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Qualifications: Knowledge, skill, and experience working with sand-based turf systems; successful completion of a two-year turf degree from an accredited institution with emphasis on cool season grass management.

Salary: Commensurate with experience.

Application Procedure: Please forward letter of application, resume, and a minimum of three letters of reference to:

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Dodger Stadium

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Send resumes to Eric Hansen at L.A. Dodgers, 1000 Elysian Park Ave, Los Angeles Ca. 90012.

Q&A

BY DR. DAVE MINNER, PH.D., ASSOCIATE PROFESSOR, IOWA STATE UNIVERSITY

Making Concrete

Mr. Sand Man:

Would you clear up some of the confusion around adding sand or calcined clay to native soil fields-does it help or does mixing sand and soil make concrete?

Jim Gavigan, CSFM

I confess, early in my career this academic repeated that very phrase because it is what I was taught. Since then I have heard that famous phrase "if you mix sand and soil you will get concrete because all of the fine particles will fill up all of the macropores in the sand."

After 20 years of watching this industry evolve however, I have come to this conclusion: Sand is a necessary and essential part of managing today's athletic fields. Any confusion relating to its benefit usually comes from how you are using sand in your particular management strategy and what are you trying to achieve.

I'm not going to address sand-based fields where more than 92% of the rootzone on a weight basis is made up of sand. Instead, I want to concentrate on using sand as a topdressing and mixing sand into the surface by tilling. My target for mixing sand and soil is 70% sand on a weight basis (see *Sportsturf* March 1998 "Q&A"). In the mid 60's Dr. Don Waddington and others evaluated sand and soil mixtures for building fields. I still use their recommendation today when I select sand to till into soil for the purpose of amending the soil and increasing macropores. For this purpose use a uniform coarse sand (80% between 1.0and 0.5 mm and 95% between 2.0 and 0.5 mm).

To refresh your memory here are the seven sizes of particles that characterize most turf situations: gravel, >2 mm; very coarse sand, 2 - 1 mm; coarse sand, 1 - 0.5 mm; medium sand, 0.5 - 0.25mm; fine sand, 0.25 - 0.10 mm; very fine sand, 0.10 - 0.05 mm; silt, 0.05 - 0.002 mm; and clay, less than 0.002 mm. In the case of soil modification the most effective modification (greatest change in physical properties with the least amount of added sand) is obtained from sands in the very coarse and coarse category. Fine and very fine sands are not very effective for modifying soils.

Most of you have only two choices when it comes to getting local sand, mason sand or concrete sand. These are only general names and you should spend the $50-$70 to have them tested for particle size. Mason sand is usually the result of screening the gravel out of concrete sand. Comparatively, concrete sand generally contains more coarse particles with some gravel and mason sand has more fine particles with no gravel. The mason sands are preferred because they have most of the particles in the very course, coarse, and medium range. I would choose the mason sand first, but would not hesitate to use the coarser concrete sand if that was the only material available. Unlike putting greens, the gravel particles just over 2 mm do not cause any problem since athletic field mowing heights are usually over 0.5 inches.

Making concrete?

Back to the question, does mixing sand and soil make concrete? If you have avoided using sand as an amendment or as topdressing because of the fear of making concrete, let me put your mind at ease. Given the "native soils" that most of you have, in excess of 60% silt/clay by weight, any sand that you add will not make the situation worse. I have never experienced a field getting more compacted, compared to what it once was, after adding sand.

At first you may not receive much benefit, but remember this, when the sand content reaches approximately 70% by weight there are sufficient macropores available to positively impact the playing field. The increase in porosity makes it easier for water, cleats, and aerifier tines to penetrate the surface. This translates to better playability and more effective management of the field surface.

For example, if you apply a 1/4-in. of topdress mason sand in combination with core aerification, and then never topdress again you have done very little to change the sand content in the upper 3 in. of the rootzone. But if you use 70% sand on a weight basis as your target, and you repeatedly apply sand topdressing in combination with coring, you will eventually increase the sand content in the upper 3 in. of the rootzone. Given the following program of coring, topdressing, and dragging-in cores, you can reach your target goal of 70% sand in the top 3 in. of the profile in just over 3 years: two applications per year, 3/4-in. hollow tines, spaced on 4-in. centers, topdress to fill holes and leave 1/4-in. of sand on top of surface.

After 3 years you have added a sufficient amount of sand, however you have only impacted 18% of the field area by coring. Additional coring will be needed to completely mix the sand and existing soil if desired, but no additional sand is needed to reach your target. This requires 9.5 tons of sand per 1000 sq.ft. If we estimate the delivered cost of sand at $12/ton, then the total cost

continued on page 40

Have Questions?

Send them to Dave Minner at Iowa State University, 106 Horticulture Hall, Ames, IA 50011, or email dminner@iastate.edu. Or, send them to Grady Miller at the University of Florida, PO Box 110670, Gainesville, FL 32611, or email gmiller@mail.ifas.ufl.edu.

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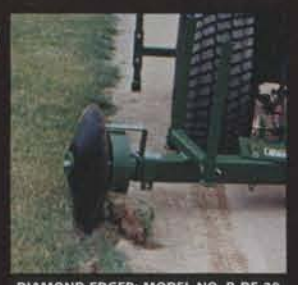

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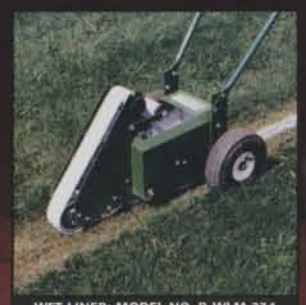

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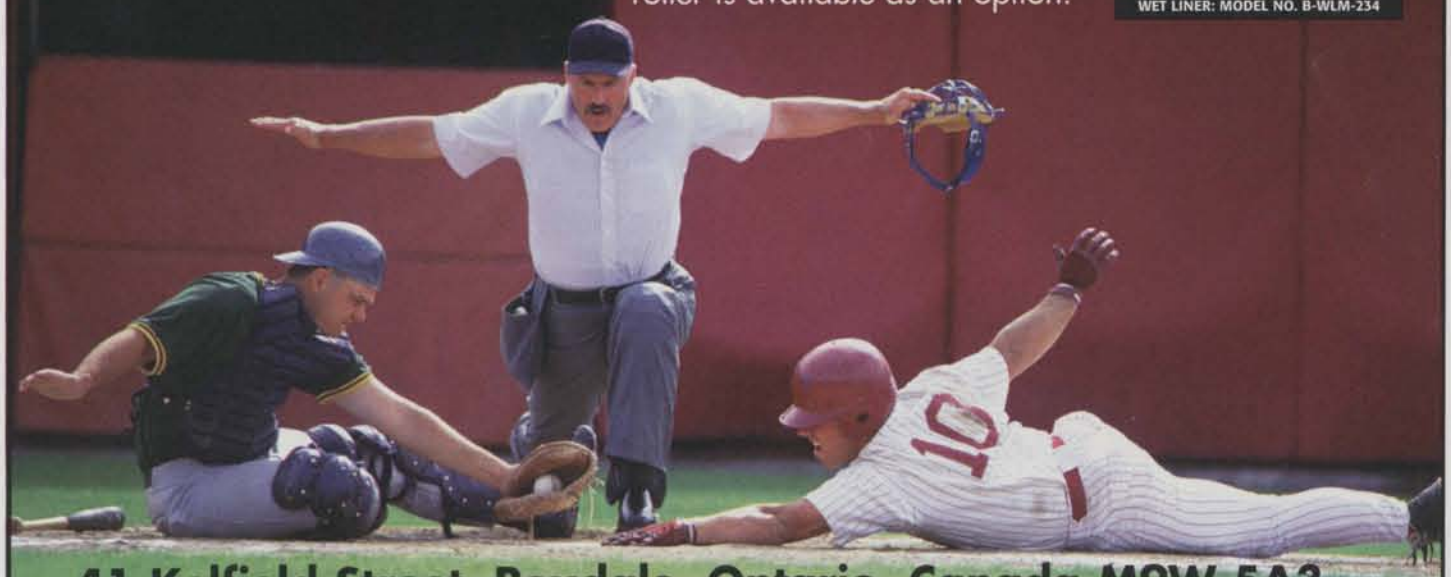

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