

Many superintendents are now topdressing with finer sand to save time and resources on managing sand left on top of greens. But can it negatively impact the soil over time?

**A** study published last fall in the USGA Green Section Record by Dr. James Murphy, extension turf specialist in the department of plant biology and pathology at Rutgers University, indicates many superintendents are using finer sand when topdressing to ease the burden of dealing with sand particles left on greens.

Murphy states many superintendents are selecting sand that contains no fine gravel (2 to 3.4 mm particle size diameter) or very coarse sand (1 to 2 mm) to improve incorporation of topdressing. The latest trend, he states, is to use sand that doesn't contain coarse sand (0.5 to 1 mm), which according to the report further improves incorporation, especially when this sand is dry.

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# Does Size Matter?

By Jason Stahl

There is some thinking that sand size could negatively change the physical properties of the thatch layer of a green.



## Getting Dirty

A trend Christian is seeing is superintendents “dirtying up” their sand more with organic material to prevent their greens from drying out too quickly – a more frequent occurrence with the extreme summers of late.

“One thing that was brought up to me not too long ago is that, when they do testing in labs, everything is based on 30 centimeters of suction, and that’s 12 inches of rootzone,” says Christian. “The problem, though, is that with everyone adding sand, their greens are 14 to 16 inches deep, but they’re still basing their measurements on a 12-inch rootzone. The greens are getting drier and drier as they add more and more sand to the top because that spent water below the surface is getting lower and lower and there’s less tension on the sand on the top. It’s getting pulled quicker to the bottom and therefore the top dries out more quickly.”

Superintendents are telling Christian, “I can’t keep my greens wet, I can’t keep them wet,” and his advice is to probe them to see how deep they are. Then, there are two options: dirty their sand up with organic material, or change the sand size, being aware that choosing too fine a sand can create a whole new set of problems.

think again. Murphy says there are potential issues with this strategy, mainly that this size of sand could negatively change the physical properties of the thatch layer of a green.

Steve Christian, account manager/consultant with Dakota Peat, has seen that negative impact firsthand, especially with superintendents who use finer

sand on Ultradwarf greens.

“With Ultradwarf, [superintendents] are trying to use finer sand all the time as tight as they are, but they have to be really careful,” says Christian. “If the greens were built out of USGA sand and then they topdress with this light sand for five or six years, it can create a perched water table on top of the USGA

sand. The salts will then stay on top and create a lot of issues.”

Christian tells a story about a course he analyzed a core sample for after it had trouble with its greens. The greens had been built with concrete sand, but then, after 15 years of topdressing, they had five to six inches of USGA material on top of coarse materials. An extremely wet summer came, and all of a sudden the greens wouldn’t drain.

“They were blaming the water being muddy and all these other issues, but the real issue was that they had a perched water table,” Christian says. “In that situation, you’re pretty much done. You have to aerate aggressively with 10-inch tines two to three times per year to get enough height on your column so you can get some drainage.”

To avoid trouble, Christian says many superintendents are opting for a “combo platter” of sand when topdressing and aerifying.

“A lot of guys are using this fine sand for light infrequents. Then, when they do their core aeration, they’re going in with

USGA sand because it has greater porosity and opens things up better and keeps it closer to spec.”

Murphy’s study confirms that superintendents are using this “combo platter,” but it doesn’t go so far as to say it’s effective.

“The concept is to manage any potentially negative effects by coring out the mat layer containing finer sand and replacing it with coarse sand backfill,” Murphy says. “It is not clear whether this ‘dual-sand’ concept will be sufficient to offset any negative effects of the finer sand, presuming the negative effects actually occur.”

Another potential issue with using “uniformly graded sand,” or sand with particles of a similar size after large particles have been taken out, is that there can be instability problems where the sand can shift under normal traffic conditions.

“The extent to which these concerns are actually a problem in the context of topdressing is not fully understood,” Murphy explained in his report. “For example, some finer sand, despite being uniformly graded,

can pack together and be more stable than coarser sand."

Christian agrees, adding that instability has not been an issue with customers he has dealt with. "The finer sand usually doesn't have that problem of instability and shifting because they have a lot more tension with the water," he says. "Where I see that more is when you go to dried sand. If guys use that for a long time, they'll start to have instability problems."

Still, some superintendents are erring on the side of caution when it comes to stability problems by switching to a less uniformly graded sand. Dan Koops of Findlay Country Club in Findlay, Ohio, made the switch earlier this year.

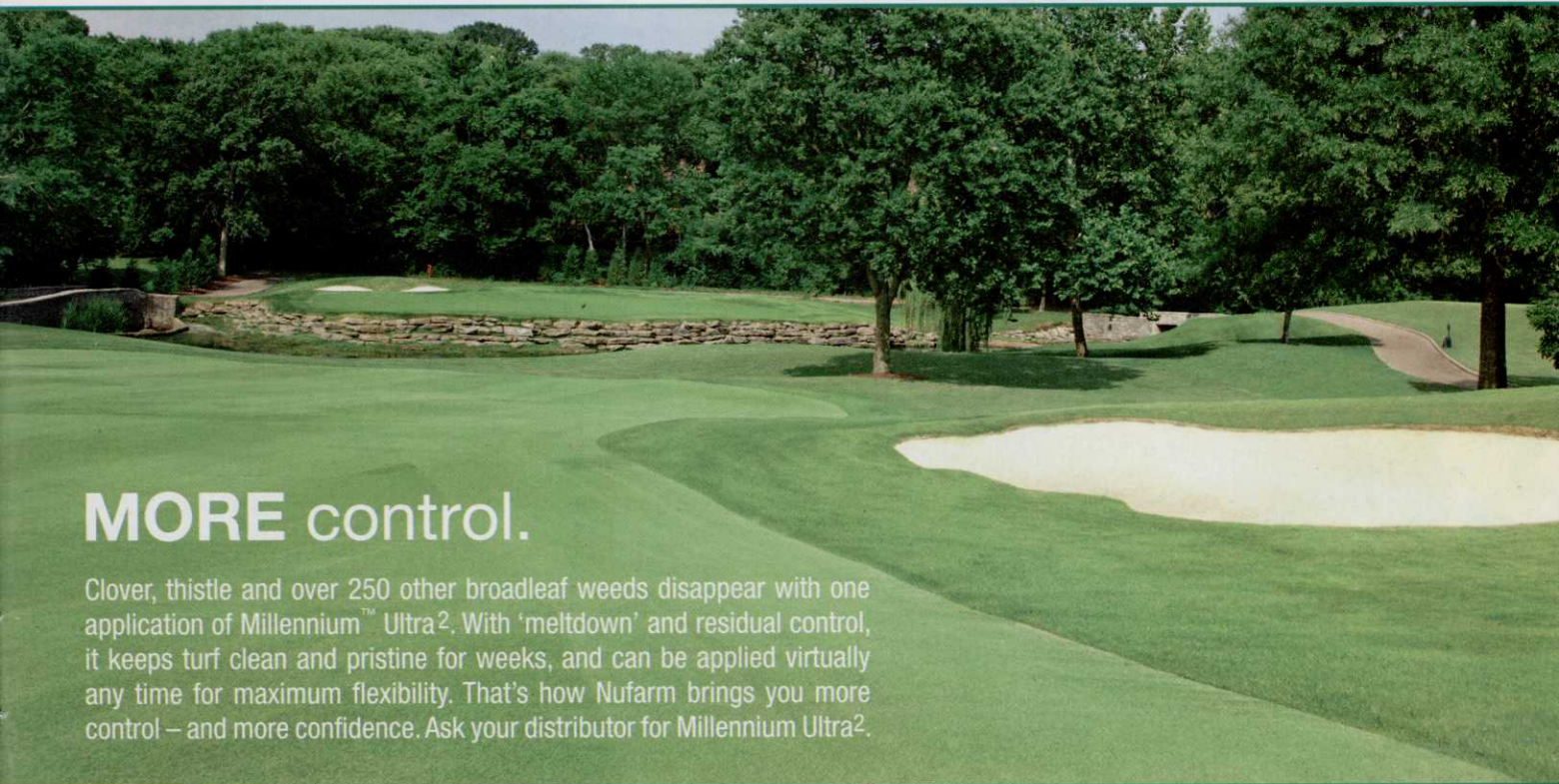
"When I came to Findlay Country Club, I changed sands immediately because, in my mind, the sand they were using was too fine and too uniform," says Koops. "I didn't want instability issues and the possibility of a wetter profile on top over time."

At a previous course Koops worked at, the



Superintendents who can't keep their greens wet can change the sand size, but be aware that choosing too fine a sand can create a whole new set of problems.

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wrong kind of sand was being used and, as a result, they had a perched water table where the top two to three inches of the soil profile was staying way too wet.

"That can definitely be a problem when guys are using too fine a sand," he says. "It comes down to doing your due diligence and taking tests to see what kind of sand is beneath and making sure your topdressing sand matches it."

Koops said he has never had a problem incorporating sand into the turf canopy. He is aware that superintendents use different sands for topdressing and aerating, but he uses the same sand all the time. His method is to apply the sand, let it dry, brush it in and then mow when it's dry.

Since Koops has switched to a less uniformly graded sand, he has noticed a little bit more staying on top of the greens. But it still hasn't proved to be an issue.

"There definitely are bigger particles that have to get worked in, but again, if you let the sand dry completely, then brush it in, it's not a problem," he says.

To put some science on whether topdressing with fine sand could ultimately be bad news for soil, two research trials were conducted at Rutgers to gauge the effect on turfgrass quality and surface firmness. According to Murphy, in the first trial, coarse-medium sand or medium-fine sand was applied on a Greenwich velvet bentgrass green every two weeks at 50 or 100 pounds per 1,000 square feet. Plots were mowed daily at 0.11 inch with a triplex mower, and irrigated only enough to relieve initial signs of stress. As expected, it took more time for the greens to become clear of sand after topdressing with medium-coarse sand.

"As the particle size of the sand was reduced, less sand was removed by mowing," said Murphy. "The critical issue that must be evaluated is, will the use of a finer topdressing sand applied over coarser-textured soils have any long-term ramifications? Will infiltration be affected negatively, and/or will free drainage within the profile be unaffected?"

A second trial using medium-coarse sand, medium sand and medium-fine sand was conducted on an annual bluegrass green. The plots that were topdressed had as good or better turfgrass quality than the non-topdressed plots. Also, more anthracnose disease was observed on the non-topdressed plots. **GCI**

Jason Stahl is a Cleveland-based freelance writer and frequent GCI contributor.