

Topdressing 101: Organic Matter Management for Cool-Season Putting Greens

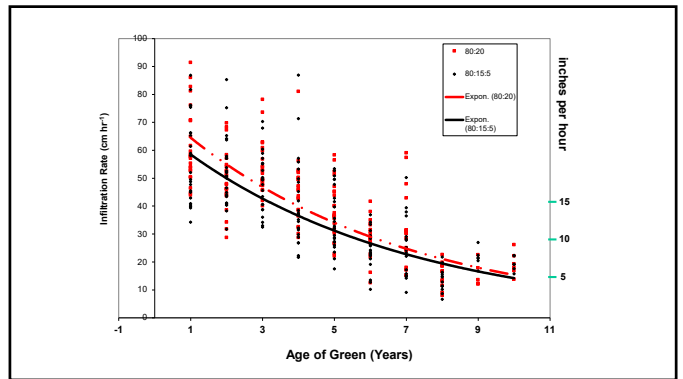


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RMRTA
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 The Ranch Events Complex
 DECEMBER 13-15, 2022

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Heads up!

- Supplemental reading
- Access by QR code
- Use your phone to access and download or save the image.

<https://turf.unl.edu/>

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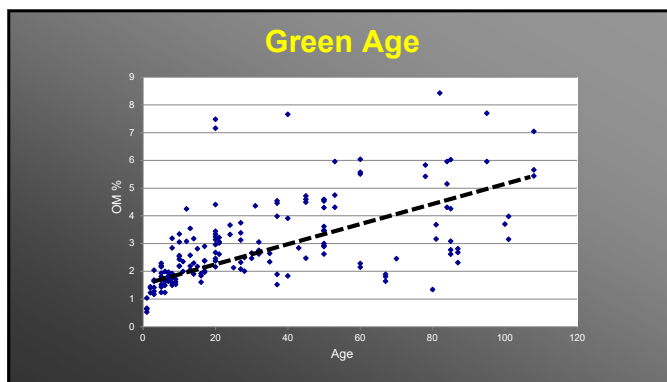


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➤ **National Survey**

➤ **Determine cause and effect relationship among management practices and their interactions relative to surface OM accumulation**

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Organic Matter Concentration of Creeping Bentgrass Putting Greens in the Continental U.S. and Resident Management Impact

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Is the age effect misleading?

- **Sampling issue:**
 - **Mat depth increases as green ages resulting in more OM in the same volume soil.**

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Organic Matter Management Study

Objectives

1. Determine if conventional hollow tine is more effective than solid tine aerification at managing organic matter accumulation
2. Determine if venting methods are effective at managing OM accumulation

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Survey Summary

- None of the variables collected, by themselves, or in combination with others, predicted OM
- Courses using >18 cubic ft*/M of topdressing with or without “venting” had lower OM
- Of the known cultivars, no differences in OM were evident

*1 ft³ = 100 lbs of dry sand; yd³ = 2700 lbs

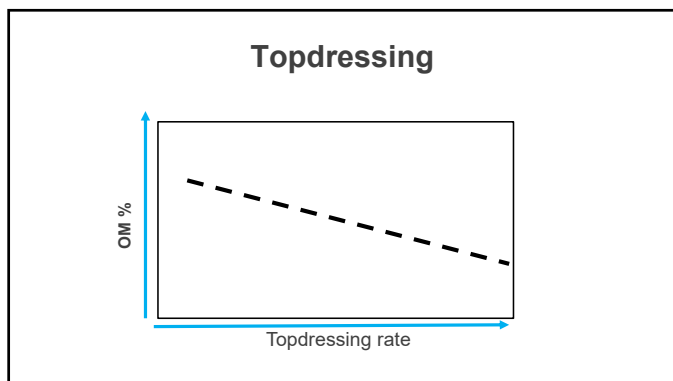
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Treatments

Tine Treatment	Venting Treatment
None	None
2X Hollow tine	PlanetAir
2x Solid tine	Hydroject
	Bayonet tine
	Needle tine

All possible combinations = 180 treatments, applied for 2 consecutive years

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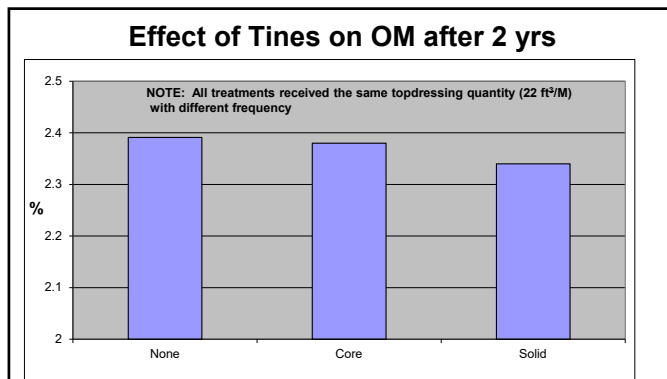
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All treatments received the same topdressing quantity (22 ft³/M*) but different frequency

Equilibrated to identify differences of the practices in question

**1 ft³ = 100 lbs of dry sand; yd³ = 2700 lbs*

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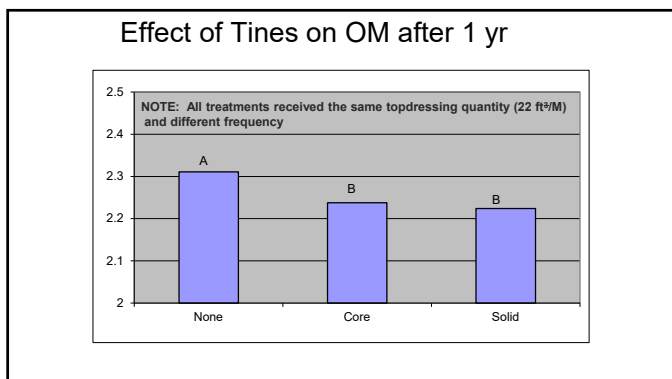
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- ### Materials and Methods
- Green Age:
 - 12 years
 - 9 years
 - Data collected:
 - OM% (pre-cultivation/monthly)
 - Single wall infiltration (monthly)

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Let's take a quick look at that...

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What these data do/don't suggest

- Cultivation, when topdressing quantity was equal, was insignificant in affecting OM
- Superintendents must use whatever tools they have at their disposal to ensure sand is making it into the profile and not the mower buckets

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Topdressing interval relative to Tine/Venting combinations (22 cu ft/M)*

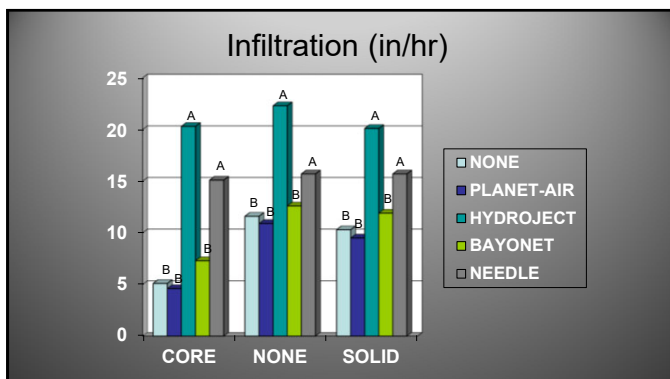
- **NONE/NONE**
– 5-10 days
- **Solid & Hollow/NONE**
– 7-14 days
- **Solid & Hollow/Venting**
– 14-18 days

Observed and calculated based on displacement and surface area opened

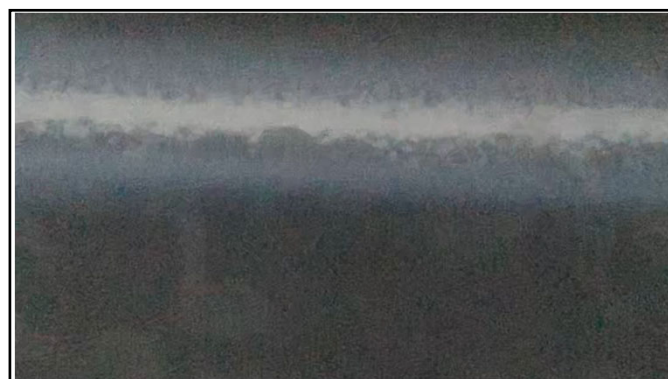
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<https://www.usga.org/content/usga/home-page/course-care/regional-updates/central-region/2018/solid-tine-aeration-order-of-operations.html>

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Topdressing

Old Tom Morris (1821–1908) is thought to have discovered the benefits of topdressing accidentally when he spilled a wheelbarrow of sand on a putting green and noted how the turf thrived shortly afterward (Hurdzan, 2004).



J.B. Beard is his classic textbook "Turfgrass Science & Culture, 1973" writes:
"The most important management practice for OM management is topdressing"

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How much sand to use for topdressing?

- Generic recommendation is 20-40 ft³ per 1000 sq. feet/yr (about 0.5 inch/M/yr)
 - UNL worked showed 20-24 ft³ for OM management
- Varies by amount of:
 - Traffic
 - Grass species or cultivar
 - Nitrogen Applied
 - Water Applied
 - Microclimate/Location

Key is matching your growth rate to optimize topdressing +

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How do you get rid of OM?

- Decomposition/degradation (microbial)
 - Increase surface area and aeration
 - Products that degrade OM (inconsistent, not reliable)
 - Removal
 - Power raking, dethatching, core aeration
- Dilution
 - Topdressing

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#clipvol "One bucket at a time"

- Micah Woods, Asian Turfgrass Center
 - Asianturfgrass.com



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"the solution to pollution is dilution"



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"Growth Potential"

- Pace Turf
 - <https://www.paceturf.org/public/sand-and-growth-potential>



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What these data do/don't suggest

- Cultivation, when topdressing quantity was equal, was insignificant in affecting OM
- Superintendents, however, must use **whatever tools** they have at their disposal to ensure sand is making it into the profile and not the mower buckets

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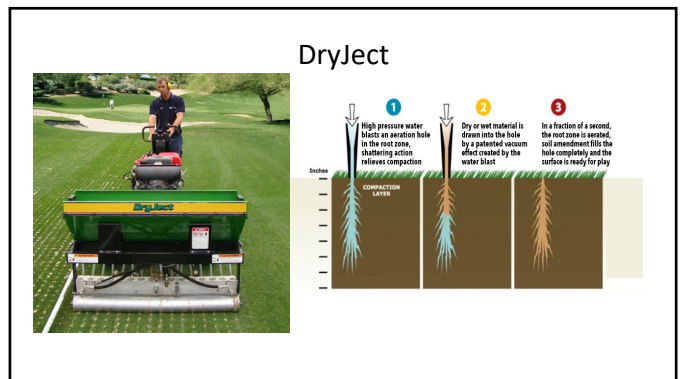
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Dryject Trial Fall 2021

- Check
- Hollow ½" ID
- Solid ½"OD
- DryJect 1 (3x3)
- Needle
- DryJect 2 (3x2)
- Needle + Solid
- Needle + Hollow

Procore - 3" target depth on all tines except Dryject = 5"

Sampled day after treatment in 1' depth increments to 4 "

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OM Testing

- Know how your sample was taken and compare notes with others that use the same protocol
- Take annual tests to determine long-term trend
 - Same time of year
 - Avoid a set sampling depth
 - #OM246
- Correlate your test results with turf quality and performance during stressful environmental conditions to determine need for changes in management program
- Threshold/critical levels likely vary across the globe and from course to course

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Treatment	% OM	
Check	4.5	a
Hollow	3.7	b
Needle	3.1	c
DryJect (3x3)	2.7	d
Needle + Hollow	2.3	d
DryJect (3x2)	2.3	d
Needle + Solid	2.3	d
Solid	2.2	d

- No differences among depths
- Dilution only
- Dryject and needle tine were least surface disruptive
- Hollow tine response was unexpected
- **Data is preliminary**

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Clarification/over-simplification regarding OM Management on sand based rootzones

- One size does not fit all
- The universal optimal % OM has not been scientifically determined and may be mythical
- Methodology & sampling differences exist and must be considered
 - Help is on the horizon (USGA OM Brain Trust)
- Cultivation is critical to increase efficiency in sand incorporation
- Solid are not different than coring tines
- The benefits of topdressing continue to be identified.
 - Sand size does matter

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Spring 2023 Tine Trial

- 9 tine types
- 2 devices (ProCore and DryJect)
- Multiple dual treatments
- Total of 18 treatments

Equipment and Tine Support Provided by

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Chapter 12 ASA Monograph (3RD Edition) **Characterization, Development, and Management of Organic Matter in Turfgrass Systems**

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