Penn State's
Center for Sports Surface Research

THE SPORTSTURF SCOOP

Synthetic Turf and Staph Infections - Cause for Concern?

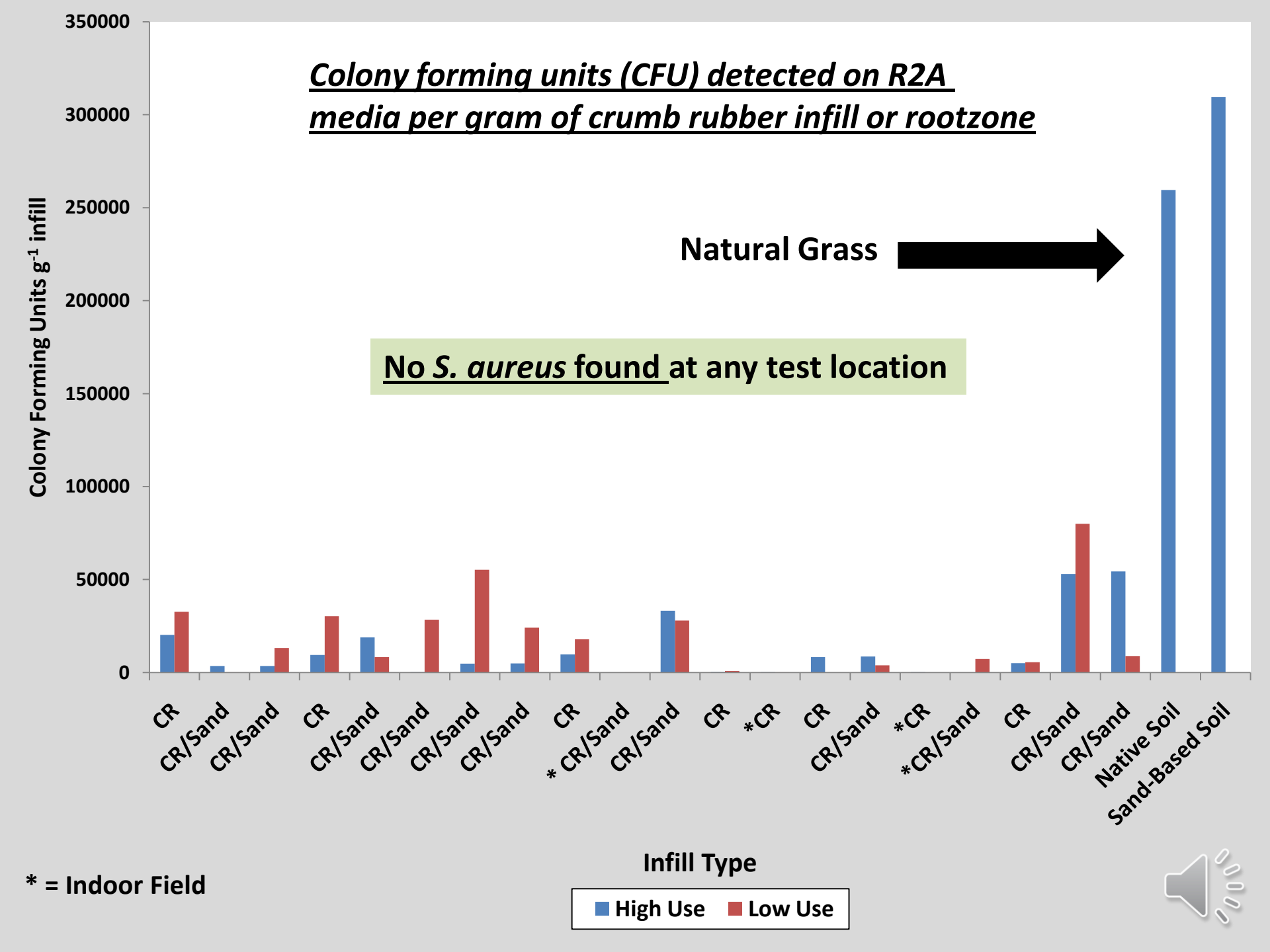
Synthetic Turf Role in Staph Infections

Texas-sized MRSA problem with prep football turf

Posted on Friday, December 21, 2007 at 11:07AM by Scott McPherson in Popular Culture, influenza and infectious diseases | 7 Comments | 1 Reference

Survey of Fields

- 20 fields (summer)
- Indoor and outdoor
- High and low use areas
- All bacteria and staph bacteria


Colony forming units (CFU) detected on R2A media per gram of crumb rubber infill or rootzone
Natural Grass
No S. aureus found at any test location
Colony Forming Units g-1 infill
350000
300000
250000
200000
150000
100000
50000
0
CR
CR/Sand
CR/Sand
CR
CR/Sand
CR/Sand
CR/Sand
CR/Sand
CR
* CR/Sand
CR/Sand
CR
*CR
CR
CR/Sand
*CR
*CR/Sand
CR
CR/Sand
CR/Sand
Native Soil
Sand-Based Soil
Infill Type
High Use
Low Use
* = Indoor Field

Surfaces that test positive (+) or negative (-) for the presence of S. aureus colonies

Source	Result
Public areas	
Human hands	+
Human faces	+
Computer mouse	-
Elevator button	-
Outside door handle	-
Computer keyboard	-

Source	Result
Athletic training facility	
Natural turfgrass playing field	-
Synthetic turf playing field	-
Cold pool	-
Blocking pads*	+
Sauna	-
Football*	-
Weight equipment*	+
Towel hamper	-
Stretching table	+
Used towels*	+
Trash can for drink cups	-
*Sampled immediately after use	

How Long Can Staph Bacteria Survive on Synthetic Turf ?

Outdoor Test

- Levels of bacteria quickly dropped to very low levels
- Difficult to evaluate control products (bacteria in all plots decreased quickly)
- Comparable bacteria survival rate natural grass

Indoor Test

- Bacteria survived on synthetic turf and natural grass for multiple days
- Population decreased significantly with time
- Anti-microbial treatment and detergent decreased survival rate

Summary of Studies

- Is synthetic turf a breeding ground for staph bacteria? – No!
- Sunlight appears to be best disinfectant
- Indoors – treatments can reduce bacteria

Abrasiveness of Synthetic Turf

Centers for Disease Control –
Staph spread primarily through breaks in the skin

Abrasiveness of Synthetic Turf

- **Surface/epidermal injuries 9x more common on infilled synthetic turf**

Incidence, Causes, and Severity of High School Football Injuries on FieldTurf Versus Natural Grass

A 5-Year Prospective Study

Michael C. Meyers,*† PhD, FACSM, and Bill S. Barnhill,‡ MD
From the †Human Performance Research Center, West Texas A&M University, C and ‡Panhandle Sports Medicine Associates, Amarillo, Texas

Background: Numerous injuries have been attributed to playing on artificial turf. Recently, FieldTurf was d the playing characteristics of natural grass. No long-term study has been conducted comparing game-rela ball injuries between the 2 playing surfaces.

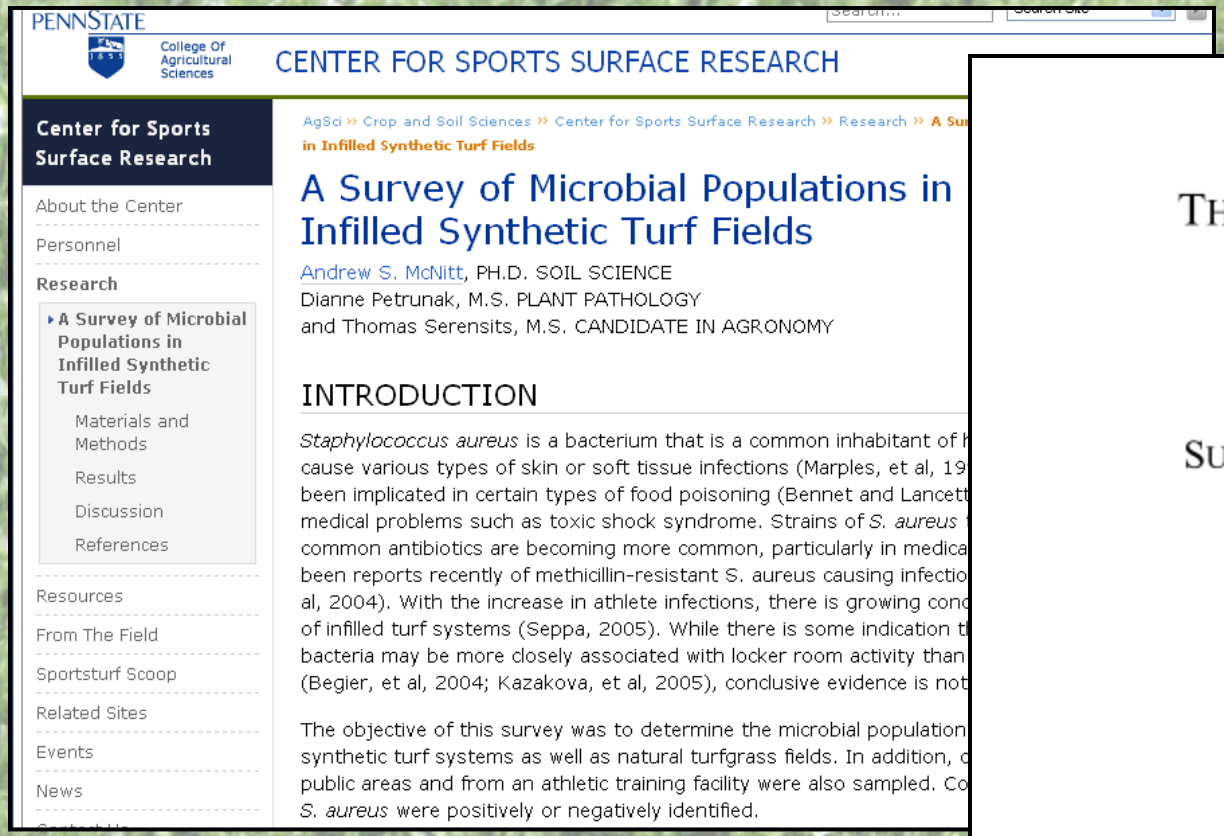
Hypothesis: High school athletes would not experience any difference in the incidence, causes, and sev injuries between FieldTurf and natural grass.

Study Design: Prospective cohort study.

Methods: A total of 8 high schools were evaluated over 5 competitive seasons for injury incidence, injury c injury time loss, player position, injury mechanism, primary type of injury, grade and anatomical location o injured, head and knee trauma, and environmental factors.

Conclusions

- Staph bacteria – found on other surfaces
- No evidence of anyone getting staph infection directly from synthetic turf
- Synthetic turf - not a hospitable environment for staph bacteria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in Infilled Synthetic Turf Fields

A Survey of Microbial Populations in Infilled Synthetic Turf Fields

Andrew S. McNitt, PH.D. SOIL SCIENCE
Dianne Petrunak, M.S. PLANT PATHOLOGY
and Thomas Serensits, M.S. CANDIDATE IN AGRONOMY

INTRODUCTION

Staphylococcus aureus is a bacterium that is a common inhabitant of h
cause various types of skin or soft tissue infections (Marples, et al, 19
been implicated in certain types of food poisoning (Bennet and Lancett
medical problems such as toxic shock syndrome. Strains of *S. aureus*
common antibiotics are becoming more common, particularly in medica
been reports recently of methicillin-resistant S. aureus causing infectio
al, 2004). With the increase in athlete infections, there is growing conc
of infilled turf systems (Seppa, 2005). While there is some indication t
bacteria may be more closely associated with locker room activity than
(Begier, et al, 2004; Kazakova, et al, 2005), conclusive evidence is not

The objective of this survey was to determine the microbial population
synthetic turf systems as well as natural turfgrass fields. In addition, c
public areas and from an athletic training facility were also sampled. Co
S. aureus were positively or negatively identified.

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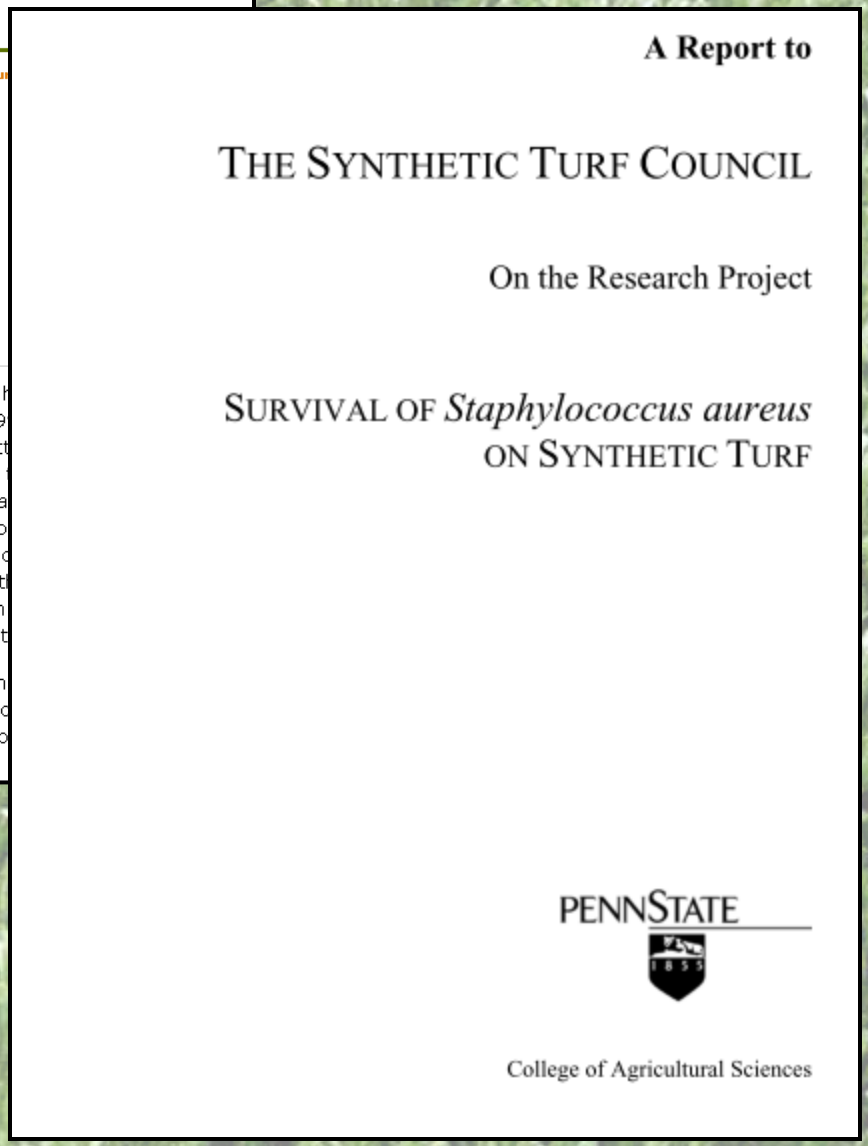
A Report to

THE SYNTHETIC TURF COUNCIL

On the Research Project

SURVIVAL OF *Staphylococcus aureus* ON SYNTHETIC TURF

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