



## BENEFITS OF LIGHT AND FREQUENT TOPDRESSING

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- Large sand particles can damage mowers because they are difficult to work through the turf canopy.
- Removing coarse sand particles from topdressing mixes can improve sand incorporation without negatively affecting soil properties.
- Light-and-frequent sand topdressing dilutes organic matter accumulation and smooths the putting surface.
- Topdressing with medium-fine sands in conjunction with bi-annual core aeration produced no adverse effects on soil moisture retention.

Light-and-frequent sand topdressing is one of the most important practices for putting greens because it smooths the surface and dilutes organic matter. However, some facilities are hesitant to commit to frequent sand topdressing because sand particles that remain on the putting surface following an application can damage mowing equipment. Coarse sand – i.e., particles greater than 0.5 mm in size –

can be particularly difficult to work into a dense turf canopy. Therefore, researchers at Rutgers University have set out to determine the effects of using fine-textured topdressing sands on putting greens. More specifically, researchers seek to determine how core aeration and eliminating coarse particles from topdressing sands affects the performance of 'Shark' creeping bentgrass and the physical properties of a sand-based rootzone.

During a two-year experiment, combinations of three topdressing sands (medium-coarse, medium-fine or fine-medium), two topdressing application rates (50 or 100 pounds per thousand square feet) and two aeration treatments (core aeration or no core aeration) were compared against two non-topdressed control plots (Tables 1 & 2). Core aeration of designated plots occurred in May and October to remove 9.82 percent of the mat layer annually. Researchers backfilled the aeration holes with the coarsest of the three topdressing sands – i.e., the medium-course sand – because it is widely used for light-and-frequent topdressing and falls within the USGA Recommendations for a Method of Putting Green Construction. Conversely, the medium-fine and fine-medium sands contained few to no coarse particles, making them less likely to damage mowing equipment.

Results have been positive and support the use of medium-fine sands in light-and-frequent topdressing programs in conjunction with core aeration. The following points outline some of the key takeaways thus far.

- Core aeration and backfilling with medium-coarse sand reduced surface wetness and organic matter concentration.
- Core aeration decreased fine-sand particle concentration in plots topdressed regularly with the finer sands that did not fall within USGA Recommendations.
- Light-and-frequent sand topdressing increased the depth of the mat layer. Putting green turf quality improved, organic matter concentrations in the thatch layer decreased, and surface wetness decreased when using medium-coarse and medium-fine sands – i.e., sand that meets USGA Recommendations with coarse particles removed.
- Medium-fine sands increased the number of fine sand particles in the thatch layer, but this did not impact surface wetness compared to standard medium-coarse sands due to the removal of fine-particles with core aeration.
- Light-and-frequent applications of fine-medium sands did not produce drier surfaces due to the increase in fine and very fine particle concentrations.

Core aeration was the most effective cultural practice to manage organic matter accumulation in this research experiment. However, light-and-frequent sand topdressing is an effective practice to smooth the putting surface, dilute organic matter and improve turf health. Furthermore, removing coarse particles from sands that fall within USGA Recommendations can minimize damage to mowing equipment without reducing turf health or increasing surface wetness.

## Additional Information

[Topdressing Sand Size and Coring Effects on Putting Green Turf](#) (video)

[Effects of Finer-Textured Topdressing Sand on Creeping Bentgrass Putting Green Turf](#)

**Table 1.**

Summary of the individual treatment combinations of topdressing (sand size and rate) and cultivation as well as two controls evaluated on ‘Shark’ creeping bentgrass turf grown on a sand-based rootzone.

Treatment No.	Sand Size <sup>†</sup>	Factors in the Experiment		
		Topdressing Sand Rate during the Growing Season <sup>‡</sup> lbs. / 1,000 sq. ft.	Cultivation <sup>¶</sup>	Annual Quantity of Sand Applied lbs. / 1,000 sq. ft.
1	Medium-coarse	50	Non-cored	1,300
2	Medium-coarse	50	Core + Backfill	1,700
3	Medium-coarse	100	Non-cored	1,800
4	Medium-coarse	100	Core + Backfill	2,200
5	Medium-fine	50	Non-cored	1,300
6	Medium-fine	50	Core + Backfill	1,700
7	Medium-fine	100	Non-cored	1,800
8	Medium-fine	100	Core + Backfill	2,200
9	Fine-medium	50	Non-cored	1,300
10	Fine-medium	50	Core + Backfill	1,700
11	Fine-medium	100	Non-cored	1,800
12	Fine-medium	100	Core + Backfill	2,200
13	None	0	Non-cored	0
14	None	0	Core + Backfill	1,200

<sup>†</sup> First-mentioned size class represent the predominant size fraction in the sand.

<sup>‡</sup> Topdressing applied every two weeks from 10 June through 12 October (10 applications) in 2016 and every 10-14 days from 12 June to 28 September (10 applications) in 2017. Topdressing at 50 lbs. per 1,000 sq. ft. represented a ‘dusting’ quantity (O’Brien and Hartwiger, 2003); whereas, topdressing at 100 lbs. filled the surface thatch and lower verdure layers.

<sup>¶</sup> Core cultivation to the 1 ½-in depth was performed twice a year (10 May and 2 November in 2016; 15 May and 9 October in 2017) using ½-inch diameter hollow tines spaced to remove 10% of the plot surface area annually. Coring holes were backfilled with 600 lbs. per 1,000 sq. ft. of medium-coarse sand. Non-cored plots were topdressed with the respective sand size at 400 lbs. per 1,000 sq. ft. (300 lbs. per 1,000 sq. ft. in October 2016) to fill the surface thatch and verdure layers to the same extent as backfilled, cored plots.

**Table 2.**

Particle size distribution of three sands used to topdress plots on a ‘Shark’ creeping bentgrass turf grown on a sand-based rootzone.

Sand	1,000 µm	500 µm	250 µm	150 µm	53 µm
	Very Coarse	Coarse	Medium	Fine	Very Fine
Medium-coarse	0	33.8	57.7	8.4	0.1
Medium-fine	0	0.1	76.7	22.7	0.5
Fine-medium	0	5.7	25.8	66.8	1.7

lbs. / 1,000 sq. ft.