

November 7, 2019

# 2019 PRM RESULTS

River Birch Golf Course, Star ID



## INTRODUCTION

Performance Resource Management is a premium agronomic service designed to deliver superior results. PRM improves playing conditions while saving water and other operational costs, which greatly benefits the business of operating a golf course.

Qualitative results that have been recorded this season include:

1. Improved turf density
2. Less irrigation maintenance (due to clogged sprinkler heads)
3. Reduced hand watering
4. A reduction in the severity of wet spots

PRM has monitored multiple, quantitative data points that have contributed to the qualitative results that were observed over the season.

This report highlights the agronomic improvements that have been observed on the 1<sup>st</sup> fairway trial plot at River Birch Golf Course over the course of the 2019 season.

Notable, quantitative improvements include:

1. Thatch Reduction
2. Root Zone Expansion
3. Drainage Improvement

Charts, graphs, and tables included in the '19 PRM Results Report reference data representative of trends observed across the smaller trial plot on the 1<sup>st</sup> fairway during the 2018 season.

Agronomic data has been gathered by PRM.

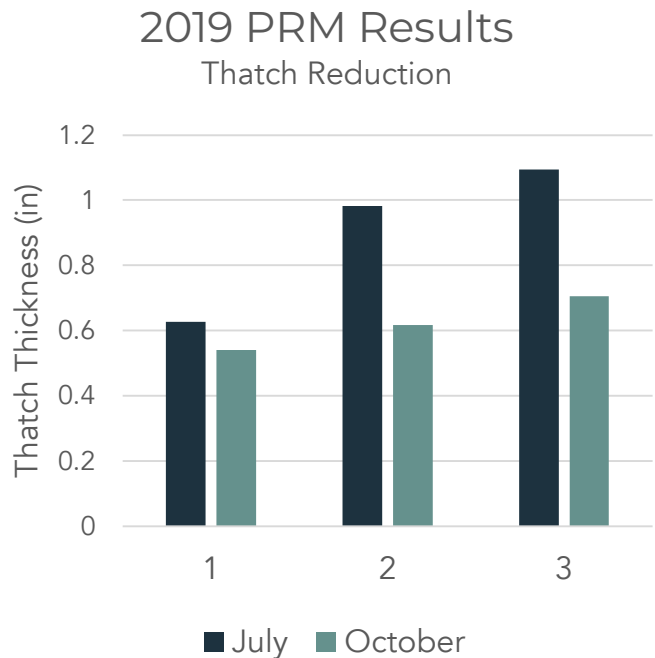
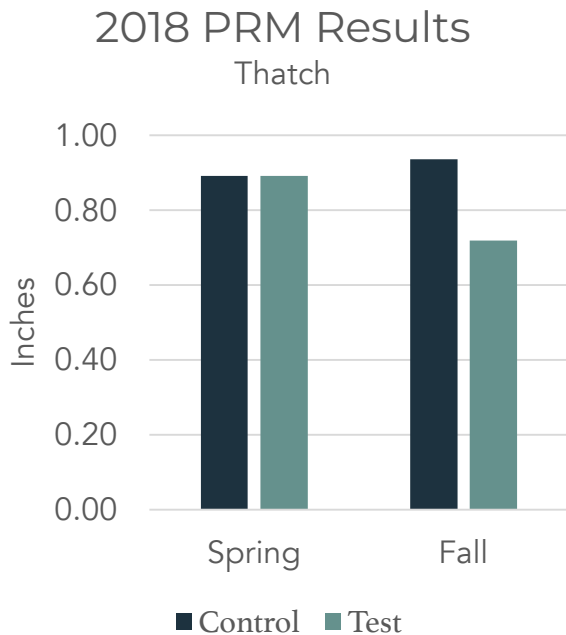
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# THATCH REDUCTION

Excess thatch is a problem many golf courses struggle with across the valley. Thatch layering creates a perched water table, limiting drainage, enabling compaction, reducing the effectiveness of irrigation and the efficiency of root development. Managing organic material has posed a challenge for decades, and significant progress has been recorded in both the 2018 and 2019 PRM trials at River Birch.

The first layer of thatch was measured in the Spring and Fall for both 2018 and 2019. The figures 1 and 2 (below) shows the decrease in thatch, by layer, over the course of 2 seasons. For example, the first layer of thatch decreased from 0.89 inches in the Spring to 0.72 inches in the Fall (of 2018), a 19% reduction in the thatch layer. PRM has continued to deliver results throughout the 2019 season, exhibiting familiar trends in thatch reduction, year after year.

We have made significant progress combatting thatch, layering, and managing organic material over the trial plots throughout 2 seasons of running PRM.



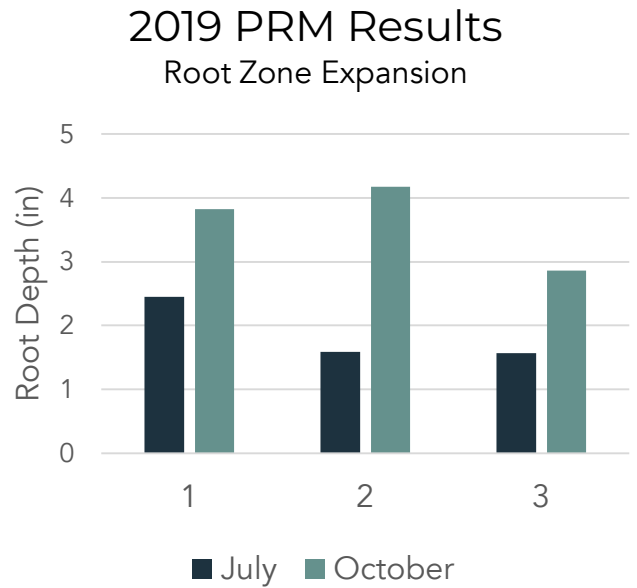
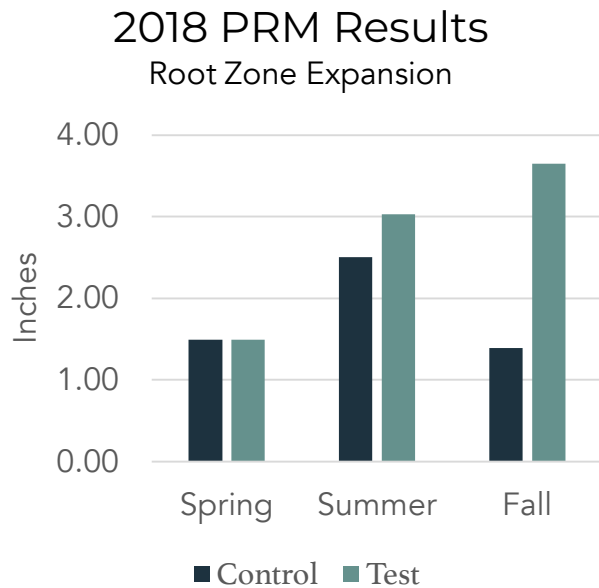
2018 Thatch Reduction			
Location	Spring	Fall	% Change
Control	0.89	0.94	5%
Test	0.89	0.72	-19%

2019 Thatch Reduction			
Location	July	October	% change
1	0.63	0.54	-14%
2	0.98	0.62	-37%
3	1.1	0.71	-36%
Average	0.90	0.62	-29%



# ROOT ZONE EXPANSION

The deeper roots can go into the soil, the more efficient the plant is in transporting nutrients and surviving extreme temperature and drought. Running PRM caused the root zone to expand. Expanded root zone was observed across each consecutive season both independently and where trial plots overlapped.



2018 Root Zone Expansion				
Location	Spring	Summer	Fall	% increase
Control	1.49	2.50	1.39	-7%
Test	1.49	3.03	3.65	145%

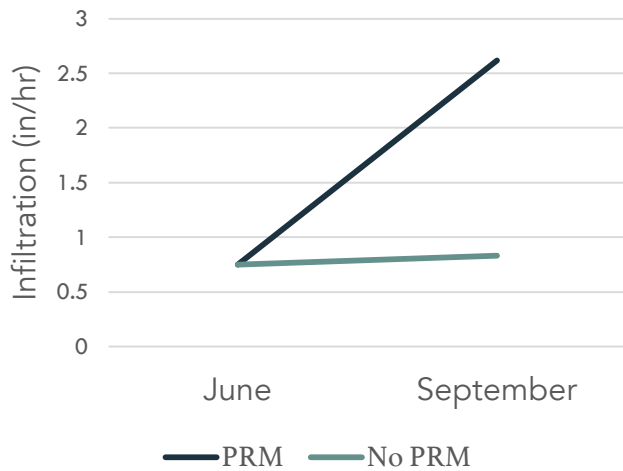
2019 Root Zone Expansion			
Location	July	October	% increase
1	2.45	3.83	56%
2	1.59	4.18	163%
3	1.56	2.86	83%
Average	1.87	3.62	101%

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# Drainage improvement

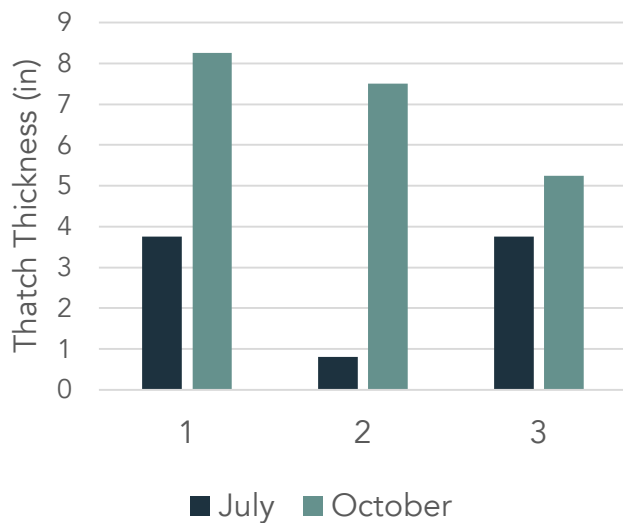
Drainage is the result of a combination of agronomical factors that are interrelated. Reducing thatch and compaction allows water to flow through the soil profile and also causes increased root development. All trends have been observed over the 2018 and 2019 season.

## 2018 Drainage Improvement



2018 Drainage Improvement (in/hr)			
	June	September	Increase
PRM	0.75	2.615	249%
No PRM	0.75	0.833	11%

## 2019 PRM Results Drainage Improvement



2019 Drainage Improvement (in/hr)			
Location	July	October	% change
1	3.75	8.25	120%
2	0.81	7.5	825%
3	3.75	5.25	40%
<b>Average</b>	<b>2.77</b>	<b>7.00</b>	<b>328%</b>

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