

To: Larry Napora

From: Alan Lee ~

Date: September 11, 2001

Subject: Thatch Measurements of the I-Mol Test Hole- Grove #4

Attached is a list of the thatch measurements that I collected this past year. All samples and measurements were taken by me. The samples were randomly taken in the following areas:

Green: the left side, the center, and the right side

Tee: the gold tee the rear, the center and the front

Fairway: at 150 yard marker the left side, the center and the right side

A review of the data indicated that the I-Mol treatment resulted in a significant reduction levels

## Thatch Measurements of I-Mol Treated Test Hole

### Grove #4

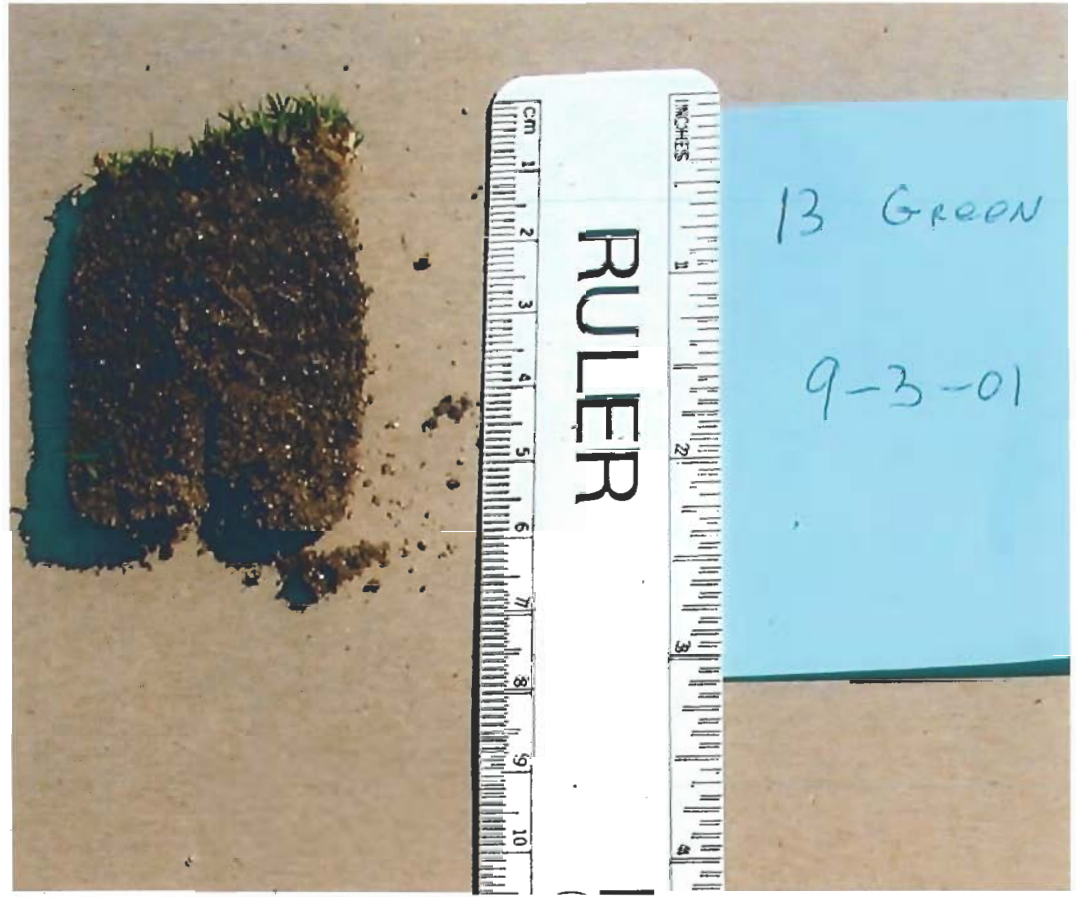
Thatch Measurements are not compressed. Measurements are in centimeters.

Date		Samples			Average
		#1	#2	#3	
04/06/01	Green	2.8	3.3	2.9	3.00
	Tee	3.2	3.4	3.2	3.27
	Fairway	2.8	2.6	3.3	2.90
05/27/01	Green	2.0	2.0	1.5	1.83
	Tee	4.0	3.5	4.0	3.83
	Fairway	3.0	3.5	3.0	3.17
06/21/01	Green	2.0	2.2	2.5	2.23
	Tee	3.6	2.8	2.7	3.03
	Fairway	2.0	2.5	2.5	2.30
07/06/01	Green	1.4	1.5	2.0	1.63
	Tee	2.0	3.0	3.5	2.83
	Fairway	1.8	2.0	1.8	1.87
07/20/01	Green	1.0	0.9	0.8	0.90
	Tee	1.7	1.5	1.5	1.57
	Fairway	1.9	2.0	1.8	1.90
08/03/01	Green	0.8	0.7	0.6	0.70
	Tee	1.6	1.4	1.3	1.43
	Fairway	0.7	0.8	0.8	0.77
08/19/01	Green	0.8	0.7	0.8	0.77
	Tee	0.8	1.2	0.9	0.96
	Fairway	1.5	1.4	1.3	1.40
09/03/01	Green	1.0	0.9	0.8	0.90
	Tee	1.7	1.5	1.5	1.57
	Fairway	1.9	2.0	1.8	1.90

All measurements were taken by Alan Lee

# #13 Green

April / September 2001



Alan Lee's study

# #13 Tee

April / September 2001



Alan Lee's study

# #13 Fairway

April / September 2001



Alan Lee's study

## I-Mol Study

An informal study was conducted to see if the regular application of a sugar would aid in thatch reduction. The Grove #4 hole was chosen to do the test because thatch development was considered excessive there. The product chosen to be tested was I-Mol. A proprietary molasses blend is the sugar source used in making I-Mol. I-Mol is currently used at the Pete Dye Golf Club, Clarksburg, West Virginia. Product advertising material states the use of I-Mol has eliminated the need for fall aerification of greens. The claim is also made that fairways are only aerified once a year now.

Our study was started in March of this year. I took nine thatch measurements from this hole. Three randomly selected core samples were taken from three areas of the hole: The gold tee, one each from the front, middle and the rear of the tee. Fairways cores were taken near the 150-yard marker, at the left, center and right of the fairway. Cores from the green were taken take from the left, center and right of the green. The exact locations of the core samples were randomly selected. Thatch measurements were made and the data posted. An average value was determined for each sample location. Measurements were taken approximately every three weeks. All the sampling and measuring was done by me. Table 8.1 is a list of the thatch measurements obtained.

Weekly applications of I-Mol were applied to the tees, fairway and the green of Grove # 4. Table 4.5 is a list of the I-Mol and chemical applications made to Grove # 4 hole. The data collected indicated a definite reduction in the thatch levels of all three areas tested. Non-compressed thatch levels reductions observed were, gold tee: 3.00 cm to 0.90 cm, fairway: 3.27 cm to 1.57 cm and on the green: 2.90 cm to 1.9 cm. Although this was not a strict scientific study, I believe the weekly application of I -Mol resulted in a decrease in the thatch levels observed on this hole.

## **Tissue Nitrogen Tests**

Grass clippings were collected from the Pitch green, Orchard # 1 green, Grove #4 green, and the Lakes #6 green approximately every three weeks. Tournament Turf Laboratories, Inc., of Valencia, PA conducted tissue analysis on the samples. The main reason for the tissue testing was to see if tissue nitrogen levels varied depending on how the greens were treated. The Pitch green received three granular applications of fertilizer between April and September. Orchard # 1 and Lakes # 6 greens received applications of a Floratine mixture and Lesco 18-3-6 every two weeks at a rate to provide 0.1# of N/1000. The Grove #4 green received the weekly applications of I-Mol. Iron, 1 oz. / 1000, was applied April 19th and April 16th and Chelated Micro-Mix, 3 oz. /1000, and was applied May 28th.

Figure 8.2 A -8.2D is a copy of the April 10th report supplied by Tournament Turf. Copies of June 15th and August 16th reports are figures 8.3A-8.3D and 8.4A and 8.4C. I feel the reports do not show a significant difference in the tissue nitrogen levels observed on the three greens even though they treated differently this summer. I would question the need for the Floratine applications.

**2001 Chemical and Fertilizer Applications I-Mol Test Hole  
Grove #4 Table 4.5**

**Fertilizer**

Date	Product	Nutrient Source			Application Rate		
		Nitrogen	Phosphorus	Potassium	#/1000 sq ft		
					N	P	K
6/25	Anderson Tee Time 18-3-18 + Merit 0.2%	Urea	Ammonium Phosphate	Sulfate of Potash	0.63	0.1	0.63
9/10	Country Club 13-25-12	Urea	Ammonium Phosphate	Muriate of Potash	0.5	0.96	0.45
9/13	Lange 24-4-12 50% Umaxx	Urea	Diammonium Phosphate	Muriate of Potash	1.5	0.25	0.75

**Pesticides and Chemicals**

Date	Product	Active Ingredient	Application Rate		Target
			Oz/	1000 sq ft	
4/9	I-Mol	Proprietary Molasses Blend	2		Thatch Control
4/16	I-Mol	Proprietary Molasses Blend	2		Thatch Control
4/23	I-Mol	Proprietary Molasses Blend	2		Thatch Control
4/30	I-Mol	Proprietary Molasses Blend	2		Thatch Control
5/10	I-Mol Daconil Weatherstik	Proprietary Molasses Blend	2		Thatch Control
		Chlorothalonil	1		Dollar Spot, Leaf Spot, Brown Patch
5/16	I-Mol Daconil Weatherstik	Proprietary Molasses Blend	2		Thatch Control
		Chlorothalonil	1		Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22		Growth Regulator
5/23	I-Mol Chelated Micro-Mix (Green Only)	Proprietary Molasses Blend	2		Thatch Control
			3		

**2001 Chemical and Fertilizer Applications I-Mol Test Hole  
Grove #4 Table 4.5**

**Pesticide and Chemical Applications –Continued**

<b>Date</b>	<b>Product</b>	<b>Active Ingredient</b>	<b>Application Rate</b> Oz/ 1000 sq ft	<b>Target</b>
5/30	I -Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator
6/4	I-Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator
6/12	I -Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator
6/19	I- Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator
6/27	I-Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator
7/3	I-Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator
7/9	I-Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator
7/17	I-Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator
7/25	I -Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator

**2001 Chemical and Fertilizer Applications I-Mol Test Hole  
Grove #4 Table 4.5**

**Pesticide and Chemical Applications –Continued**

<b>Date</b>	<b>Product</b>	<b>Active Ingredient</b>	<b>Application Rate</b> Oz/ 1000 sq ft	<b>Target</b>
8/1	I-Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
8/22	I-Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
	PrimoMaxx	Trinexapac	0.22	Growth Regulator
9/5	I-Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil	1	Dollar Spot, Leaf Spot, Brown Patch
9/10	I-Mol	Proprietary Molasses Blend	2	Thatch Control
	Daconil Weatherstik	Chlorothalonil 1		Dollar Spot, Leaf Spot, Brown Patch

I returned to school in September and it is my understanding that I-Mol applications were continued in the fall.