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## Q&A

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Have questions? Solutions to past questions? Photos related to questions? Send them to Dave at: ISU, Hort. Dept., Ames, IA 50011.

# What's in a Good Sports Field?

By Dr. David Minner

A good field has sufficient traction and firmness to maximize player ability without increasing risk of injury. Water in the surface two inches is the most important factor in determining a field's degree of hardness and traction.

### What Happens from Too Much Water?

**1. Mud bowl.** This usually occurs on native soil fields that have a high clay content, high water-holding capacity, and slow infiltration rate (less than 1 inch per hour). Sand-based fields are designed to have good internal drainage, but when they are sodded with high clay content soils, excessive water may be held near the surface.

Too much water makes a field soft, so it tears easily and the soil compresses easily. In other words, soils that become saturated with water offer little resistance to cleat penetration, and are easily displaced. Rutting and tearing of the grass surface during soggy conditions expose the underlying soil and result in a "mud bowl" game.

Use the "squashy-feet test" to determine if your field is too wet. Simply walk on the field and notice if water is "squashing" out from under the soles of your shoes. If there is no visible water, stand in one spot and shift your weight from foot to foot about 10 to 20 times. If the field is too

wet, the ground will begin to "pump" a little, and water will squash beneath your shoes. This visible display of excessive moisture near the surface, "squashy-feet," is a good indication that your team is going to the mud bowl between the hash marks.

**2. Slick surface.** Avoid irrigation for 24 hours prior to a game. Try to schedule irrigation so the field is in a moderate-to-dry condition just before game time. Should it rain during the game, a drier field will be able to absorb more water before reaching soggy conditions. Also, drier fields tear less and resist soil compaction.

In some situations, perennial ryegrass has been suggested as a contributing factor to slick fields. When the blades of perennial ryegrass are dry, the field seldom becomes slick. Wet blades of perennial ryegrass from irrigation or dew increase surface slickness compared to most other cool season grasses. Perennial ryegrass fields that are tarped may become especially slick from the slim-like moisture that develops under the tarp.

Topdressing with sand and crumb rubber can reduce water held in the rootzone near the surface. Topdressing with water-absorbing materials such as calcined clay or diatomaceous earth can quickly dry the grass surface and reduce slickness.

Although there may be some slickness attributed to perennial ryegrass, its fast establishment and good traffic tolerance make it highly desirable

when reestablishing grass on worn fields.

### What Happens from Too Little Water?

**1. Concrete-like surface: poor cleat penetration.** Fields may be soft and easily compacted when wet, but when they become very dry, they harden. Such field conditions are often described to be "as hard as concrete," resulting in very poor cleat penetration and players skating across the hard surface on the tips of their cleats. Excessively hard fields can also cause injury from player-to-surface contact.

**2. Dry sand: unstable surface.** Poor footing can also result on sandy fields that are too dry. Sand-based fields, or soil fields heavily topdressed with sand, contain a high degree of non-compactive particles near the surface. Sands reduce compaction and allow space for root growth, but sands are also less stable simply because they compact less.

Think of the beach. Dry sand away from the shoreline is unstable and difficult to walk on, whereas the wet sand near the breakers is firm and more stable. Avoid excessively dry conditions during the game that may reduce footing on sandy fields. □

*David D. Minner, Ph.D., is an associate professor with the Department of Horticulture, Iowa State University.*





When the Brewers' grounds crew first arrived, they faced a nightmare. Photo courtesy: David Mellor.

# Milwaukee Brewers' Rainy Day Miracle

By Bob Tracinski

When the ordinary suddenly becomes extraordinary, well-defined procedures, teamwork, innovative planning and persistence can pull off victory. Imagine yourself in the trenches with the Milwaukee Brewers' grounds crew and slosh in their shoes through a devastating rain last summer.

## Day One — The Rains Fell

"It all started on June 21st, after the June 20th ball game," says David Mellor, assistant director of grounds at Milwaukee County Stadium. "We saw the storm on our DTN weather system, but it looked normal, so we followed our usual precautionary procedure: we put on the tarp and went home."

"At 3:10 in the morning, my house lit up with lightning. I turned on the weather channel and saw an ugly red storm-line directly over Milwaukee."

Although crew report time was 7 a.m., Mellor headed out at 5:30.

"The highway ramp was flooded with 2 1/2 feet of water, and the inbound lane was closed," Mellor says. "It took 1 1/2

hours to get through what is usually a 15-minute drive."

Eight inches of rain had fallen in nine hours. Meteorologists later said the rains came from a "chaining effect," storm fronts linking together and maintaining a long-term assault on an area. But in the early morning, Mellor only knew that water was coming up and rain was falling down.

"Soon two-thirds of the outfield was covered," Mellor says, "and by mid-morning the water reached a three-foot depth."

Since Milwaukee County Stadium has a crown running through the middle of the field, the infield grass was not flooded. But water seeped beneath the tarp, and homeplate and all bases were submerged.

"We felt, if the rain stopped, the water would go down," Gary VandenBerg, director of grounds, notes. "We had a night game scheduled and one of the biggest crowds of the year booked. Mr. [Bud] Selig, our owner, obviously wanted to play and wanted us to make it happen if there was any way."

"Coming into the stadium that morn-

ing was like walking into a nightmare," says Kirt Bakos, lead person for the Brewers' grounds crew. "You hoped you could just open your eyes and it would all go away. We didn't know what to expect. But Gary and Dave were prepared for everything, coordinating plans and feeding information and assignments to us. That approach — that this was just another challenge, not a crisis, and here's how we're going to handle it — kept it all on track."

"Finally, at 11:00 a.m., the rain stopped," VandenBerg says. "At that point, we still hoped to get in the game." But that was not to be.

"The rains had come so fast and hard," Mellor says, "the city sewer system filled with debris. The water kept backing up because it had no place to go."

Besides water, the crew also had to cope with a flood of reporters.

"I spent much of my time sitting on the sidelines with Mr. Selig and our boss, Gabe Paul Jr.," VandenBerg says, "dealing with various media representatives and assuring them that once the storm sewers would take water, the field would drain." He also needed to



correct earlier media reports that there was no water on the field.

"Those on the morning helicopter flights over County Stadium saw green and thought everything was okay," Mellor says. "What they really saw was grass clippings floating on top of 3 1/2 feet of water."

### Fighting Back

During the early morning hours, crew members wove their way through flooded streets, reported for duty and joined the battle.

"Obviously, working conditions were far from ideal," VandenBerg says. "Yet no one complained; no one begged off an assignment."

"Everyone was ready for action," Mellor says. "Once the rains stopped, our first area of attack was the infield. We squeegeed as much water as we could from the tarp. Then crew members formed a line and folded back one side. They moved around the tarp, folding in the other three sides, and then folded in each corner to expose wet areas."

"Homeplate wasn't just covered with water," Bakos says. "It was submerged. We formed a big chain line and passed buckets of water back to the stands. Crew members on the line were up to their knees in standing water."

"Removing the water was only the first step," Mellor adds. "Much of the clay in the homeplate section was so wet you would sink over your foot if you tried to step on it. We couldn't bring a tractor onto the field or even a wheelbarrow."

"Two of us concentrated on the homeplate section," Bakos says. "We raked up the soggy clay with bow rakes and put it in buckets. Other crew members moved it to the parking lot. We kept raking down until we hit clay that was at least semi-workable. We started adding Pros Choice, and eventually added 50 bags to get the plate back in shape."

Finally about 2 o'clock, the sun came out, and optimism built for getting in that night's game. But with the sun came heat.

"We knew things were heating up under the tarp," Mellor says. "When we lifted a corner, the air underneath felt as hot as opening an oven door. The tarp itself was an island. The area



For six hours the grounds crew pumped fresh air beneath the infield tarp to prevent scorching and disease. Photo courtesy: Milwaukee Brewers.

around it was soggy, and the outfield was still flooded. So there was no where to go with the tarp, even if we could have rolled it up."

VandenBerg and Mellor devised a workable alternative. They had 14 or

15 crew members hold one side of the tarp and "do the wave."

"In synchronized action," says Mellor, "they lifted the edge of that 16-ounce tarp above their heads and lowered it, repeating this again and again

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David Mellor (left) and Gary Vandenberg direct a helicopter to help dry the field. Photo by: J. Adcock.

to pump cooler air underneath the tarp to replace the super-heated air. After a short break, they'd move to another side. This kept the grass from scorching

and helped avoid disease."

At 3 p.m., that night's game was called off. Making the announcement, Selig noted that to his knowledge, it

was the first Major League game canceled by a flood. At that point, 3 1/2 feet of water covered the warning track and outfield and was receding only an inch an hour.

The crew kept up their pace. They didn't want to lose the 1 p.m. game scheduled the next day, too. The tarp "wave" cool-down continued for six long hours.

"Anyone who has rolled up a tarp knows how heavy they are," Bakos says, "and can imagine how tiring this process was. We alternated people as often as we could. Short breaks really helped. Finally the sun dropped low enough so the super-heating stopped and temperatures stabilized."

Vandenberg and Mellor monitored the situation that evening and fine-tuned their plans for the next day's massive cleanup. Fortunately, the field was in excellent condition prior to the rain, and it was vertidraind eight days before. When the sewer system finally cleared, it was like a huge toilet flushing.



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"The water started going down about eight that night," Mellor says. "We could see air bubbles rising to the surface as the water went through the vertidrain holes." Knowing the draining process was underway, they gave up for the day.

"I asked the night crewman to call me if anything unusual happened," VandenBerg says. "He called about 10:30 that night, about an hour and a half after we left, and reported the water had all gone down."

### Day Two — Executing the Plan

On day two, the field was nearly clear of water, but brown scum coated previously submerged areas.

"The siphoning effect not only pulled the water down through the drains," VandenBerg notes, "it also pulled warning-track materials right on through the drainage system."

The dugouts were filled with water, which sump pumps cleared. The camera pits also were flooded, and two \$250,000 cameras floated on top — an ugly sight for the TV crews that showed up later that morning.

But to the grounds crew, there was no doubt: they would have the field ready for play by 1 p.m. The plan developed the night before was executed.

"The entire surface of the warning track, over one-quarter mile, was covered with a slick, ugly residue," Mellor says. "One set of crew members began raking and removing those top 1 to 2 inches of contaminated, scummy material. They transported it to the parking lot, then brought in new crushed granite to replace it.

"We arranged to have a helicopter from a local TV station help dry out the field and 'fluff' the turf. They came at 6 a.m. for the first session and stayed for three hours. We had a crew member in the helicopter with a two-way radio, and had him move them around to wet areas that needed it the most. They kept sweeping across the field from spot to spot."

"Along with the residue," Bakos says, "the flood left all kinds of debris on the outfield. Ten of our crew converged on the outfield turf with metal fan rakes and cleaned the entire area. They found all sorts of stuff, including wood chunks and spikes." Luckily, the field escaped deposits of raw sewage, which had backed up into the base-

ments of many homes from the clogged sewer.

"Instructions to the crew were specific," Bakos says, "with a special reminder about the basics. We didn't want players slipping or twisting ankles. Crew members walked the base path making sure there were no soft spots, and those raking the outfield and warning track checked every inch as

they worked."

About 8 a.m., mowing started.

"We were working on the homeplate area," Bakos says, "when they brought the walk-behind greensmower out to mow the infield turf. We looked at the job it was doing and thought, 'Why not give it a try?' We covered the homeplate area with that mower about 15 times, making each pass in a slightly different

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The June 21 rain left 3 1/2 feet of water on Milwaukee's field. Photo by: Rob Erdman.

direction. The clay didn't stick to the roller, and it did a great job of smoothing out the surface."

Later that morning the helicopter returned for a 45-minute drying session.

"At that point," Vandenberg notes, "the air movement from the helicopter also helped to move some of the remaining dusty residue off the turf."

Because of the tarp, some areas of the infield skin were not saturated. When preparatory watering began, "There were interesting reactions from everyone except our crew," Vandenberg reports, "so I put more time into the explanation end of the job."

"Because the grass was so muddy," Bakos says, "mowing was a bear. The dust would come up and hit you in the face. Dave said I looked like that Pigpen character from the 'Peanuts' comic strip moving across the field. It took about a week or so before that dust all filtered its way down to soil level."

The rest of the day's activities focused on business as "unusual."

"There were multiple extra things that had to be done over and above the

usual," Vandenberg says, "including extra work on the homeplate area, the outfield and the warning track. We had to make sure safety standards were not neglected in the rush to get the field ready."

"Safety was our main priority," Mellor adds. "Gary and I concentrated on the overall picture so everyone else could pay attention to what they needed to do. We couldn't let the distractions get in the way. That was key."

Vandenberg and Mellor met with the Brewers' and Royals' managers around 11 a.m. Infield practice started at 11:30 and the game at 1 o'clock, as scheduled.

"One thing is constant in sports turf management," Mellor says. "When strange things happen, you're right in the middle, and everybody looks to you for answers. It's your job to have them." □

*Bob Tracinski is public relations manager for John Deere Co. in Raleigh, N.C., and public relations co-chair for the national Sports Turf Managers Association.*

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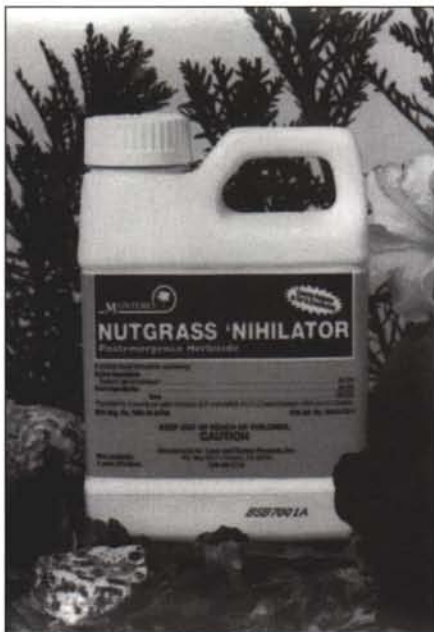
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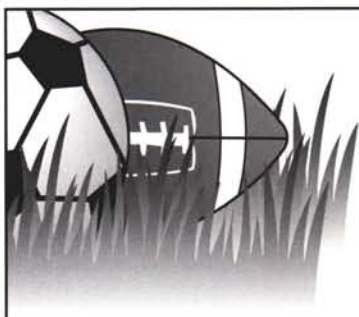
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