaluate what the problems might be. For routine maintenance, soil testing to determine nutrient status of the soil and determine fertilizer requirements is valuable for setting up fertilizer programs.

ST: What are the most common tests that you conduct, and what do they entail?

Hummel: Probably the most common tests that we run are mix designs or complete physical analysis. These are tests that we perform during the construction phase—usually on sand-based fields—to make sure that the sand-based mix has a particle size distribution that conforms to either a specification or industry standards. The physical properties are determined to make sure the sand-based mix drains adequately and has adequate amounts of air-filled pore space and water-filled pore space.

We’re testing a lot more topsoil samples or modified soil samples. There are still a lot of fields being built made of soils. In those cases we perform a particle size analysis to determine the percentages of sand, silt and clay as well as the sand size and organic matter content. Once we have this information we can make recommendations to the client for any amendments, whether it is a sand amendment or both. If they want to take it a step further with topsoil fields, we can do compaction testing on the samples to determine maximum levels of compaction of the soil. Then we can run physical properties on the soils at density levels that correspond to what the soil should be compacted to in the field during construction. This way they can get an idea if whether an amendment is improving the soil physical properties or not. We would test the soil before and after the amendment to see what benefit, if any, the amendment is providing. That would be a complete physical analysis, with a Proctor test.

ST: Do you typically recommend a particular type of amendment, or does it depend on each particular case?

Hummel: The most common amendments that are used are sand. We like to help people out when selecting the sand amendment, because there are some guidelines for selecting the sand amendment and the quantity. This is important, because adding too much or too little sand as well as improperly sized sand often results in a soil that is worse than what they started with. The other type of amendment that is commonly used is organic matter. More for economic reasons than anything else, composts tend to be the organic amendment of choice, for soils anyway. For sand-based mixes it’s more along the line of good-quality peat.

ST: In terms of the tests you perform on existing fields, when and how often should the field manager have the soil tests done?

Hummel: Soil physical properties are normally performed on existing fields when there are suspected problems. Density is a real important parameter to measure, especially on topsoil fields, because it has a big influence on all the other properties. Density refers to the level the soil, or sand-based mix, is compacted to. To do it properly requires taking undisturbed samples. We have samplers that pull out 12-inch-long sleeves of samples and leave the soil pretty much intact. Some grounds managers or superintendents will drive 2-inch PVC into the ground to extract a sample. If they’re conscientious about how they take the sample and pack it right, they can pull a pretty good sample. When this is done we can determine physical properties, which is a pretty good diagnostic tool to assess whether there are any physical problems. The nutrient test is something that should be done every year on a sand-based field and once every 3-4 years on a soil-based field just to determine the nutrient status. Proper sampling
involves taking numerous samples with a soil tube off the field in random locations, getting a composite sample, mixing them together and sending them off to the lab.

ST: How quick is the turn-around on the tests?

Hummel: The turn-around varies with the type of testing to be done. Most tests are done within 3-4 working days. Some of the more comprehensive tests with the soils could take up to 2 weeks.

ST: What is the most common problem you see with sports fields?

Hummel: The most common problems we see on soil-based fields—in particular, newer soil-based fields—are a result of poor design. It seems that there are few people who know how to design a soil-based field. In their defense, though, there really aren’t any good industry standards on topsoil fields. Many times these fields are overengineered to the point that they are worse than older fields adjacent to these where the soil was just hauled in and pushed up. Compaction issues are probably the number one problem on newer fields. There often is no control during construction on the placement and grading of the soil. There are people out there with road graders and vibratory rollers trying to achieve the perfect grade. You can take very good topsoil and really build a lousy field by over-compact the soil.

The common problem with sand-based fields, at least initially, is quality control during construction. If somebody is experiencing problems on a newer sand-based field typically it’s due to a lack of quality control during construction and the materials that were brought in are not what they were supposed to be. But those are relatively few; we don’t really have too many problems with sand-based fields.

ST: When someone is looking to have test done on a soil-based field, do you recommend which tests should be conducted?

Hummel: Yes, and what I typically recommend is what we call a topsoil quality test, which includes particle size analysis, organic matter content, and the nutrient test. From this testing we will recommend any amendments, if needed, to the soil. I would like people to do the complete physical analysis for topsoils in which we do the Proctor testing and then look at physical properties under various compaction levels. That gives them a lot more information, especially in terms of evaluating whether an amendment is doing any good, and what proportions are needed for the amendment to work properly. This testing is more expensive, requires more material and more time. All of this testing is done to reduce the risks down the road, and this more comprehensive testing just gives us more information.
Olivet Nazarene upgrades fields for Bears' camp

BY NATHAN ODGAARD

Hometown pride among Chicago Bears fans has blossomed in Bourbonnais, IL. That's obvious to anyone who has recently driven along Interstate 57 past the three-city community of Bourbonnais, Kankakee, and Bradley, about 50 miles south of Chicago. A 170-ft. tall water tower standing just off the highway boasts, "Bourbonnais, Summer Home of the Chicago Bears."

Last year the Bears announced that they were moving to Bourbonnais after 18 training camps in Platteville, WI. The Bears will begin practicing on Olivet Nazarene University's athletic fields this month in preparation for the 2002 NFL season.

While the community is pumped up for the Bears' arrival, Olivet's athletic department has a reason of its own to celebrate. Though Olivet must now share its facilities, the Bears' move is Olivet's gain. In preparation for the Bears' arrival, 14 acres of the university's "Bourbonnais, Summer Home of the Chicago Bears." area were dedicated to renovation.

"Our athletic department has really benefited from this because (the Bears' move to Bourbonnais) brought renovation to the forefront," Whitis said. "We had nice football and soccer fields before, but we just bumped that up to another level."

Renovation to the fields, estimated to cost about $400,000, was part of a $1.5 million project, which included laying new sod, installing an underground irrigation system and adding TURFACE MVP to the fields.

Starting from scratch

With the summer nearly halfway over last year when the Bears made their announcement, the Olivet grounds crew had to move immediately to complete renovation before winter. The crew had to tackle the football team's game field, Ward Field, and two practice fields, and the soccer team's game and practice fields.

Olivet first had a soil analysis taken of the fields in July. The analysis, which revealed the soil's texture and characteristics, helped determine its top-dressing and fertilizing needs. Sod was stripped off the three practice fields, as renovation to the game fields was put on hold until the end of the teams' seasons. Roundup herbicide was used on the bare surface to ensure that no remaining grass would creep into the new sod.

"We had to do a complete kill because we had a lot of aggressive grass that we had to get rid of," Whitis said. The old sod consisted of a mixture of bluegrass, tall fescue and ryegrass.

Next, the land was tilled. In August, a topdresser spread 60 tons of TURFACE on each field, which was then tilled 4-6 inches deep into the fields' existing soil, a Midwestern silty-clay loam.

Olivet's native soils "are really prone to compaction and have a tendency to hold water, which is one of the reasons we brought in TURFACE, to help improve drainage," said Larry Berry, Olivet manager of grounds.

In September, underground sprinklers were installed. Whitis said the new sprinkler system will save the grounds crew invaluable time each day and will be more reliable than the university's walking sprinklers. The underground system operates automatically, which will save the crew from having to manually move the sprinklers, including in the middle of the night.

"We can water fields in a few hours, whereas before it would take a couple of days," he said.

In October, new sod, made up of bluegrass mix, was laid. That same month the grounds crew completely renovated Olivet's soccer game field. In December, the crew left the sod on Ward Field but installed an underground irrigation system, aerated and then top-dressed the field with amendment. "We had an abnormally warm December, which allowed us to get the sod down, and we couldn't have asked for better temperatures in the fall," Whitis said.

Fields ready for Bears

Since their renovation, the five fields have sat dormant. The area has been roped off, almost daring the Olivet athletes and intramural players to step foot onto the plush, rich-colored bluegrass. The Bears, however, get first crack. Training camp runs every day from July 26 to Aug. 14; the rest of the year, the fields belong to Olivet's football and soccer teams. During training camp, the fields will be mowed and watered daily. Olivet's grounds crew will topdress by hand, using a grass seed/TURFACE mix, to fill in divots, and will aggressively aerate the fields immediately following camp.

Whitis commends the university's teams for their patience while having to arrange practices off campus. "Our coaches have been willing to make sacrifices because they know the quality of the end product they're going to get," Whitis said.

Quality of the fields is just one factor that helps make Olivet an ideal training camp site, Ken Mrock, the Bears' head groundskeeper, said. "The practice fields at ONU are everything that a pro team could want. The site is expansive, finely manicured and brand new," he said. "When we embarked on the building of these fields, the big reason to build four fields was to have the flexibility to rotate the play on these fields and enable the ONU athletes to have the same fine surface that our players are going to enjoy." Whitis said Olivet would be able to accommodate the thousands of fans that are expected to attend training camp each day.

In addition to the field renovations, other projects completed to fit the Bears' needs were: the addition of lights to Ward Field, new locker rooms, a new training room, new storage units and enhancements to the university's landscaping.

Whitis' pride and enthusiasm for the new-look Olivet is as evident as the message on Bourbonnais' water tower.

"We're extremely ecstatic with the end product that we have," he said.

Nathan Odgaard is a writer for Swanson-Russell Associates, Lincoln, NE.
FIELD MARKING SYSTEM

Newstripe introduces its ProLine field marking system. Just drive the nylon locators into the ground at key field positions, attach the supplied string line to the locators, and you're ready to stripe. The locators are permanently in place so you can precisely re-mark your fields without re-measuring.

There are no open holes in these locators and no other pegs or plugs are required. Kits of six, 12, 25 or 50 locators are available, along with starting tool and 600 ft. of cord.

Newstripe Inc/800-624-6706
For information, circle 155

NATURAL FERTILIZER

Nature Safe Fertilizers are derived from natural sources containing no waste by-products. The all-natural ingredients in Nature Safe are premium animal proteins that provide a balanced nutritional program for the soil and the plant.

Studies at over 20 universities validate Nature Safe's performance improving turf color, density, stress tolerance and disease suppression properties, says the company.

Nature Safe/859-781-2010
For information, circle 193

Contact:
Marty Wilson
800-273-8608

1487 Blackdirt Road, Whitesburg, Georgia 30185
www.sportsturf.net

Circle 112 on card or www.Onestop.net/207sp-112
NON-GRASS PLAYING SURFACES

Designed to be played on in rain or dry conditions, Beam Clay Green-Premium infield mix doesn't get muddy when wet yet retains moisture and resilience in dry weather, says the manufacturer. An alternate surface to grass for soccer fields and multi-use fields where the skinned areas are used for soccer or football. Beam Clay offers more than 200 infield products from distributors nationwide.

Partac Peat/Beam Clay/800-247-2326
For information, circle 174

STABILIZE TURF

TurfGrids is a polypropylene fiber that is used to stabilize turf and high vehicle traffic areas such as turf parking or roadways. TurfGrids act like a mass of indestructible roots to increase load bearing of the rootzone. The product reinforces but does not interfere with standard maintenance operations, says manufacturer Stabilizer Solutions.

Stabilizer Solutions/800-336-2468
For information, circle 171

SYNTHETIC GRASS LINING SYSTEM

For use with natural turf fields, Permaline synthetic grass lining system can offer a cost-effective solution to athletic field marking and slash your turf maintenance budget, says the manufacturer. Other benefits include: 10-15 year life; 5-year guarantee against UV fading and premature wear; and can be installed in almost any environment where natural turf grows.

Permaline Sports Inc./866-546-3787
For information, circle 162

The most important games in the world depend on one supplier for paint solutions.

We built our reputation as the reliable manufacturer of premium quality bulk and aerosol paints. Made of 100% acrylic, World Class super concentrate paints are guaranteed to last longer and are kinder to your turf. We supply custom color paints and coatings for field marking, traffic, goal posts, non-slip floors and artificial turf surfaces. For all your painting and equipment needs, World Class is the only name you need to know.

Call us today at 1-800-748-9649 or e-mail us at info@worldclass.com

World Class Facilities

USE WORLD CLASS

Circle 113 on card or www.OneRS.net/207sp-113
WATER-POWERED FERTIGATION

Dosatron equipment is now available for commercial fertigation. The simple-to-use, water-driven units, installed directly in your irrigation line, automatically prime and inject the correct amount of fertilizer into the water flow.

Because water flow or pressure variations do not affect the accuracy of fertilizer being injected, the system works well with all sizes and types of irrigation systems, says the company.

For 30 years Dosatron has supplied reliable fertilizer and chemical injectors to more than 120 countries.

Dosatron/800-523-8499
For information, circle 163

WETTING AGENTS

FloraSPORT is introducing two new wetting agent products designed for clay & sandy soils. MOVE is designed to promote quicker, longer lasting moisture penetration properties to soil, and H2OOLD is a non-ionic wetting agent designed to promote entry and even distribution of water into the rootzone. Its components then interact with the soil molecules to retard leaching.

FloraSPORT Turf Products are sold and supported nationwide and are known for providing a high level of service and support.

FloraSPORT Turf Products/901-853-2898
For information, circle 181

For the best performance...
on the mound and in the batter’s box, you can’t beat Pro Mound packing clay. A unique blue gumbo clay, Pro Mound bonds to form a solid subsurface that allows players to dig in and establish footing without leaving large holes. It performs all year long – season after season.

Call for information and samples of our full line of sports field products, including Rapid Dry® drying agent, Soilmaster® soil conditioner and baseball accessories.

(800)648-1166
www.prochoice1.com

Circle 114 on card or www.OneRS.net/207sp-114
FAST MARKING

Newstripe has added the NewRider 2000 to its line of field marking and maintenance equipment. The unit features a 55-gal. tank so you can paint up to 22,000 ft. of 4-in. line, at a 25,000 ft. per hour pace. It has center and side-mounted dual spray heads, seat-based controls, rear hitch, and dual in-line filters. Handgun attachment is standard.

Newstripe Inc/800-624-6706
For information, circle 164

DRAINAGE CHAMBERS

CULTEC, Inc. RECHARGER and CONTACTOR plastic chambers are designed for underground detention/retention. The cost-effective chambers handle drainage on athletic fields, golf courses, paved parking lots, and landscaped areas.

The polyethylene units have a patented rib connection that is found only on CULTEC chambers. They have an open bottom for higher infiltrative capability and a history of long-term performance. The low profile Field Drain is a practical choice for near surface designs and areas with space constraints, while RECHARGER is used for projects that require a larger drainage system.

CULTEC, Inc/800-428-5832
For information, circle 160

SOIL/TURF AMENDMENTS

Diamond Pro Soil/Turf Amendments improve percolation and air movement throughout the root zone and reduces compaction, providing permanent aeration. A stable porous ceramic granule, the product is manufactured by firing natural raw material in a rotary kiln. Each granule is composed of capillary and non-capillary pore space, thus improving air, water and nutrient control within the root zone.

It will not break down to physical or chemical elements and retains beneficial moisture and nutrients. Diamond Pro Soil/Turf Amendments is also used as a top dressing after aeration to improve turf quality. Available in bags or bulk truckloads.

Diamond Pro/800-228-2987
For information, circle 175

FOLIARS

Emerald Isle Nutri-Rational foliars are designed to bypass the root system and provide intake of plant nutrients through the leaf tissue, which has two benefits: reliably feeding the plant and allowing it to conserve energy.

The faster a foliar is absorbed through the leaf tissue and the faster it gets into the plant, the more efficient it is, says the company.

Milliken Turf Products/800-845-8502
For information, circle 167
MATERIAL ANALYSIS

Dakota Analysis, an A2LA accredited lab, tests materials used for construction and maintenance on sports fields and golf courses around the world. The company says it supports testing for most of the NFL, major league baseball, major college stadiums, and many high school stadiums that have natural turf.

Dakota Analytical/800-424-3443
For information, circle 192

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

WHITE GOLD

Plant Nutrition Technology
0-0-24
WITH
14% Ca + 5% S
AND OTHER MICRONUTRIENTS

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

WHITE GOLD

Plant Nutrition Technology
0-0-24
WITH
14% Ca + 5% S
AND OTHER MICRONUTRIENTS

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

WHITE GOLD

Plant Nutrition Technology
0-0-24
WITH
14% Ca + 5% S
AND OTHER MICRONUTRIENTS

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

WHITE GOLD

Plant Nutrition Technology
0-0-24
WITH
14% Ca + 5% S
AND OTHER MICRONUTRIENTS

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

WHITE GOLD

Plant Nutrition Technology
0-0-24
WITH
14% Ca + 5% S
AND OTHER MICRONUTRIENTS

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

WHITE GOLD

Plant Nutrition Technology
0-0-24
WITH
14% Ca + 5% S
AND OTHER MICRONUTRIENTS

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

WHITE GOLD

Plant Nutrition Technology
0-0-24
WITH
14% Ca + 5% S
AND OTHER MICRONUTRIENTS

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

WHITE GOLD

Plant Nutrition Technology
0-0-24
WITH
14% Ca + 5% S
AND OTHER MICRONUTRIENTS

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

WHITE GOLD

Plant Nutrition Technology
0-0-24
WITH
14% Ca + 5% S
AND OTHER MICRONUTRIENTS

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195

"THE CALCIUM WAVE"

White Gold is a 0-0-24 product that is safe to use and very easy to apply has more than 5 years of documented research behind it, says the manufacturer. It melts quickly, has a low salt index and the risk of turf burn is very minimal.

It has been proven that White Gold knocks salts off of soil profiles, providing vital nutrients to the plant in as little as 3 days. White Gold also causes nitrogen retention, which creates savings and safe turf.

White Gold comes in three different forms: Mini prill, Regular Prill and Dry, Flowable Powder for spraying.

Magic Green Corp/573-384-8300
For information, circle 195