Minnesota Agriculture in the Classroom

Educational Program through the MN Department of Agriculture

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http://www.mnagclassroom.org

Middleburg, FL

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Importance of Agriculture in Education

- Provides real-life context
- Endless opportunities for inquiry and experimentation
- Opportunities for “hands-on” learning

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Agenda

- Intro
- Science and an Art
- Relate to science or agriculture
  - Use as a context or real world application
- Artificial vs Natural Field
- Soil Science (activities 5 of them)
- Maintenance (All about maintaining it, plant doctor activity) Explain those selections and what they may mean.
- Careers in Turf
- Additional resources for research

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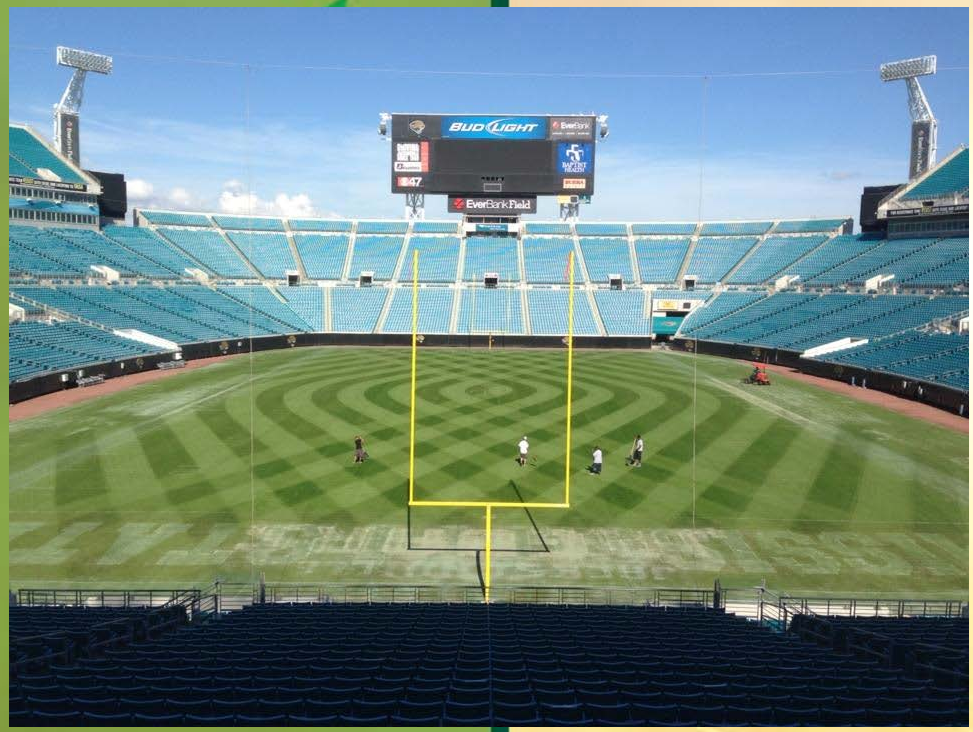
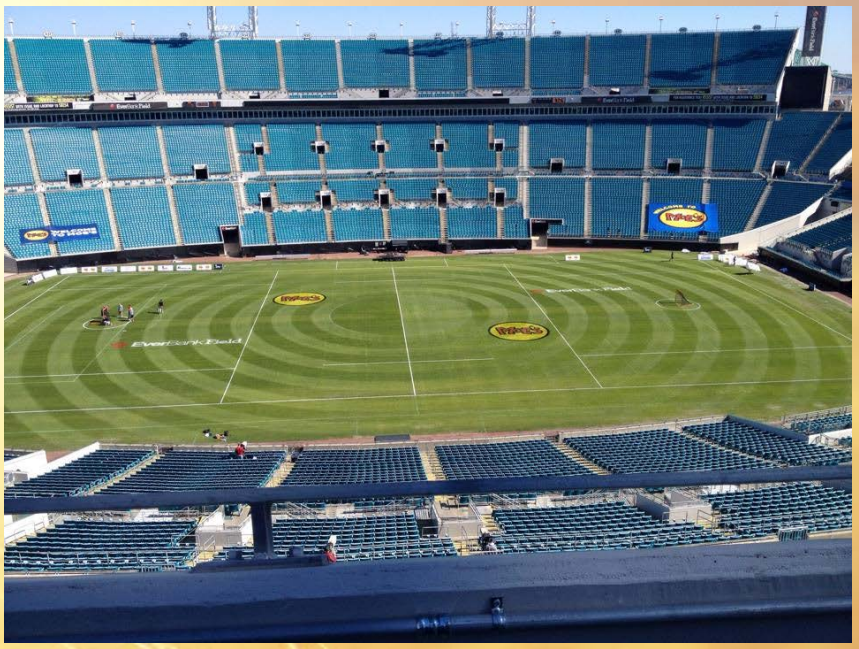
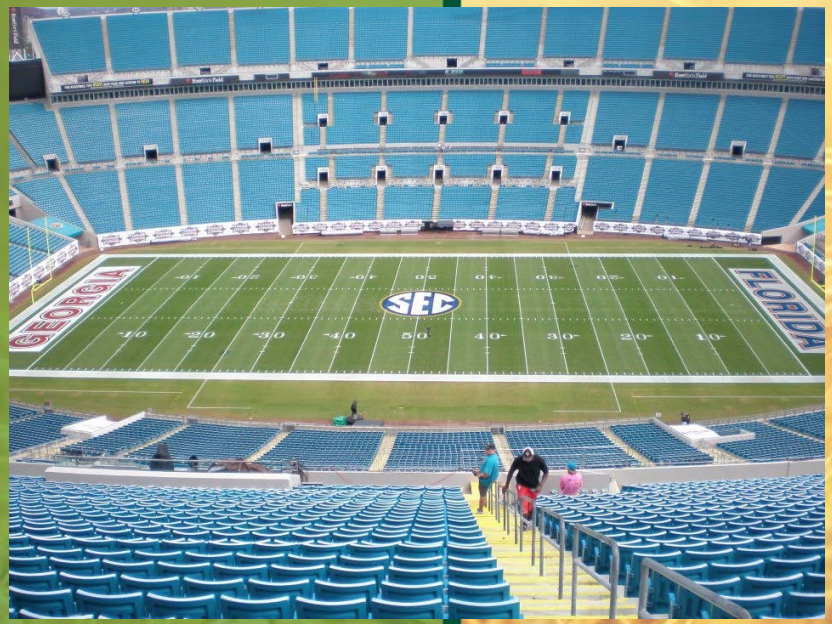

BUD LIGHT
EverBank Field


EverBank Field


GEORGIA
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PENN STATE


FIRSTENERGY
STADIUM


FIRSTENERGY
STADIUM

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Fenway Park Striping Info Video

Find out more about grass patterns

Grounds crew Bloopers

Early Lead

NFL's Hall of Fame game canceled because of unsafe field conditions

By Des Bieler August 7, 2016

Crews try to get the field ready for the NFL Hall of Fame game. (Joe Robbins/Getty Images)

NFL fans will have to wait a few more days to get their fix. Sunday's Hall of Fame game between the Packers and Colts, which would have been the first preseason contest, was canceled because of poor field conditions. The problem stemmed from the paint used in the logo at midfield and in the end zones, which reportedly

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Intro Video Clip

Pampered Turf

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How can sports fields relate to agriculture or science?

- Practical research
  - Natural Grass vs Artificial Field
- Soil Science
  - Soil particles
  - Soil texture
  - Compaction
- Maintenance Tasks
  - Mowing (photosynthesis)
  - Irrigation (transpiration)
  - Fertilization (plant Science)
  - Grass Selection (Gardening: Right plant, right place)

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Artificial vs. Natural Grass Fields

- Why artificial?
  - Withstand weather conditions
  - Holds up under heavy use
  - No maintenance?
    - Myth (additional infill, disinfect, painting, temperature monitoring)
  - Costs less?
    - Not always!
- Why natural grass?
  - Provides good traction
  - Cooler temperature
  - Naturally disinfects itself and decomposes organic items left on field
  - Living plant that provides oxygen and filter water
  - 74% of NFL players prefer it

Why not always have a natural grass field?

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Soil Compaction is the Enemy!

- Increases hardness of the field
- Influence ball bounces and rolls
- Increase uneven playing surface
- Stress the grass
  - Allow weeds or disease to come in

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Soil Science

- HUGE part of natural grass field!
- Not Dirt!!
  - Earth as an Apple
- What is soil made up of?
- Differences in Soil Particles determines soil texture
- Ability to accept or retain water (and also nutrients) determined by soil texture
- Properties of Soil particles table

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Soil Science

- What is soil made up of?
  - Dry Soil Investigation
    - Minerals
    - Organic Matter
    - Water
    - Air
- Soil Particles
  - Sand, Silt, Clay

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Soil Science

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Soil Properties

Property	Clay	Silt	Sand
Porosity	Mostly small pores	Mostly small pores	Mostly large pores
Permeability	Slow	Slow to moderate	Rapid
Water-holding capacity	Large	Moderate	Limited

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- infiltration: the process by which water penetrates into soil from the ground surface
- percolation: the process by which water moves downward through openings in the soil
- permeability: the ability of soil to allow the passage of water
- porosity: the percentage of soil volume that is not occupied by solids

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Soil Activities

Complete Activity and Report Back:

1. 30 second summary of activity

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Plant Doctor: Challenges of Growing Natural Grass

- Review the Natural Grass Field Guide
- With a partner, take a stab at determining the issue on the field in the different scenarios.

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Plant Doctor

- Scenario 1: The grass was mowed too short. This can stress the grass and cause it turn brown and die.
- Scenario 2: Soil compaction is the cause of natural grass field being too hard. Compaction can happen from overuse, lack of preventative maintenance tasks and overly wet soils being played on.

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Plant Doctor

- Scenario 3: This is evidence of a fungus issue that must be taken care of quickly or it can wipe out and entire field.
- Scenario 4: The dry areas likely have developed a thatch layer that is preventing water from reaching the soil.
- Scenario 5: This is a rare occurrence but would be due to a lack of nitrogen fertilizer.

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Sports Field Careers

- Profiles of different sports field mangers
- Quick read
  - Circle where the location of their fields
  - Underline why they chose to go into the turf industry
  - Place a star in the margin when you come across information that is new to you.

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Other Turf Careers

- Golf
- Field Design
- Field Installation
- Turf Equipment Technician/Mechanic
- Turf Equipment Companies
  - Research and Development

*Careers at all levels of post secondary training/education!

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Turf Farm: From Farm to Field

- Graff's Farm Profile

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