

# PROBLEM SOLVING FOR THE SPORTS FIELD MANAGER


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## TODAY'S GOALS

- Can preventive maintenance fit your problem solving needs?
- Learn and apply the principles of "Root Cause Analysis".
- Problem solving revolves around communication.
- Apply problem-solving skills in some actual problem solving.
- Confirm the value of improving your communication skills:
  - Asking the "right" questions.
  - Providing the "best" answers.
- The opportunities available through new technologies.
- The value of engaging 'consultants'.

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THE EFFORTS OF JOHN MASCARO, PRESIDENT OF TURF-TEC INTERNATIONAL, ARE OFTEN THE FIRST PAGES VISITED IN OUR INDUSTRY PUBLICATIONS.

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## ONE OF THE ULTIMATE PROBLEM SOLVING TOOLS IS PREVENTIVE MAINTENANCE

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## YOU BEING AT THIS MEETING IS PREVENTIVE MAINTENANCE.

- information exchange
- get some new ideas
- visit with old friends/make new ones
- recharge/reset of your mental health

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## PREVENTIVE MAINTENANCE CERTAINLY MAKES SENSE BUT...

- It has a 'cost' and in some instances perhaps it is NOT the best choice?
  - Budget... what is the ROI?
  - Time... what's that worth?
  - Particular situation.

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## PREVENTIVE MAINTENANCE CERTAINLY MAKES SENSE BUT...

Is your philosophy Preventive or Curative  
in your pest control programs?



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## ROOT CAUSE ANALYSIS

- What happened?
- Why did it happen?
- What to do to prevent it from happening again.
  
- Can you determine if the cause was
  - Physical
  - Human
  - Organizational



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## AND IT IS PRESUMED TO BE A GIVEN IN ROOT CAUSE ANALYSIS, BUT LET'S RE-EMPHASIZE THIS POINT:

- Communication is always key in either solving, resolving,  
or living with the consequences of a problem.



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## AND NOW, A REAL WORLD EXAMPLE OF EFFECTIVE PROBLEM SOLVING:

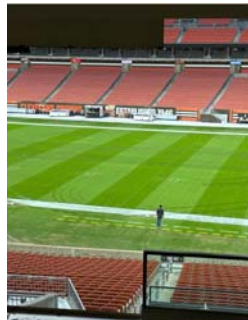
- *Neal Pate, Stadium Field Manager at FirstEnergy Stadium, applied his problem solving strategies in dealing with vandalism to the stadium surface done by a F-150 truck on November 21, 2022, 6 days prior to hosting Tampa Bay on Sunday, Nov. 27.*



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## THE TIMELINE AND PROBLEM SOLVING PROCESS FOR FIRSTENERGY FIELD:

- 2022 schedule was heavily front-loaded and middle of field had been resodded with 1.5 to 1.75" thick KBG from Tuckahoe Sod Farm
- Tuesday of game week, Nov 21, received an "odd" call from a stadium colleague about something had happened and he had better come to the field.



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## THE TIMELINE AND PROBLEM SOLVING PROCESS

- Worst damage on left side of field and particularly in the painted areas. Replaced some sod here.
- But on the playing surface none of the sod really 'pushed out'... damage was primarily cosmetic.
- Flagged the worst areas and replaced around 90 plugs with square plugger (4.5-5" deep plugs pulled from east end of field).



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### THE TIMELINE AND PROBLEM SOLVING PROCESS


- Most areas on the playing surface could be lifted and then rolled to restore the uniformity of the surface.
- Topdressed the areas with green sand and Mirimichi carbon



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### THE TIMELINE AND PROBLEM SOLVING PROCESS

- Field remained tarped right up until game time.
- Lots of internal meetings with NFL, but NOT with NFLPA.
- All assessments indicated the damage was cosmetic and playability and safety were not compromised.



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### THE TIMELINE AND PROBLEM SOLVING PROCESS

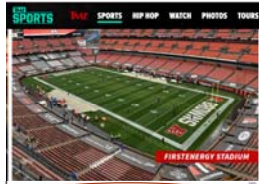
- Players definitely spent extra time pre-game checking out their footing etc.



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### COMMUNICATION SOON BECAME THE CHALLENGE:

- VP of Football Facility Operations led all communications.
- Damage was impossible to hide because of visibility of the field from helicopters, drones, planes etc.
- Had maybe 1 hour before word leaked that field had been vandalized.
- Staff responded phenomenally well; confidence in staff's ability to assess and address the damage was conveyed.
- Reviews of security procedures in order to assure similar situation does not happen again.



*Police believe the damage occurred after someone broke into the stadium and got ahead of a turf roll. The whole thing is currently under investigation.*

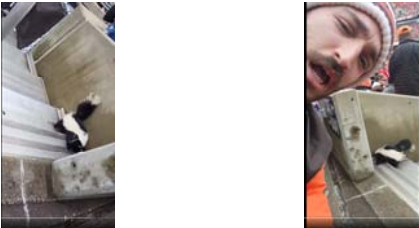
*They also noted all the stadium maintenance people working on it (family) relations, and have provided the Cleveland Division of Police with all relevant information. The team said in a statement.*

*Based on our internal evaluation, there was some superficial damage to the playing field and our grounds maintenance team is currently working to repair.*

*You take great pride in the strong names and reputation of our stadium's playing surface. We have in touch with the NFL on the matter and are confident after repair our field will be ready for Sunday's game on the 'Orange Blossom'.*

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### FIELD PLAYS GREAT, CLEVELAND WINS, AND BIGGEST PROBLEM ON GAME DAY IS NOT ON THE FIELD BUT IN THE STANDS:



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### NOW, LET'S APPLY SOME ROOT CAUSE ANALYSIS PRINCIPLES OF OUR OWN TO SOLVING SOME PROBLEMS



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- Patriot bermudagrass field, 3<sup>rd</sup> week of August, just before the first game of the season, Lynchburg, VA (central VA);
- Extension Agent says "field is blighted, never seen bermudagrass look this bad... you've got to come"
- What questions etc. do you ask in the problem solving process?

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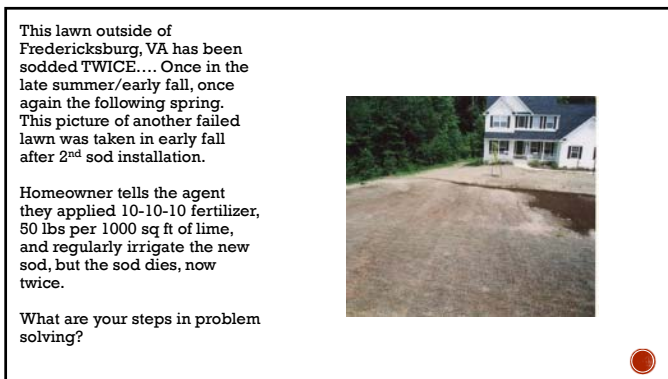


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- Tall fescue home lawn, near Va Tech Campus in SW VA
- Image taken in August
- County Extension Agent asks for a visit because "I've never seen anything like this"
- Again, what questions do you ask/what steps do you take to try to figure out the problem and a solution?

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This lawn outside of Fredericksburg, VA has been sodded TWICE.... Once in the late summer/early fall, once again the following spring. This picture of another failed lawn was taken in early fall after 2<sup>nd</sup> sod installation.

Homeowner tells the agent they applied 10-10-10 fertilizer, 50 lbs per 1000 sq ft of lime, and regularly irrigate the new sod, but the sod dies, now twice.

What are your steps in problem solving?




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Homeowner is worried that something bad is happening to his lawn following a chemical application on their lawn. He suspects that the yellowing areas are dying. Comments that "wife wanted me to spray the lawn, but I should have left it alone... it's very low input... haven't used any fertilizer of any kind in years".

What questions do you ask?


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**The situation:**  
A creeping bentgrass putting green in NE Mississippi, early fall.

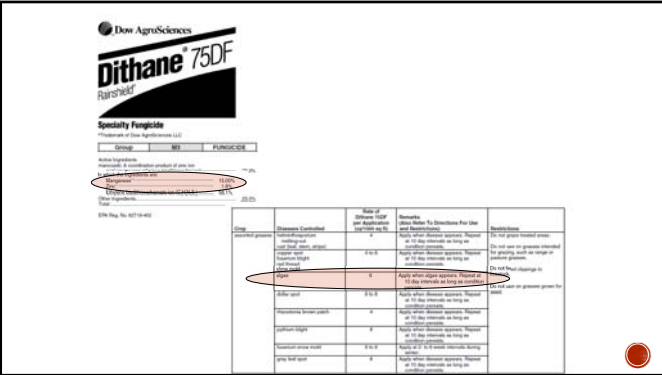
What questions do you ask, what steps do you take in initiating the problem solving effort (and hopefully solving the problem)?

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**Summary of soil test results:**  
pH = 5.2; P = M+; K = H; Ca = M+; Mg = H; **Mn = VH; Zn = VH ???**

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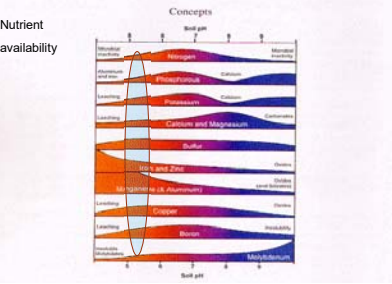


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**THERE ARE TWO LIKELY SOLUTIONS TO CORRECTING THIS MICRONUTRIENT PHYTOTOXICITY PROBLEM (WITH VARYING COSTS AND DEGREES OF EFFORT)**

- 1) Remove and dispose the existing soil and replace with a new growing medium (they didn't like that recommendation, but I thought it was a good one because it wasn't a 'band-aid')
- 2) a much more cost effective option which was ???

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2) Lime according to the soil test recommendation.

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Here's a tribute 'thought problem' from the late Dr. Don Waddington of Penn State University that requires some critical thinking :

- A turf manager is thinking about adding either 40% medium sand by volume or 40% calcined clay (think kitty litter-type product) to an existing silt loam soil. The reason? "It will make the soil drain faster." To their credit, they knew enough to do some testing before implementing the modification.
- The lab did the mixing etc and provided data on the percentages of air and total porosity, as well as plant available/unavailable water for the new mixtures vs the original silt loam soil.
- Your problem solving task – predict what happened to these variables for the soils that were modified with the sand or calcined clay by indicating that the percentage went up (+) or it went down (-) after the modification.

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Amendment with silt loam soil (% by volume)	Air Porosity (%)	Available Water (%)	Unavail. Water (%)	Total Porosity (%)
None	9	35	9	53
40% medium sand	???	???	???	???
40% calcined clay	???	???	???	???

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### REAL WORLD PROBLEM

- Bermudagrass turf horse track 'struggling' in southern United States (near coast).
- Newly sprigged June 2022, re-sprigged Aug. 2022.
- Overseeded with perennial ryegrass Oct. 2022.

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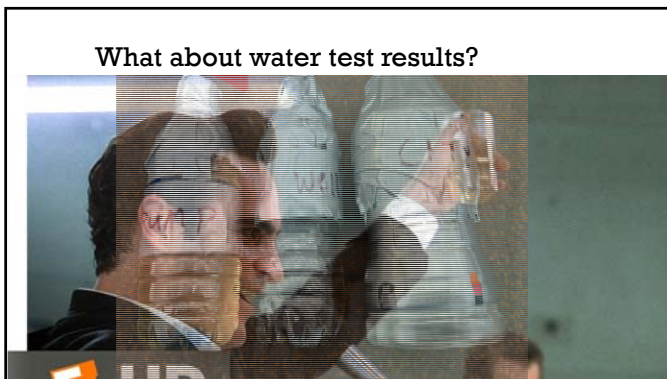


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### SOIL TEST RESULTS

<p>Inside of track</p> <p>pH: 7.78</p> <p>P: VH</p> <p>K: H</p> <p>Ca: VH</p> <p>Mg: VL</p> <p>Zn: VH</p> <p>Soluble salts: L</p>	<p>Outside of track</p> <p>pH: 7.24</p> <p>P: VH</p> <p>K: L</p> <p>Ca: L</p> <p>Mg: VL</p> <p>Zn: VH</p> <p>Soluble salts: L</p>
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ANALYSIS OF CHEMICAL PROPERTIES		YOUR RESULTS			RATING OF YOUR RESULTS		
City water		UNIT OF MEASURE	RESULT	LBS/ ACRE FOOT	SATISFACTORY	POSSIBLE PROBLEM	PROBABLE PROBLEM
WATER CHARACTERISTICS	pH	--	8.76	--			
	Hardness	--	150.72	--			
	Bicarbonate	ppm	150.79	410.15			
	Carbonate	ppm	9.60	26.11			
<b>High bicarbonates limit nutrient availability in soils</b>							
Well water		UNIT OF MEASURE	RESULT	LBS/ ACRE FOOT	SATISFACTORY	POSSIBLE PROBLEM	PROBABLE PROBLEM
WATER CHARACTERISTICS	pH	--	8.36	--			
	Hardness	--	10.85	--			
	Bicarbonate	ppm	403.58	1097.74			
	Carbonate	ppm	2.88	7.83			

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IMPACT ON SOIL STRUCTURE	Sodium Absorption Ratio Adj	mmhos/cm	2.57	--		No anticipated difficulty with most crops.	Some difficulty for sensitive & moderately sensitive crops.	Significant difficulty for most crops.
	Electrical Conductivity (ECe)	ppm	0.57	--				
	Total Soluble Salts		362.24	385.29				
<p><b>City water</b></p> <p>To maintain good soil structure in arid regions, irrigation water should have the capacity to replace the soluble salts being dissolved. If the salts being dissolved are not replaced, a decrease in permeability may occur.</p> <p><b>SAR &gt; 3 = sodic</b>  <b>SAR &gt; 9 = severe risk of increasing soil sodicity, reduced plant growth, soil deflocculation, poor infiltration and percolation, poor seedling emergence</b></p>								
IMPACT ON SOIL STRUCTURE	Sodium Absorption Ratio Adj	mmhos/cm	20.80	--		No anticipated difficulty with most crops.	Some difficulty for sensitive & moderately sensitive crops.	Significant difficulty for most crops.
	Electrical Conductivity (ECe)	ppm	0.74	--				
	Total Soluble Salts		474.24	1289.93				
<p><b>Well water</b></p> <p>To maintain good soil structure in arid regions, irrigation water should have the capacity to replace the soluble salts being dissolved. If the salts being dissolved are not replaced, a decrease in permeability may occur.</p>								

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## TECHNOLOGY... BE SELECTIVE, BUT THERE ARE LOTS OF POSSIBLE TOOLS TO ENGAGE ON YOUR SMART DEVICES

Dr. Shawn Askew, Professor and Extension Weed Specialist at Va Tech gave me one recommendation for an app that he thinks everyone should have on their smart device: 'LeafSnap'

And now we have a problem solving effort utilizing this app.

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The turfgrass manager is upset that the very costly preemergent herbicide that was applied has failed to control this weed (images from early May in Va). He is asking me as a 'consultant' if I think this is an instance of an improperly formulated pesticide... he would like some reparations if possible.

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Have you been able to identify it with the app? Was it a failed preemergent product? What types of questions would you ask to offer your best guess regarding product performance?

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### WHAT IS THE VALUE OF A CONSULTANT?

**Unmatched Experience**

USGA agronomists are located in field offices throughout the country, each visiting nearly 100 golf courses per year. Since 1953, this nationwide network has been an invaluable source of expertise and experience for golf courses.

**Rigorous Methodology**

Backed by the largest private turfgrass research program in the world and equipped with practical and scientific tools, USGA agronomists are trained to thoroughly identify key issues and offer site-specific recommendations.

**Unique Objectivity**

The USGA Course Consulting Service has no financial interest in any products or services it may recommend. Our agronomists operate with autonomy, so that the interests of the individual golf course are our first and only priority.

**Build Consensus**

A goal of every consulting visit is to help build consensus among key course personnel. This strong level of communication both during and after an on-site visit can include an agronomist's presentation of findings to course officials, if desired.

**Long-Term Savings**

USGA agronomists can identify problems early, thereby preventing turf loss or other issues requiring large expenditures. Golf course managers and others consistently report that USGA recommendations have saved them many times the cost of the course consulting visit.

**Improved Golf Experience**

Course conditioning is the most important factor in golfer satisfaction, which helps attract and retain customers. In areas such as putting green consistency, turf quality, and appropriate tee placement, we can provide insights that allow facility managers to provide a better product for their customers.

USGA Course Consulting Service

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### ARE CONSULTANTS "WORTH IT"?

- Well, a private consultant won't be in business very long if they can not demonstrate value, so that question typically answers itself.
- One of those values: another set of independent ideas and observations from someone with experience but is not 'biased' with situational familiarity.
- A full-time consultant has the opportunity to see first-hand a wide variety of situations that may (or may not) apply to you, and their experiences broaden perspectives and possible recommendations.
- Most likely they are 'credentialed' and that carries weight with your administration in the site visit and/or follow-up report.

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## YOU'RE SURROUNDED BY POSSIBLE CONSULTANTS... MANY AT ZERO COST

- Your peers are consultants (or at least they should be).
- Does your land-grant university have turfgrass specialists through their extension service?
- The county-level extension service for your land-grant university is a very much underutilized consultant possibility for most professional turfgrass applications.
  - That often makes sense... we are such a specialized industry that few extension agents have training in situations as specific as they will encounter in golf and sports turf situations.
  - But don't forget about their value in other areas of horticulture where they often are VERY WELL trained (ornamentals and arboriculture in particular) AND
  - The local extension agent is often one of the best connected individuals in a town, city, or area... lots of local knowledge that has its own consulting value.



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## ONE FINAL THOUGHT ON PROBLEM SOLVING...

Sometimes the problem can NOT be solved... at least not to a level of satisfaction that you were hoping to be achieved.

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