Update

Sports Field Managers Association of New Jersey

May/June
2004
Vol. 4, No. 3

e-mail: hq@sfmanj.org
www.sfmanj.org

Sports Field Managers Association of New Jersey has recently set the date for the

Third Annual SFMANJ Field Day/ Outdoor Trade Show and Equipment Demonstration Day.

Tuesday, August 17th is the date and Plainsboro Township Community Park is the place. This is definitely a day to mark on your calendar. The day has been planned with the support of, New Jersey Turfgrass Association, the New Jersey landscape Contractors Association, the Irrigation Association of New Jersey and New Jersey Recreation and Park Association. This event will without a doubt prove to be the largest of its kind in the State of New Jersey.

Commercial vendors from all over the tri state area will be present to display their products, services and equipment. Equipment demonstrations will include but not be limited to irrigation equipment, skid-steers, trenchers, tillers, blenders, mowers, tractors, topdressers, aerators, edger's, line painters, groomers, utility vehicles etc.

If you don't find it at our trade show, it probably doesn't exist. Those that know will be available to answer all your questions. If they can't tell you how, they'll be able to show you how.

Time will be allocated for hands on operation of all the equipment being demonstrated. In addition, educational sessions will be provided in cooperation with the New Jersey Landscape Contractors Association and the Irrigation Association of New Jersey.

Come out and see what's new and exciting while at the same time showing support for the green industry. Watch for more information about attending and participating as a vendor in NJTA CLIPPINGS, NJLCA TIMES, LESURE TIMES, SFMANJ Update and member mailings. ◆

SFMANJ Business

Next Board of Directors Meeting – June 11, Thurs. 5:30pm. At Rutgers University, Geiger building.

If you work for a professional facility and are interested in serving on the Board of Directors of SFMANJ fax a resume to 908-730-7770. You must be a member in good standing. ◆

Inside This Issue

This newsletter is the official bi-monthly publication of the Sports Field Managers Association of New Jersey. **For information regarding this newsletter, contact: SFMANJ at 908-730-7770**

Co-editors:
Jim Hermann, CSFM and
Eleanora Murfitt-Hermann, CRS

Rutgers Corner – A summary of turfgrass traffic tolerance research

by Brad Park, Rutgers University, park@aesop.rutgers.edu

For sports field managers, relying on non-trafficked turfgrass quality data generated from National Turfgrass Evaluation Program variety trials and other tests conducted at university sites does not satisfactorily answer the often asked question, "What varieties should I establish on my heavy-use sports fields?" Rutgers has made significant progress to answer that question through turfgrass traffic tolerance research conducted on varieties comprising the three major turfgrass species utilized on New Jersey sports

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Welcome New & Renewed SFMANJ Members

Currently we have 373 members. 66 have not renewed as of this publishing date and 34 are new members. If you have not seen your name in this newsletter please call (908)730-7770 or email us at hq@sfmanj.org. Take advantage of the August Trade Show and Equipment Demonstration Field Day discount by renewing today.

Tom Allen	Monroe Township
Douglas Ball	Maplewood Township
Alex Barcheski	Perth Amboy, City of
Anthony Barone	Down to Earth Landscaping, Inc.
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Bob Borelli	Northern Nurseries, Inc.
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Ray Cipperly	Somerset Patriots Baseball Club
Gerald Collincini	Manalapan Township Recreation
Kenneth Dix	Lakewood Township DPW

SFMANJ Annual Membership Registration Form

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Phone _____ **Fax** _____

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Signature _____

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2004

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Mission Statement

Committed to enhancing the professionalism of athletic field managers in New Jersey by improving the safety, playability and appearance of athletic fields at all levels through seminars, field days, publications and *networking* with those in the sports turf industry.

Contact us at:

P.O. Box 370
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National Organization
Sports Turf Managers Association

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Calendar of Events

3rd Annual SFMANJ Field Day/Outdoor Trade Show and Equipment Demonstration

When: August 17, 7:30am to 4pm Trade Show opens 9am., Demos begin 10am.
Where: Plainsboro Township DPW, Community Park.
What: Educational sessions for Contractors, Landscapers, Parks & Recreation, Irrigation and Sports Field Managers.
CEU's are pending
See front page for more information
Fliers will be sent soon. ◆

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Jim Hermann, CSFM	Total Control Inc.
Gene Huntington	Duke Farms Foundation
James C. Kelsey	Partac Peat Corp./Beam Clay
William Koonz	Koonz Sprinkler Supply
Jim Lawlor	Atlantic City Special Improv. Dist.
Clare S. Liptak	Rutgers Coop Ext Soil Testing Lab
Patric Lisanti	Growing Concern Inc.-Irrigation Div.
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Kevin Malone	The LandTek Group
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Robin VanDerlyn	Chatham School District
Tony Wilcenski	Monroe Township
Bill Wise	Rain Bird Corp.

Valuable Lessons in Goose Behavior

***by Mona Zemsky, Marketing Manager, Bird-X, Inc.**

(Phil Whitford, Biology Professor at Capital University and 30-year-veteran researcher of Canada geese) Dr. Whitford has factored the habits of geese into a comprehensive system of deterrence. Here is a sample of his observations:

1. Female geese are the ones you need to move. If she leaves, the male goes with her.

2. The longer geese sit on the nest, the more defensive they become. So begin harassment early in the nesting cycle, such as when the first egg is laid, for maximum disruption before they are fully invested in the nest.

3. In deterring geese, employ more than one element so the birds don't habituate and return when they think the coast is clear.

4. Strictly visual harassment doesn't work well with geese. Be sure to add other sensory stimulants, especially sound, to dislodge them.

5. Geese are not stupid. If the timing and duration of harassment methods are totally consistent, they learn when it's safe to return.

6. Don't stop the harassment. Follow through long enough so the offending geese relocate elsewhere. If a few return, step up deterrence measures immediately.

7. Ideally, begin disrupting geese in the fall when the first migrants arrive to scout the territory. Deterring them early is easier than later, when they've become attached to and comfortable in an area and the infestation has had time to multiply.

The Multifaceted Problem of those Lovely-Looking Canada Geese

- Unsightly environment – more than a pound of offensive droppings produced per goose per day.
- Unhealthy conditions – fecal material can harbor contaminants and bacteria that raise coliform levels in ponds.
- Ruined landscape – gross damage to grass, greenways and pond edging.
- Financial drain – heavy cost of cleanup, reseeding, resodding and repairing. Repeated annually.
- Medical bills and lawsuits – aggressive geese can attack, causing people to slip, trip and fall disastrously. The geese's messy droppings are similarly hazardous to humans.

**Bird X - web page: bird-x.com for pictures go to http://www.bird-x.com/pdfs/gbpr.pdf*
Toll Free: 800-662-5021. ◆

Question & Answer-Turf Tec Digest

***by: John Mascaro Volume 10 Number 1 February 2004**

An alert Turf-Tec Digest reader worked out the question my father asked some 57 years ago. Here is the question posed along with the answer, thanks Ed!

Q: It has been shown that 53,000 worms in an acre can cover the surface with three inches of soil in fifteen years. We do not feel inclined to calculate the exact number of worm-hours, which would be required to top-dress a green, but have presented the figures in case some ambitious person would like to work it out.

A. By Ed Bylica, Sports Turf Manager, Ft. Lauderdale Stadium:
(15 years)(24 hrs)(365 days)(53000 worms)= 6,964,200,000 worm hours——but if the worms were city workers????

Also some interesting factors to consider.

1— only 25% would work
2— 870,525,000 days which include 1 hour lunch break 2- 15 min breaks
3— then there is union business on company time
4— injury /sick/personal leave/comp. time/vacation/jury duty/ light duty
5— city daily bureaucracy 2 hrs / day
6— possibility of a worm work slow down (can't strike) — worms slowing down, now that's good humor———now figure that out????

*(TURF-TEC DIGEST-FOR GOLF COURSE SUPERINTENDENTS AND SPORTS TURF MANAGERS. To see the original article go to: http://www.turf-tec.com/aug03.html) ◆

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fields: Kentucky bluegrass, perennial ryegrass, and tall fescue.

What is traffic?

While the term "traffic" is often used interchangeably with the term "wear" when referring to turfgrass damage resulting from sports field use, it is important to understand that the term "traffic" actually encompasses four turfgrass stresses: wear, soil compaction, divoting, and soil displacement. Wear injury affects above ground plant parts and is defined as the immediate result of crushing, tearing, and shearing actions of foot and vehicular traffic. Soil compaction is a chronic stress associated with increased soil bulk density, loss of soil structure, and reduced aeration and water infiltration rates. Divoting involves the physical removal of a piece of turf from the turfgrass stand. Soil displacement is the displacement of soil particles due to pressure, resulting in a rut or depression.

The objective of turfgrass traffic research at Rutgers was to examine the tolerance of Kentucky bluegrass, perennial ryegrass, and tall fescue varieties as affected by two stresses comprising traffic: wear and soil compaction.

The research: How we did it

National Turfgrass Evaluation Program (NTEP) trials allow for the evaluation of seventeen turfgrass species in as many as forty U.S. states and six provinces in Canada. Information such as turfgrass quality, color, density, resistance to diseases and insects, tolerance to heat, cold, drought and traffic is collected and summarized by NTEP annually. Results can be found at www.ntep.org. Wear and soil compaction were applied to mature Kentucky bluegrass, perennial ryegrass, and tall fescue variety trials sponsored by NTEP located at Rutgers University in 2002 and 2003.

Wear was applied to individual established turfgrass plots using a wear simulator developed by removing the steel and nylon brush of a Sweepster unit and equipping the unit with rubber paddles used in potato harvesting. The modified sweepster was mounted on a Toro Groundsmaster and "passes" were administered over rows of turfgrass plots to create wear (Figure 1). Turfgrass trials received the following number of wear passes in 2002 and 2003, respectively: Kentucky bluegrass: 132 and 178; perennial ryegrass: 128 and 156; and tall fescue: 70 and 130.

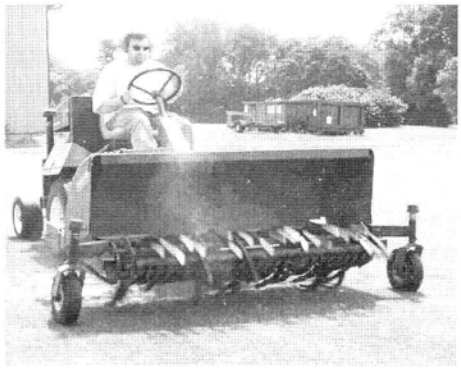

Figure 1. A wear simulator was developed using a modified Sweepster unit. The steel and nylon brush on the Sweepster was replaced with rubber paddles. The modified Sweepster was mounted on a Toro Groundsmaster.

Compaction was created utilizing a 2970-pound Wacker roller (Figure 2). The roller was used to pass over rows of turfgrass plots to create compaction. Turfgrass trials received the following number of compaction passes in 2002 and 2003, respectively: Kentucky bluegrass: 42 and 20; perennial ryegrass: 10 and 16; and tall fescue: 20 and 20.

Trafficked turfgrass quality (i.e. percent groundcover, uniformity, and density) ratings were taken monthly on trafficked plots during the growing season to visually assess traffic tolerance. Non-trafficked plots were assessed for non-trafficked turfgrass quality (i.e. overall appearance, turfgrass color, uniformity, density, mowing quality, leaf texture, and freedom from weed encroachment and/or insect/disease damage). The results of Rutgers' turfgrass traffic tolerance for individual varieties within species are listed in Table 1.

Figure 2. A roller (2970 lbs) was used to create compaction in the test plots.

Numerous Kentucky bluegrass, perennial ryegrass, and tall fescue varieties showed good traffic tolerance compared to other varieties and experimental selections in 2002-2003. The challenges faced by New Jersey sports field managers in overseeing high-use athletic field turf necessitate traffic tolerance evaluations of cool season turfgrasses at Rutgers. When sports field managers are faced with the decision as to specific varieties to establish or overseed, the results provided in Table 1 are a valuable resource.

Literature Cited

Beard, J.B. 1973. Turfgrass: Science and culture. Englewood Cliffs, NJ: Prentice Hall, Inc.

Carrow, R.N. and A.M. Petrovic. 1992. Effects of traffic on turfgrasses. p. 285-330. In D.V. Waddington, R.N. Carrow, and R.C Shearman (eds.) Turfgrass. Agronomy Monograph 32. ASA-CSSA-SSSS, Madison, WI.

Table 1. Traffic tolerant Kentucky bluegrass, perennial ryegrass, and tall fescue varieties recommended for New Jersey sports fields based on traffic tolerance research conducted at Rutgers University in 2002-2003.

Kentucky bluegrass

Good tolerance

Award*	Princeton P-105*	Avalanche*	Midnight II*
Tsunami*	NuDestiny*		

Moderately good tolerance

Ginney	Cabernet	Bariris	Awesome*
Barrister*	Odyssey*	Total Eclipse*	Beyond
Impact*	Liberator*		

Fair tolerance

Perfection*	Moonshadow	Julia	Arcadia*
Excursion	Quantum Leap	Bluestone	Jefferson
Serene*			

Perennial ryegrass

Good tolerance

Prowler	Citation Fore*	Divine	SR 4350
Stellar*	Sierra*	Esteem*	Manhattan 4*
Courage	SR 4220*	Pacesetter*	

Moderately good tolerance

SR 4500*	IQ	Pleasure XL	Inspire*
Secretariat	Gallery	Jet*	Premier
Catalina II	Elfkin	Churchill	Gallery*
Ascend	Sol	Exacta*	Paragon
Line Drive	ProTyme	Brightstar II*	Mach 1*
Racer II	Grand Slam 2L96*	Kokomo*	Gator 3*
Radiant	Pentium*		

Fair tolerance

Phantom	Renaissance	Majesty	Paradigm
Monterey II	Buccaneer	Summerset*	Premier II
Affirmed	Skyhawk		

Tall fescue

Good tolerance

Elisa	Titan Ltd	Apache III*	Endeavor
Tar Heel	Olympic Gold*	Jaguar 3	Bingo*
SR 8550*	Dominion	Masterpiece*	
Silverstar*	Tulsa II		

Moderate good tolerance

Blackwatch*	Forte*	Tar Heel II*	Padre*
Finelawn Elite*	Falcon IV*	Falcon II	SR 8600
2nd Millennium*	Bravo	Coyote	Barlexas
Millennium	Watchdog		

Fair tolerance

Scorpion	Tempest	Rendition*	Barlexas II
Tomahawk RT	Focus	Wyatt	

* Varieties showing the highest turfgrass quality when evaluated in the absence of traffic. ◆

Best Management Practices:

Avoid Soil Compaction

*by Dr. Stephanie Murphy and Clare Liptak

Why shouldn't we work the soil when it's wet? Why shouldn't the marching band and the drill team practice on athletic fields, even when they're dry? Why should we avoid tight turns and spinning wheels with our turf maintenance equipment? Because we want to avoid soil compaction, a natural process that – taken to the extreme - eventually results in the formation of sedimentary rock. Soil doesn't have to be as hard as rock to be too compacted for the healthy growth of turfgrasses.

Wet soils are easily compacted because the excess moisture they contain minimizes the friction between particles and allows them to shift into close-packing arrangement. Like working wet soils, frequent pedestrian traffic and heavy machinery also destroy soil structure, a term that refers to the arrangement of clusters or aggregates of soil particles. Aggregates can be shaped like blocks, plates laminated together, clods, prisms, or crumbs. Aggregates of soil particles form over a period of years, or more slowly if organic matter is deficient. The action of soil microorganisms on organic matter releases gels or gums that hold the particles together. Excessive force can overcome the organic matter bonds that hold particles into desirable soil structure (aggregates). For example, pick-up trucks with standard tires concentrate their weight on relatively small surface area, and therefore exert larges forces (high psi) on the soil surface.

When soil particles are squeezed together due to shear force (such as from spinning wheels) or static weight on the soil surface, some of the air space between the particles is eliminated and reduced in size. Ideally, air space in soil should be about 25% of the total volume. For example, imagine a volume of soil one foot wide, one foot long, and one foot deep. One quarter of that volume (equivalent to 6"x 6"x 6") should be air. As the amount of air is reduced because soil particles are packed tightly together, the soil environment becomes unfavorable for root growth, and eventually for the entire turfgrass plant.

The soil can become so compressed that grass roots can't penetrate the surrounding soil, affecting their rate of growth, length, orientation, and branch patterns. Besides the physical aspects of a compacted soil, the lack of air space often means that air diffusion is limited and roots are suffocated. This inhibition of air diffusion is exacerbated by poor drainage in compacted soil.

Compaction significantly reduces the speed with which water passes through the soil, in part because of the reduction in total pore-space, but in particular because of reduced pore size between the tightly packed particles. In the smaller pores, water molecules are attached to nearby soil particles through capillary action, effectively reducing the gravitational pull on the water molecule. That is why compacted soil is usually poorly drained.

The plants' normal life processes that allow water and nutrient uptake cannot occur in root tissue when the surrounding soil is excessively wet. Instead, other life processes predominate, specifically, those

that can occur in an environment containing little or no oxygen. Organic acids and alcohols build up in the soil, often giving it a characteristic fermented odor. Symptoms observed in plants growing under conditions of soil compaction include: *yellowing, stunting, poor vigor, swollen short roots with few root hairs, susceptibility to disease.*

Qualitative assessments of compaction involve the measurement of bulk density, which is the mass of dry soil in a known volume (as it occurs in place). The equipment to extract a specific volume of soil is expensive and can be easily damaged when sampling in stony soil. Getting a volume sample in a soil that is stony or one that contains buried debris can be difficult. For example, when the sampling tool is removed from the ground, the excavated soil may not be an accurate volume because of a hole left by a rock that remained in the ground. Any rock in the path of the sampling tool also interferes with obtaining an accurate sample. Interpretation of bulk density values will depend on other factors, such as soil texture and comparison to uncompacted sites of the same soil type. Penetrometers, which measure the resistance of the soil to a probe pushed

into the ground, are sometimes used to compare "soil strength", but these instruments also can be difficult to use and the results difficult to interpret.

Soil compaction can be difficult to measure, but its effects are easy to see and experience. Simply put, it's difficult to dig in areas of compacted soil. Digging holes for planting, or even to gather soil samples for testing, can be a time-consuming and laborious process. One useful technique is to compare the difficulty of digging in two areas: the problem area and a second area with a similar type of soil that you are certain is not compacted. Ponded water remaining on the field long after a rainfall is another visible sign of compaction. Plants often exhibit signs of the stress that they are experiencing under these conditions - as mentioned previously – but the symptoms could be misinterpreted as nutrient deficiencies, disease, poor turf varieties, or other causes.

People without some experience working with soil often don't believe it, but even raindrops or overhead irrigation can cause compaction if the water falls on bare soil. The force of the falling drops of water shatters the soil aggregates. The particles from the surface aggregates disperse and fill up smaller pore spaces in the surrounding soil, forming a crust. The dry crust is a barrier to the infiltration of water and emergence of crop seedlings. Further consequences of reduced infiltration include greater water runoff, loss of seed & fertilizer amendments, and increased potential for soil erosion. Mulching bare areas in the landscape will minimize crust formation and subsequent negative effects.

Alleviation of soil compaction is not a simple matter. While routine aerification can alleviate surface compaction and allow air and water infiltration, it may lead to deeper compaction. Best management practices for sports fields, therefore, include the rule: Avoid soil compaction. Protect bare surfaces with mulch (etc.); limit unnecessary traffic; use only equipment with turf-type tires; stay off the field when it's wet; and make gradual turns with maintenance equipment, never spinning the wheels. Prevention of compaction will relieve you, and your sports fields, of multiple sources of stress.

* Dr. Stephine Murphy heads the Rutgers Soil lab, Cook College and Clair Liptak is her assistant. ◆

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References Available Upon Request

What Makes Your Infield, Your Infield?

***by Jim Hermann, CSFM**

It could be that wet area mid way down the third base line. Or, it could be the sandy infield mix you have wanted to replace but haven't had the resources for. It could be the playing schedule your field is forced to endure. Your baseball or softball infield is different from every other. For this reason, the particulars of your maintenance plan and the products you use have to be site specific to your individual field. The key to being an effective sports field manager is having the ability to evaluate your individual field and apply the principles of proper athletic field management. This must be accomplished in a way that coincides with your resources, the needs of your field and the needs of the teams and leagues that use it.

Consider the following assumption: This product is used on nine out of ten professional infields and is therefore the answer to the problems on your infield. Consider the actual differences in your infield and a professional infield.

Along with being covered, primped and pampered, a professional infield typically starts with a perfectly graded sub base below the actual playing surface. This sub base usually maintains a grade contour, which mirrors that of the final surface-grading plan. A popular and effective surface grading plan for a professional field is one, which maintains a precise slope of ½% away from a point directly behind pitchers mound in all directions and maintains a smooth transition into the turf perimeter.

Your infield or my infield may have a slope of 1.5% on one side and 1% on the other. It may have no slope at all. It may be the high point of the complex or the low point of the complex.

The sub base of a professional infield is typically excavated below finish grade to a depth which accommodates both the infield mix or root zone along with a subsurface drainage plan which may include a full gravel blanket. Lateral drains may be installed within or below the gravel blanket at a depth and spacing engineered to be adequate for the existing conditions to evacuate potential water.

A gravel blanket or layer is installed at a minimum thickness of 4" or so. The actual thickness is determined by the particle size and physical properties of both the gravel being used and the material above it. As with everything else in athletic field construction and maintenance there are differences in opinion in regard to what material is best for an effective gravel blanket. Some say clean ¾ stone covered with a geotextile fabric, which acts as a filter. Others prefer a smaller particle size more compatible with that of infield mix that does not call for the use of geotextile fabric to prevent inwashing of infield mix into the gravel below. I know from experience that a geotextile fabric installed below any material with a significant amount of clay such as infield mix will ultimately clog.

A misconception in reference to the use and potential benefit of a gravel blanket is the belief that the sole purpose of a gravel blanket is to provide an avenue of drainage for the infield mix or root zone above it. A properly maintained infield mix infiltrates water at rates as low as .03 inches per hour or lower. For this reason, the gravel blanket or other material below the

infield mix is not usually a limiting factor in maintaining proper surface drainage. Adequate and effective surface drainage is typically the product of proper surface grading and as such the ability of the water to move laterally off the infield into the turf area where it can effectively be intercepted and removed by means of surface perimeter drainage.

The main benefit derived from the installation of a gravel blanket or other subsurface drainage system that far exceeds any benefit in surface drainage is the decrease in the potential for saturation of the infield mix caused by ground water or a rise in the water table from below. When used in conjunction with a surface drain surrounding the infield, a gravel blanket helps to isolate the infield from the effects of site-specific conditions surrounding the infield.

Infields that I have had the opportunity to maintain and I am sure many of yours are very dependent on site-specific conditions such as a high water table or poor surface drainage of surrounding areas. If the soil surrounding your infield is saturated, chances are the infield mix is also saturated. **In order for drainage to be effective there has to be a place for the water to go**. A high water table does not provide for this. A gravel blanket provides an escape for ground water only if it is connected to an outlet.

Now that drainage has been addressed, lets look at the infield mix. What is your main concern when selecting an infield mix? Typically, the main concern is cost. As the demand for quality and playability increases, managers like you and me are becoming more concerned with the composition of infield mix and how infield mix acts given our site-specific conditions.

When it comes to the footing provided to the players, most professional infields are made up of two very specific layers. First, there is the base mix. More often than not, the base mix used in professional infields is higher in silt and clay content than an infield mix that might be acceptable to you or me. The moisture content of the base mix is managed at a precise level to insure proper stability and resilience. It is rolled to a point of firmness that is sometimes referred to as being cork like. A thumbprint or depression can be established with some difficulty. A cleat can penetrate the base and be removed without loosening material and bringing that material with it. The integrity of the base is protected at great length to insure consistency and minimize contamination from outside sources.

I don't believe there is such a thing as a "typical" base mix in professional ball. Most professional managers will try to accommodate the desires of the players when developing the infield footing and as such adjust the composition of the base mix to attain that goal. One mix that I am aware of is a base mix that starts with 60% sand and 40% clayey material. To this, 20% calcined clay is blended. I will be honest with you. I don't know if that is by weight or volume.

If you look at an acceptable mix for you or me as being a mix with 80% sand and 20% clayey material, it is within the realm of understanding that they have replaced 20% of the sand with calcined clay. This allows the 60% sand, 20% calcined clay mix (60 + 20 = 80), to maintain much of the physical characteristics of the 80% sand blend along with the added benefit of moisture retention and therefore increased stability brought about by the use of calcined clay). This concept does not support the fallacy that you can continually use infield-drying agents by just mixing them in without destroying the integrity of your infield mix.

Covering the base mix, there is a ¼" or so of topdressing. Topdressing is used to help provide the desired footing for the players. This topdressing is not merely derived by scarifying the upper half-inch or so of base material as is the case with most municipal infields. It is a specific blend of materials chosen by that particular manager to achieve the footing his players desire. There are a few considerations when selecting topdressing.

Topdressing not only provides the desired footing for the players but also provides a "capillary break" in the infield system. This capillary break minimizes evaporation or moisture loss from the base layer below by acting as a protective coating similar to mulch used to maintain moisture in a new seeding. A capillary break is a break or interruption in the capillary movement of moisture caused by a difference in particle size and distribution between adjoining layers and as such a difference in hydraulic conductivity (*the ability of a soil to transmit water*). Hydraulic conductivity will persist uninterrupted when moving from a coarser material to a finer material as from the topdressing into the base, but is interrupted when moving from a finer material to a coarser material as from the base into the topdressing. Gravity has little or no influence on this process.

The topdressing must retain moisture to provide an acceptable degree of stability and dust resistance and also be hydrophobic (repel water) to the degree that it allows for effective wetting of the base below, when needed. With the lack of infiltration provided by the base, the topdressing must also allow for optimum lateral (sideways) movement of excess moisture as an effective means of surface drainage in the event of rain.

Again, the word "typical" doesn't apply. One topdressing I am aware of consists of 80% vitrified clay and 20% calcined clay. The layering of dissimilar materials between the base mix and the topdressing forms the capillary break. Water does not readily travel from the base into the topdressing where it would be more influenced by evaporation.

You or I on the other hand, would scarify a wet infield in an attempt to provide optimum drying conditions. This is because there is no capillary break. In our situation, water is capable of rising to the surface, as it would rise through a sponge where it is more susceptible to evaporation at the surface. Scarification exposes more surface area to promote increased surface drying and moisture evaporation

The calcined clay in topdressing retains moisture but has the potential to become sticky when overly moist. Vitrified clay; although it does have the ability to absorb moisture, does not have the moisture holding capacity of calcined clay and therefore provides for the increased vertical movement of moisture when required by the base mix and lateral movement of moisture to the perimeters when necessary for surface drainage.

Add to this formula, sub surface irrigation designed to provide each individual player the footing he desires and you have a system totally foreign to many of us. So when someone says, "use this, its used by nine out of ten professional sports field managers", make your decision is based on the needs of your field and not the needs of nine out of ten others.

What makes your field, your field? "You" are the one making the decisions.

The ability of an effective sports field manager is slowing gaining justified recognition as an art form. In view of this, it should be understood that although

the principles of proper sports field management are imbedded in science, the application and utilization of those principles remains an art form acquired through experience. Science provides the explanations for why infield mixes and soils react the way they do. Experience allows for discretion and the ability to utilize this resource given your site-specific circumstances. Science provides the ASTM Standard Guide for Construction and Maintenance of Skinned Areas in Sports Fields (Publication F-2107-01). Experience gives the Sports field manager the discretion to utilize and relate this information to his or her individual site-specific conditions to optimize durability, playability and safety of the infields under his or her control.

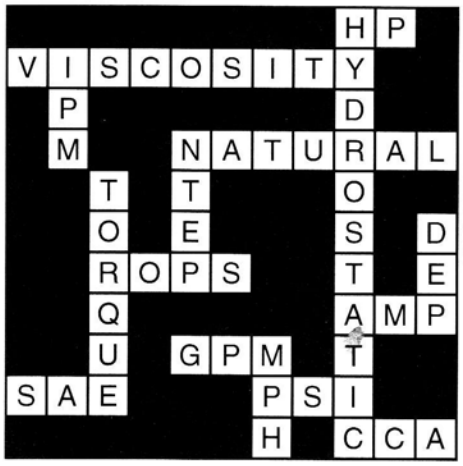
Education is key. Whether it is a short course provided by Rutgers or a field day provided by SFMANJ, education is key in both acquiring and utilizing information and resources at your disposal.

Proper sports field maintenance is a balancing act dictated by both the positive and negative influences exerted on your field.

Effective utilization of resources, minimizing negative impact, maximizing positive influence, optimizing time allocation, these are all responsibilities of the sports field manager.

*Jim Hermann is President of "Total Control Inc." Athletic Field Management & Consulting ◆

Answer for Last Issue's Puzzle



Field Design & Usage

***by Pam Sherratt & John Street**

The topic of **field usage** is something that comes up regularly. Dr. Dave Minner from Iowa State has been conducting national field surveys for the last few years with the aim of correlating the condition of a field with the amount of events it hosts. The data collected from field managers across the USA has ranged anywhere from 10-650 events per year.

Research carried out by STRI (Baker 1992) also identified different levels of use that fields could withstand and suggested the following:

1. The more sophisticated the construction of a natural turf drainage system, the more artificial the field, and the less able it is to buffer against mismanagement. Technical management in turn must be improved in conjunction with a total commitment by ground staff as drainage becomes more specialized.

2. If the natural soil drainage is poor, then installation of pipe drains only is not worthwhile except as a first step for schemes to be superimposed upon it.

3. Slit drained fields are the most cost-effective form of field provision examined, provided their installation is accompanied by correct management and a life span of at least seven years is achieved without major reinvestment.

4. If slit drained fields need to be re-slit at intervals of less than approximately seven years, the cost per hour of use is comparable with or even greater than that for a sand carpet field.

5. Suspended water table fields are the most expensive forms of field provision. In addition, the potential cost of floodlighting and irrigating these pitches is considerable and should not be ignored in the cost-effectiveness evaluation. At intensities of use expected of other designs they provide an excellent but expensive playing surface. They cannot maintain grass cover at intensities of use which would make them cost-effective and over-use creates major maintenance problems.

6. In the short-term, sand carpet and suspended water table fields can only really be justified from a financial point of view if play has to be guaranteed irrespective of the weather (except snow and frost).

In January 2004, the STRI published another article on this subject. The summary is as follows:

* **Undrained or basic drained fields** that rely upon the nature of the local soil for drainage could support 1-2 hours per week of adult play (50-80 games per season). Any more might compromise field quality. Amount of rainfall will also heavily influence this number (i.e. a sandy soil field will accommodate more play than a clay loam field before grass cover is lost and surface drainage rates fall).

* **Slit-drained fields** are designed whereby the water bypasses the native soil, so that the local soil has less of an influence on drainage rates. The slits are usually 3ft apart, running perpendicular to installed drain pipe, and backfilled with clean sand. These fields can accommodate 6 hours adult play per week (95-125 events per season). A slit-drained field will cost more to install and requires a certain level of management - in particular, an annual sand topdressing program has to be initiated to make sure that the slits are not *capped off* over time.

* For even higher levels of use, **sand cap or suspended water table** constructions are required. These can accommodate 8-9 hours of adult use per week. These fields cost more money (100-160K) and require a higher level of maintenance, which is sometimes not feasible for high school or parks & rec areas.

* All of these figures are based upon a high standard of field maintenance appropriate to the type of construction. Annual coring/deep tining, sand topdressing, appropriate slit tining, regular mowing, and occasional fertilizer applications are the minimum that need to be budgeted for, alongside any drainage improvement. A key requirement on any field that drains well is an irrigation system.

Note: they considered junior usage to cause far less field damage, so hours of play could be increased by 50% for junior use.

RESOURCES:

An informative publication, explaining each of these field designs, including diagrams, has been put together by **SPORT ENGLAND** . The PDF document can be viewed &/or printed off at http://www.sportengland.org/downloads/Naturalturf.pdf.

References: 2004-03-22 *Gibbs, R. J.; Adams, W. A.; Baker, S. W. Case studies of the performance of different designs of winter games pitches. II. Cost-effectiveness. Journal of the Sports Turf Research Institute. Vol. 68, June 1992, p. 33-49. Beggs, E. Winter Games Pitches - How Many Games? STRI Bulletin, January 2004.* ◆

Spring Diseases

by Joe Rimelspach
Ohio State University

Red Thread (LAETISARIA FUCIFORMIS)

Columbus is experiencing seasonably cool weather. Once the hot, dry weather gets here we should see a reduction in the activity of this disease. Turfgrass areas more prone to red thread are low quality, nutrient deficient soils, which can be improved by sounds management practices and a balanced fertilizer program. As with any disease, if it occurs every year, a timely preventative fungicide application can be applied. For example, an application of Bayleton, Accost (Triademefon), Endorse (Polyoxin D zinc salt), or Heritage (Azoxystrobin) made in late March or April may supply spring-long suppression. Once the disease is present, it takes time for turfgrass re-growth to fill in affected or bare areas.

Leaf Spot (HELMINTHOSPORIUM) **is Active**

Most common leaf spots on fields at this time of year are associated with one of the Bipolaris or Drechslera spp. In the past, these were lumped together and referred to as Helminthosporium leaf spot. This fungal disease of turf is wide spread at this time of year on susceptible grasses. Check for brown spots and lesions on the leaf blades. Cool wet weather will keep this disease active and increase severity. Older fields with common Kentucky bluegrass are often the most severely affected. If there are turf areas with a history of this problem, manage to minimize damage.

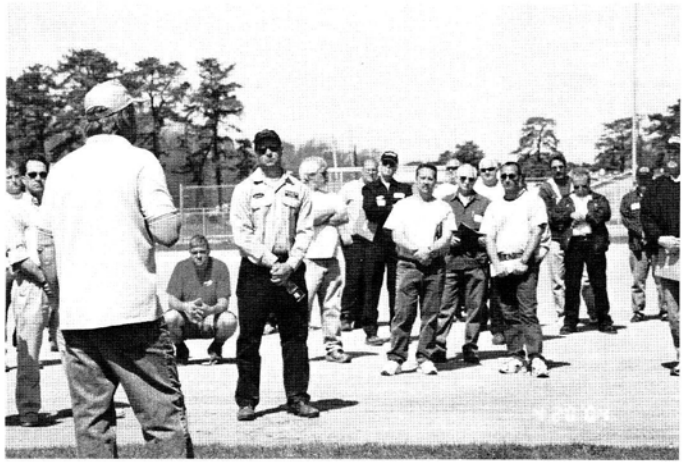
Proper mowing is important to maintain turf health. If the lawn is cut too short the disease will cause extensive damage and be much more severe than if mowed high. On newer fields, there are usually more resistant grasses and cultivars to this disease.

In extreme cases, consider the use of fungicide application(s). Remember the recent changes in fungicide labels that restrict the use of some fungicides. Some products to consider are Heritage, Mancozeb, and Endorse. The iprodione (Chipco 26GT, Iprodione Pro, and 18 Plus) and vinclozolin (Touche and Curalan) products are the most effective but new products can not be used on residential turf. ◆

April 20, 2004 4th Annual Spring Field Day Recap

Dr. Henry Inkyk. SFMANJ Advisor and GSI Sports Field Consultant describes the steps in installing drainage.

Ken Mathis(left) introducing George McCarthy(right), SFMANJ board of director and president of Spring Irrigation who spoke on Irrigation systems and "How you make it work".



Jim Hermann. SFMANJ Vice President and President of Total Control. Discussing safety issues and getting the best out of skinned infield maintenance.

Brad Park shared his results on using .5lbs of nitrogen per 1000 sq. ft(.#5) and not using any (#6) The nitrogen was applied March 18th and the pictures were April 20th. Results nitrogen can help jump start your turf in the spring.

A crowd of people listening to the Skinned Infield talk.

SFMANJ

Dr. James Murphy (right) describing a spring renovation program; IPM Practices, fertilizing, seeding and weed control (Ken Mathis(left), DPW Supervisor for Brick Twp. to his left)

The drainage ditch closer using pea gravel and perforated pipe. The secret is not using fabric.

Annual Spring Field Day

Field Tip
Beware for Your Pet's Sake

Cocoa Mulch, which is sold by Home Depot, Foreman's Garden Supply and other Garden supply stores, contains a lethal ingredient called "Theobromine". It is lethal to dogs and cats. It smells like chocolate and it really attracts dogs. They will ingest this stuff and die. Several deaths already occurred in the last 2-3 weeks. Just a word of caution check what you are using in your gardens and be aware of what your gardeners are using in your gardens Theobromine is the ingredient that is used to make all chocolate —especially dark or baker's chocolate which is toxic to dogs. Cocoa bean shells contain potentially toxic quantities of Theobromine, a xanthine compound similar in effects to caffeine and theophylline. A dog that ingested a lethal quantity of garden mulch made from cocoa bean shells developed severe convulsions and died 17 hours later. Analysis of the stomach contents and the ingested cocoa bean shells revealed the presence of lethal amounts of Theobromine.

*(Announcement from Merck & Co., Inc. Whitehouse, NJ) ◆

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