THATCH·ZYME®

DATA BOOK

2021-2026

ZYME·CO

Proprietary bio-solutions inspired by nature

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Multi Season Longitudinal Study

Across the USA – 2021 to 2023

Summary

ThatchZyme reduced organic matter accumulation in the 0-2 cm fraction by an average of 15.8% across 9 real world testing sites relative to control plots.

Description

We partnered with leading golf courses across the country to establish 9 real world testing sites. Participants chose an area for treatment and a comparable area under the same growing conditions and cultural practices to leave untreated as a control. Thatch accumulation was assessed by performing organic matter soil testing (loss on ignition) on soil samples sliced at a depth 0 to 2 cm. Soil tests were performed throughout the season and accumulation was determined by the change in organic matter between the beginning and end of the season.

Methods

Soil Test Protocol

5 to 10 soil samples were randomly taken from both the treated and control areas. Samples were sliced at a depth of 0-2 cm, 2-4 cm, 4-6 cm before shipping. Upon arrival samples were pooled together and dried at 80°C for >48 hr. Samples were allowed to come to room temperature and the dry weight was recorded. Samples were fully combusted at 440°C for 4 hours in a furnace. Samples were allowed to come to room temperature and the ashed weight was recorded. Organic matter percentage is calculated by the percentage of mass loss on ignition. OM% = (Dry Weight - Ashed Weight) / Dry Weight.

Percent Change OM% 0-2 cm over the season

Percent change is the percent difference from the beginning and end of the season. This helps us compare organic matter across testing sites with varying starting amounts. The organic matter accumulation difference is the difference between the control and treated areas.

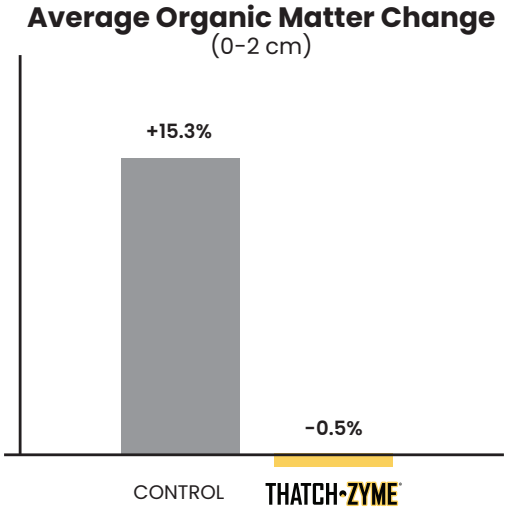
% Change = (End OM% - Initial OM%) / Initial OM% x 100
OM Accumulation Difference = % Change Treated – % Change Control

Results

Location	% Change Control	% Change Treated	OM Accumulation Difference
Bethesda, MD	24.2%	5.5%	-18.7%
Lincolnwood, IL	21.6%	10.7%	-10.8%
Lincolnwood, IL	-7.7%	-10.5%	-2.8%
Jackson Hole, WY	26.5%	3.9%	-22.7%
Jackson Hole, WY	26.3%	14.7%	-11.6%
Big Sky, MT	16.6%	0.6%	-16.0%
Edwards, CO	11.6%	-24.2%	-35.7%
Woodmoor, CO	12.2%	-3.2%	-15.4%
Manchester, VT	6.0%	-2.5%	-8.5%
AVERAGE	**+ 15.3%**	**-0.5%**	**-15.8%**

Percent change for control and ThatchZyme™ treated areas and the resulting organic matter accumulation difference for our 9 testing sites.

Across 9 testing sites organic matter was measured by loss on ignition at the beginning and end of the season. The control plots increased by an average of 15.3%, while the ThatchZyme treated plots decreased by an average of 0.5%. This results in a 15.8% accumulation difference between the treated and control areas.



Percent change for the control and ThatchZyme treated areas and the resulting organic matter accumulation difference for our 9 testing sites.

Multi Season Longitudinal Study

Country Club at Woodmoor – 2021 to 2023

Summary

Organic matter continually increased in the 0-2 cm depth of the control plot, while it remained nearly constant in the ThatchZyme treated plot. After two years, the previously untreated control plot received one season of ThatchZyme treatment, showing that organic matter buildup can be reversed.

Description

The Country Club at Woodmoor (Woodmoor, CO) began weekly ThatchZyme treatments in the fall of 2021. Organic matter testing (OM246) was performed regularly throughout the season. The treated and untreated tees contained a mixture of bentgrass and Poa annua.

Results

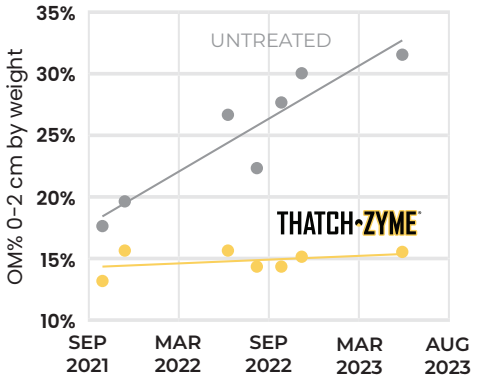


Fig. 1 Shows how ThatchZyme works to manage thatch over time on a Bent/Poa tee.

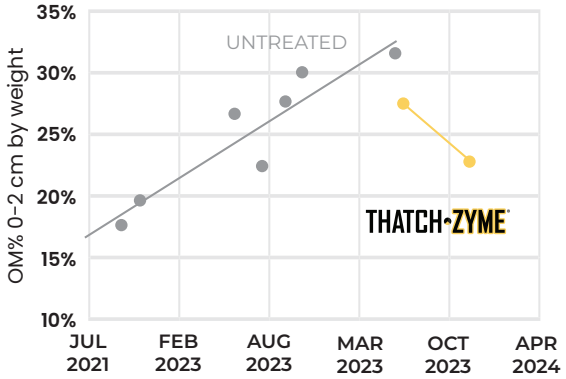


Fig. 2 Next ThatchZyme is used to treat and reverse thatch in the former untreated control plots.

Application Frequency Study

Country Club at Woodmoor (2023)

Summary

Over the course of a single season, ThatchZyme treatments decreased organic matter by 14.4% on the biweekly treated plot and 21% on the monthly treated plot. This demonstrates both application rates are effective and reversed the historical trend from the longitudinal study.

Description

The control plot from the original longitudinal study showed a continuous increase in organic matter from Fall 2021 to Spring 2023. This plot was split in half for the 2023 season and biweekly and monthly ThatchZyme treatments were performed at the recommended rates. Organic matter testing (OM246) was performed at the beginning and end of the season. The treated and untreated tees contained a mixture of bentgrass and Poa annua.

Results

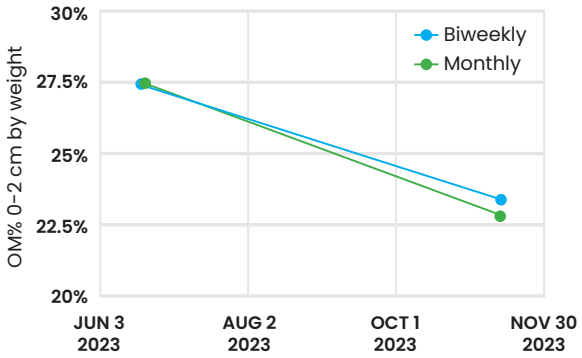


Fig. 1 Biweekly and monthly ThatchZyme treatments reduced organic matter in the 0-2 cm fraction over the course of a single season.

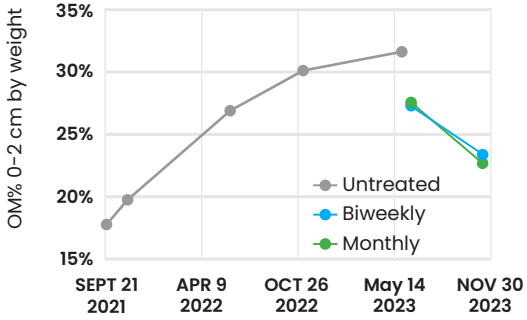


Fig. 2 Biweekly and monthly ThatchZyme treatments strongly reversed the historical trend of accumulating organic matter.

Soil Profile Study

Congressional Country Club (Gold) (Bethesda, MD) – 2023

Summary

ThatchZyme treated area visibly reduced layers of undigested thatch, improved root mass, and improved the soil profile. In addition, ThatchZyme reduced organic matter accumulation by 18.7% versus the control.

Description

20+ year old bentgrass/poa tees were selected to test ThatchZyme vs. a control. The tee boxes on hole 16 were treated with ThatchZyme and hole 4 was left untreated as a control. The tee boxes are located next to each other under the same growing environments and cultural practices. Organic matter soil tests (OM246) were taken prior to initiating treatments and throughout the season.

Results

Treatments were performed on 16 tee and 4 tee was left untreated as a control.

Organic matter soil tests were performed to compare the rate of organic matter accumulation.

THATCH-ZYME® CONTROL

May 2023 – Start of Trial (prior to treatments)

Prior to the initiation of treatments, visible thatch layers were present on both the treated (16 tee) and control (4 tee) areas on 20+ year old bentgrass/poa tees.

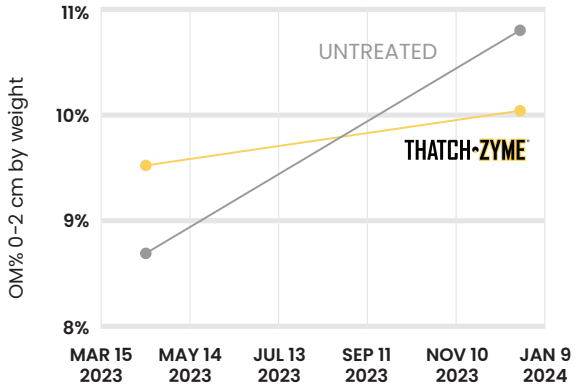
August 2023, 23 weeks

Within 12 weeks the thatch layers were significantly reduced in the ThatchZyme treated area (16 tee) versus the control area (4 tee) on 20+ year old bentgrass/poa tees.

December 2023, 31 weeks

THATCH•ZYME | CONTROL

At the end of the 2023 season there the ThatchZyme treated area had significantly less visible thatch compared to the control area on 20+ year old bentgrass/poa tees.



Root Length Study

ZymeCO Greenhouse – 2023

Summary

10 weeks of biweeky ThatchZyme treatment significantly increased creeping bentgrass maximum root length by 21% ($p < 0.05$).

Description

Experiments were conducted in 2023-2024 in a greenhouse at ZymeCO headquarters as a preliminary investigation of ThatchZyme foliar applications effect on root growth.

Methods

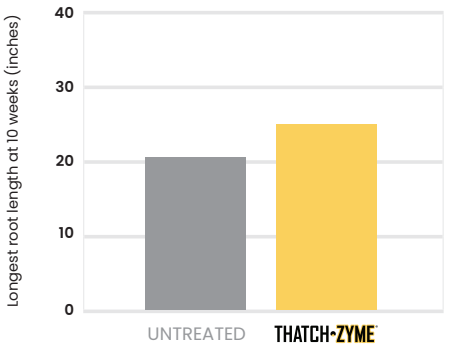
Bentgrass Rooting Tube Construction

Creeping bentgrass was grown in 1.25 inch diameter clear polyethyene tubes filled with 80:20 v/v USGA spec sand and screened spagnum peat moss held in PVC tubes oriented at a 30° angle. Creeping bentgrass was sown at 3 lb/1000 square feet by mixing into the top layer of sand in each tube and given two weeks to establish prior to the first ThatchZyme treatment. Tubes received overhead mist irrigation four times per day through the duration of the study. Andersons 10-10-10 fertilizer with iron and micronutrients was applied to each tube immediately after seeding and after 5 weeks. Leaf tissue was trimmed back to 1.5 inch twice across the 10 week study.

Maximum Root Length Measurements

Maximum root length was determined at 10 weeks by taking measurements from foliar tissue to the longest visible terminal root in each tube. Statistical significance is based on students t-test.

Results



Academic Plot Study

Dr. Tony Koski, Colorado State University – 2023

Summary

Results suggest that biweekly and monthly ThatchZyme treatments reduce organic matter in the 0-2 cm fraction.

Description

To test the effect of ThatchZyme treatment frequency, we partnered with Dr. Tony Koski at Colorado State University. A random block design with 3 replicates for each condition is being performed at Harmony Golf Club in Fort Collins, Colorado on a bentgrass nursery. All blocks are receiving biweekly topdressing. Treatments were as follows: control (topdressing only), ThatchZyme biweekly, ThatchZyme monthly, and ThatchZyme plus an undisclosed additive at biweekly and monthly frequencies. The trial began on 8/10/2023 and was performed until the end of the growing season (~12 weeks).

Methods

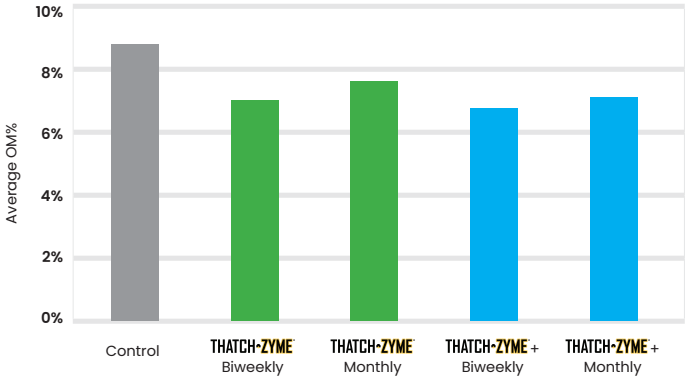
Soil Sample Protocol

At the end of the 2023 season (12 weeks after the initiation of treatments), 5 soil samples were taken from each plot and sliced at a depth of 0-2 cm, 2-4 cm, and 4-6 cm. Samples from each plot were pooled together and organic matter was measured by loss on ignition at 440 oC for 4 hours.

Results

Picture of the trial area with strings used to section of treatment blocks.

CSU Trial End of 2023 Season Following 12 Weeks of Treatments Average OM% 0-2 cm (preliminary results)

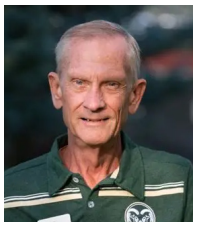


The trial indicates that both biweekly and monthly ThatchZyme treatments reduce organic matter in the 0 to 2 cm fraction versus the control plots. TZ = ThatchZyme, TZ Plus = ThatchZyme plus an undisclosed additive.

CSU Trial End of 2023 Season Following 12 Weeks of Treatments Average OM% 0-2 cm (preliminary results)

Sample	Plot 1	Plot 2	Plot 3	Average
Control	9.33%	8.67%	8.33%	8.78%
TZ Biweekly	6.38%	5.29%	9.22%	6.96%
TZ Monthly	8.91%	6.03%	7.76%	7.57%
TZ Plus Biweekly	5.78%	7.18%	7.23%	6.73%
TZ Plus Monthly	6.95%	5.22%	9.15%	7.11%

Raw data from trial. TZ = ThatchZyme, TZ Plus = ThatchZyme plus an undisclosed additive.



In memory of Dr. Tony Koski, whose decades of research, teaching, and leadership helped shape modern turf management. We are honored to include his work here and grateful for the legacy he leaves with our industry.

Colorado Course Trial

Poa-Bentgrass Tee – 2026

Summary

ThatchZyme reduced organic matter throughout the upper 6 cm of the turf profile, with the greatest reduction near the surface.

Description

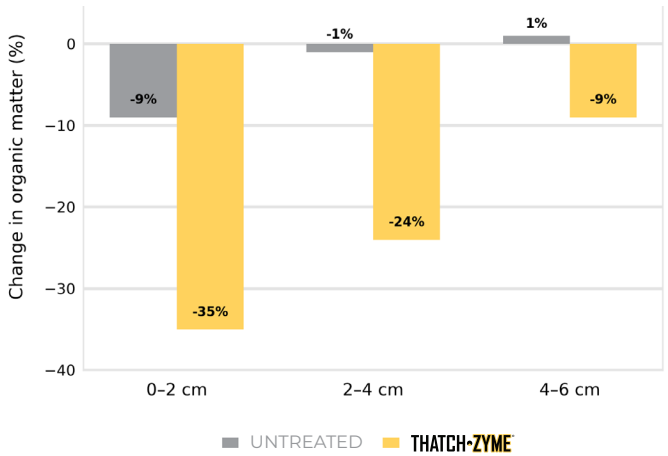
A 2026 Colorado golf course trial evaluated ThatchZyme's effect on organic matter in a Poa-bentgrass tee. Across the study period, ThatchZyme-treated plots consistently showed greater organic matter reduction than the untreated control across all three sampling depths.

Methods

ThatchZyme was applied bi-weekly at 0.4 oz per 1,000 sq. ft. (approximately 1 pint per acre). Organic matter was evaluated at 0–2 cm, 2–4 cm, and 4–6 cm depths using an average of five cores. Percent change was calculated by comparing measurements collected May 27 and August 5.

Results

Turf Profile Depth	Untreated % Change	ThatchZyme % Change	OM Accumulation Difference
0–2 cm	-9%	-35%	-26%
2–4 cm	-1%	-24%	-23%
4–6 cm	+1%	-9%	-8%



University of Florida Trial

Ultradwarf Bermudagrass – 2026

Summary

ThatchZyme slowed organic matter accumulation near the surface and reduced organic matter at the 2–4 cm depth.

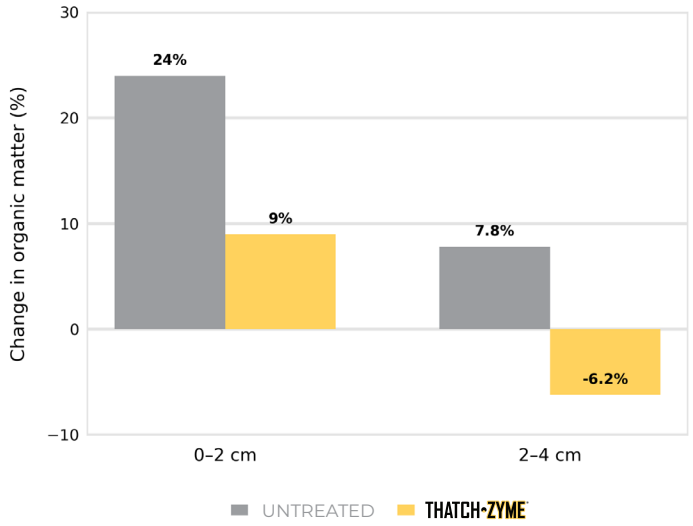
Description

A 2026 University of Florida trial evaluated ThatchZyme's effect on organic matter in ultradwarf bermudagrass. From February to June, untreated plots showed continued organic matter accumulation, while ThatchZyme-treated plots demonstrated slower accumulation or a net reduction within the upper 4 cm of the turf profile.

Methods

ThatchZyme was applied monthly from December through June at 0.8 oz per 1,000 sq. ft. (approximately 1 quart per acre). Organic matter was evaluated at 0–2 cm and 2–4 cm depths, with percent change calculated from measurements collected between February and June.

Results



University of Florida Trial

Ultradwarf Bermudagrass – 2026

Summary

ThatchZyme slowed organic matter accumulation within the thatch layer, while increased organic matter below the thatch layer may reflect greater rooting.

Description

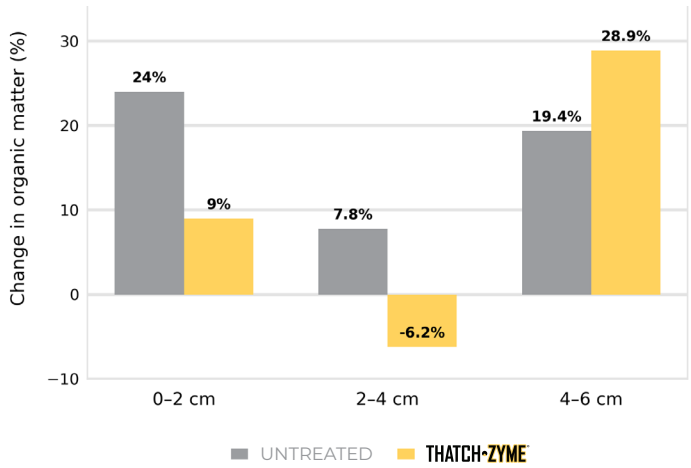
A 2026 University of Florida trial evaluated ThatchZyme's effect on organic matter throughout the turf profile of ultradwarf bermudagrass. ThatchZyme slowed or reduced organic matter accumulation within the upper profile, while organic matter increased at the deeper 4–6 cm depth. Because the observed thatch layer was approximately 2 cm thick, this deeper increase may reflect root-derived organic matter rather than additional thatch accumulation.

Methods

ThatchZyme was applied monthly from December through June at 0.8 oz per 1,000 sq. ft. (approximately 1 quart per acre). Organic matter was evaluated at 0–2 cm, 2–4 cm, and 4–6 cm depths, with percent change calculated from measurements collected between February and June.

Results

At 0–2 cm, organic matter increased 24% in the untreated control compared with 9% with ThatchZyme, a 15-percentage-point difference. At 2–4 cm, untreated organic matter increased 7.8%, while ThatchZyme-treated turf decreased 6.2%, a 14-percentage-point difference. At 4–6 cm, organic matter increased 28.9% with ThatchZyme compared with 19.4% in the untreated control.



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