Maintaining Sports Fields the Natural Way

Brad S. Fresenburg
Turfgrass Specialist
University of Missouri

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Today's Outline

- Public & administrative pressure
- Historical progression
- Dependency
- Soil ecosystem
- Cultural practices
- Natural products
- Resources

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Today's Turfgrass Management Programs…
incorporate:

- **Integrated Pest Management (IPM)**
- **Best Management Practices (BMP)**
- **Sustainability & Stewardship**

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IPM is a pest control strategy using:

- Cultural practices
- Mechanical devices
- Physical control
- Genetic control
- Biological control
- Chemical control

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IPM is:

- Ecological approach
- Using or reducing pesticides responsibly
- Managing pest populations at acceptable levels

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BMP incorporates:

- Integrated Pest Management
- With wise water use
- Producing the best possible turfgrass surface
- Protecting water resources (reducing non-point sources)

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Sustainability & Stewardship demonstrates:

- Reduction in control products
- Efficient use of water
- **Efficiencies** of time and energy
- **Recycling** in every part of your program

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Dependency

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Why are pest present?

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Managing Stress

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Managing Resources for Soil Organisms

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Components to a Natural Approach:

- Soil Ecosystem
- Cultural Practices
- Pests

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Soil Ecosystem

- Soil biology
- Soil testing
- Fertility

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Soil Biology

- Turf is healthiest in biologically balanced soil
- Bacteria should account for half of the biomass
- Bacteria thrive in soils rich with carbohydrates and proteins
- Organic fertilizers (vegetable, animal meals, etc.)
- Compost (manures, food waste)

Soil Testing

- Know what nutrients are needed: Calcium, Magnesium, Phosphorus, Potassium, etc.
- Know what the pH of the soil is: Do you need to add calcium carbonate? (Ok between 6.0 to 7.0)

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Fertility

- Synthetic Fertilizers (salt index)
- Organic Fertilizers
- Mineral Sources
- Bio-stimulants

Fertilizer Application Scheduling

Synthetic Fertilizers

Expressed in pounds of nitrogen per 1,000 sqft

	September	October	November	March/April
Cool-Season Standard	1	1	1	0.5
Cool-Season Low Maint.	1	--	1	--

Cool-Season Turfgrasses:

Tall Fescue, Kentucky Bluegrass

Natural Organics

A slow-release source of N, other essential nutrients, and organic matter

- **Organica (8-1-1) – Corn gluten**
- **Bradfield (3-1-5)**
- **Ringers (6-1-3)**
- **Sustane (5-2-4)**
- **Richlawn (6-3-2)**
- **Milorganite (6-2-0 w/5% Fe)**

Fertilizer Application Scheduling

Organic Fertilizers

Expressed in pounds of nitrogen per 1,000 sqft

Organic fertilizers are excellent, safe sources of fertility. Corn gluten-based products offer pre-emergent weed control.

	Early April	Late June	Mid Sept.
Cool-Season No Seeding	Corn gluten 0.8-1.2	Corn gluten or other organic 0.4-0.8	Corn gluten or other organic 0.8
Cool-Season Fall Seeding	Corn gluten 0.8-1.2	Corn gluten or other organic 0.4-0.8	Do Not Use Corn gluten when seeding 0.3-0.8

Cool-Season Turfgrasses:

Tall Fescue, Kentucky Bluegrass

Fertilizer Application Scheduling

Organic Fertilizers

Expressed in pounds of nitrogen per 1,000 sqft

Organic fertilizers are excellent, safe sources of fertility. Corn gluten-based products offer pre-emergent weed control.

	Early April	Mid June	Late Aug.
Warm-Season	Corn gluten 0.8-1.2	Corn gluten or other organic 0.4-0.8	Corn gluten or other organic 0.8

Warm-Season Turfgrasses:

Zoysiagrass, Buffalograss

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Cultural Practices

- Selecting Turfgrasses
- Mowing
- Over-seeding
- Irrigation
- Aeration
- Thatch

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Cultural Practices

- Selecting Turfgrasses

Multiple, resistant turf cultivars provide stability & resilience

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Cultural Practices

- Mowing has major impact on weeds

3.5 inches

1.5 inches

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Cultural Practices

- Mowing

Higher mowing heights (3 to 4”) encourage greater root growth and better competition against weeds (80% fewer weeds)

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Cultural Practices

- Mowing

Mowing frequently avoids "clumping". **Follow "1/3 rule".** Follow the **"Don't Bag It"** program.

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Cultural Practices

- Mowing

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Cultural Practices

Over-seeding:

- Over-seed annually, maintain turf density
- Over-seed often
- Prepare a good seedbed with core aeration or power rake
- Over-seeding rates can be about 50% of a normal seeding rate

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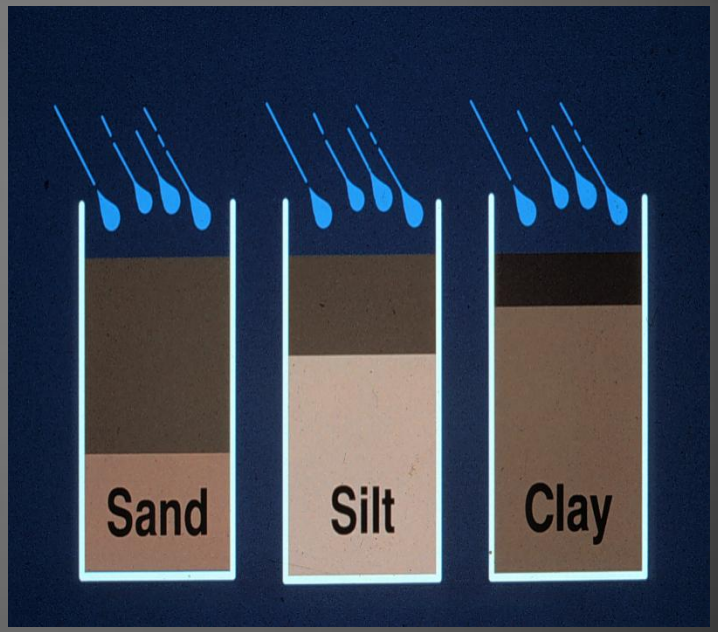
Cultural Practices

- **Irrigation** – How much, how frequent

Infiltration Rate:

- **Sand: 2-5 in/hr**
- **Silt/Loam: 0.5-2 in/hr**
- **Clay: 0.2-0.5 in/hr**



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Cultural Practices

- **Irrigation** – When

Early morning: 4 AM to 8 AM

- Evaporative losses minimized (Cooler temperatures)
- Better distribution of water (Calm winds)
- Knocks dew off leaf blades and decreases leaf wetness period (compared to evening watering) all of which discourages fungal growth and infection

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Cultural Practices

- **Thatch**

Thatch can choke out and thin a lawn by preventing water and nutrients from reaching the roots. Thatch also provides habitat for insects.

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Pest

- Weeds
- Diseases
- Insects

Why are they there?

Common Conditions that Promote Weeds

Compaction:

- Annual bluegrass
- Goosegrass
- Knotweed
- Spurge

Common Conditions that Promote Weeds

Drought conditions:

- Black medic
- Cinquefoil species
- Crabgrass
- Curly dock
- Goosegrass
- Spurge
- Speedwell
- Yellow wood sorrel

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Common Conditions that Promote Weeds

Low pH:

- Common mullein
- English daisy
- Hawkweeds
- Knawel
- Red Sorrel
- Wild Strawberry

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Common Conditions that Promote Weeds

High pH:

- Broadleaf plantain
- Hop clover
- Wild carrot

Shade:

- Chickweeds
- Speedwell
- Wild Violets

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Common Conditions that Promote Weeds

Low nitrogen:

- Black medic
- Clover species

High nitrogen:

- Annual bluegrass

Common Conditions that Promote Weeds

Poor drainage:

- Barnyardgrass
- Buttercups
- Nutsedge
- Plantains

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Weed Management:

- Multiple turf cultivars
- Mowing height
- Over-seeding important (density)
- Pre-emergence herbicides often over-used

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Weed Management:

- Herbicides more effective, less cost
- Too little or too much fertilizer
- Soil conditions (compaction, pH, moisture, etc.)

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Weed Management:

- Use natural products
  - Corn gluten
  - Fiesta
  - Burn Out II

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Fiesta
5 fl oz/gallon

Burn Out II
32 fl oz/gallon

Trimec Classic – 4 pints/A
Speed Zone – 5 pints/A

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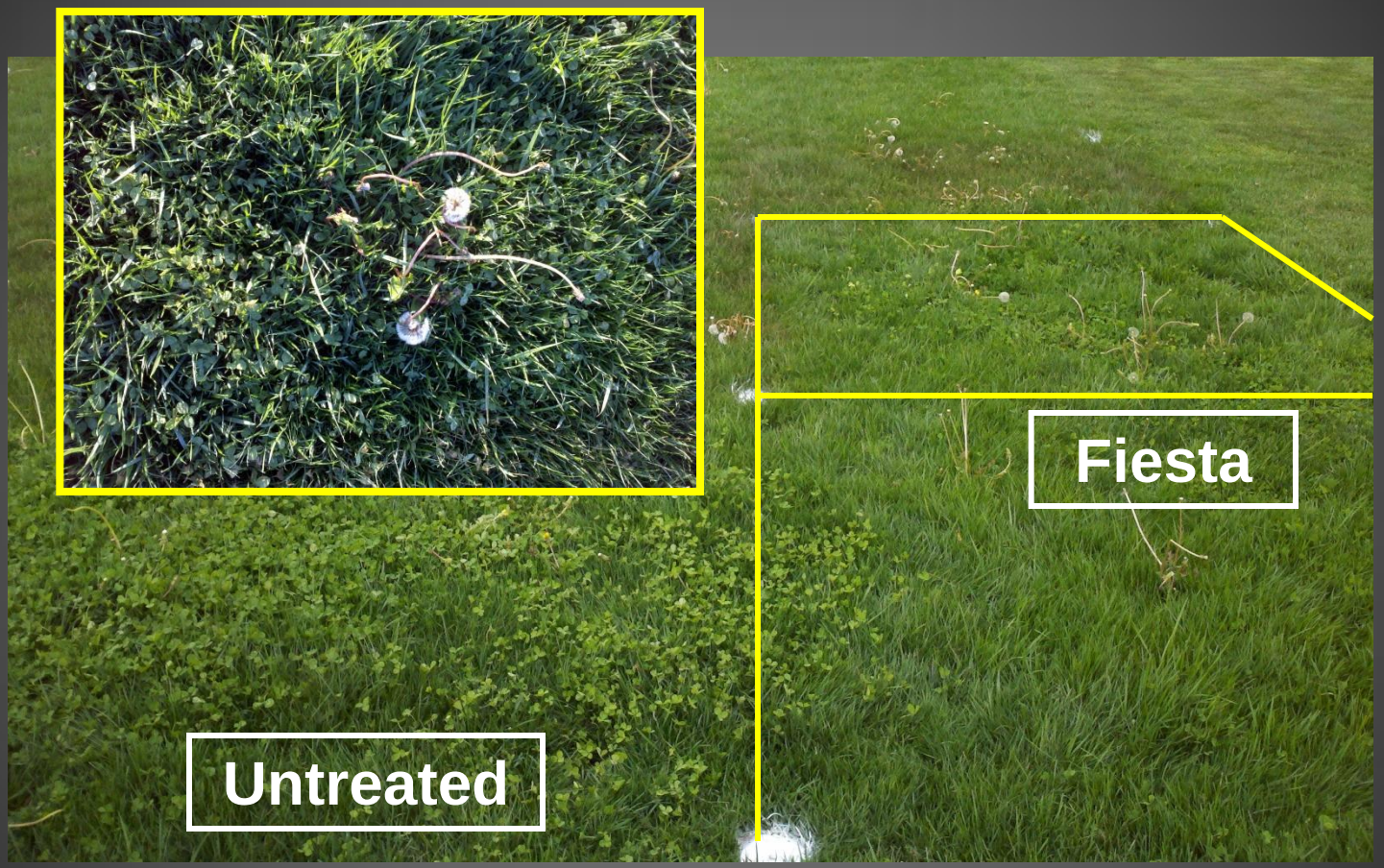

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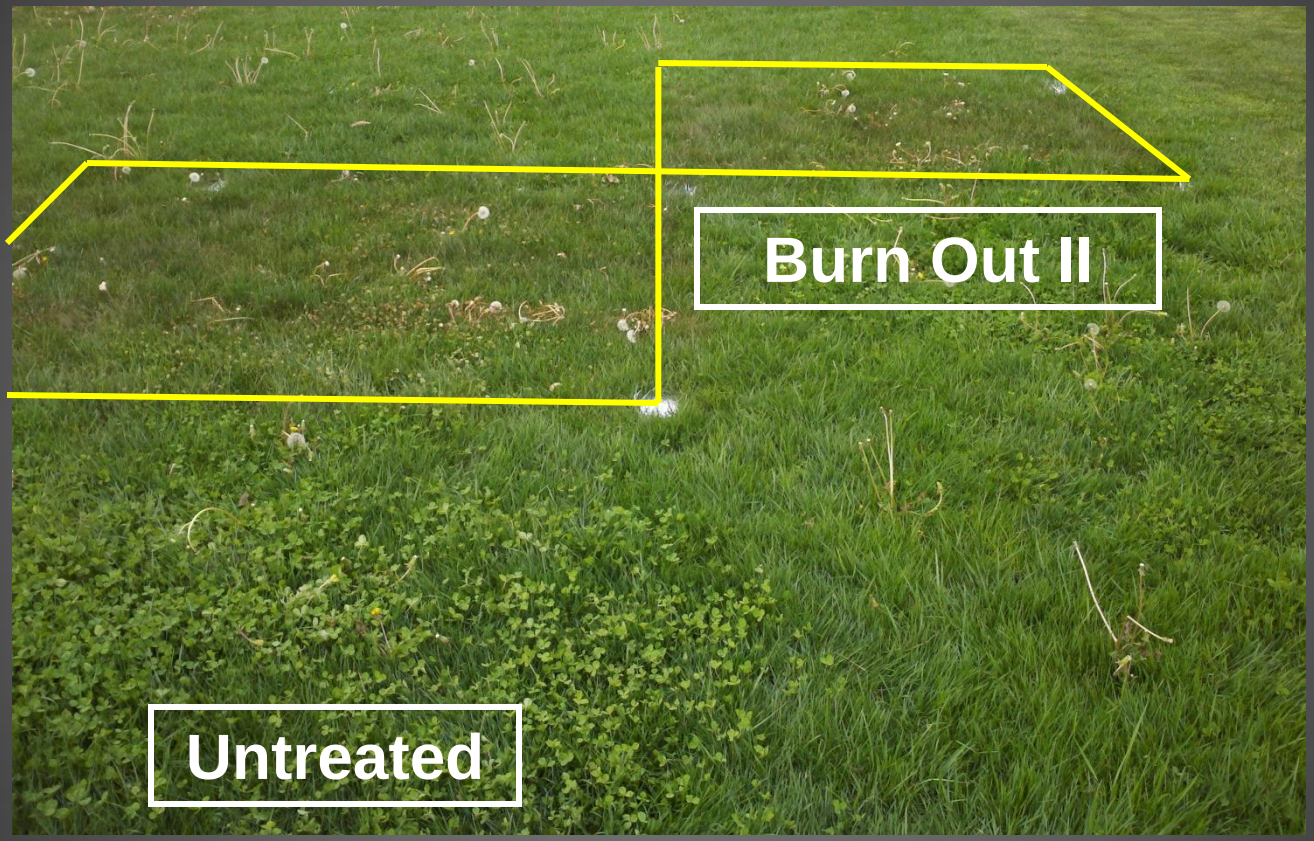

Dollar Spot:

- Active during warm, moist weather in the spring, early summer and fall
- Light tan, hourglass-shaped lesions with dark-brown to reddish-brown borders
- Primary host: bluegrasses ryegrasses
- Favors low fertility

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Brown Patch:

- Appears in hot, moist overcast weather
- High-cut grasses: light brown patches 1 to 2 feet in diameter and larger. Grass is severely thinned
- Lesions appear irregular shaped at random on leaf blade
- Primary host: tall fescue, ryegrasses
- Favors high nitrogen

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Disease Management:

- Select resistant cultivars
- Reduce stresses
- Mow taller with sharp blade
- Heat and drought stresses

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Disease Management:

- Nutrient deficiencies induce stress
- Have good air movement
- Biologically active soil offers natural suppression
- Fungicides reduce microbial activity

White Grubs - are the larval stage of several insect species. They have a white, C-shaped body, a brown head and three pairs of legs. They are sub-surface root feeders.

Insects with white grubs:

- May/June beetle
- Southern masked chafer

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Insect Management:

- Take advantage of natural defense systems
- Defense systems disabled during stress
- Use endophyte enhanced turfgrasses
- Insecticides reduce beneficial, predatory insects
- Reduce thatch
- Use natural, biological controls – Cedar oil, nematodes

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Managing Healthy Sports Fields

Paul Sachs

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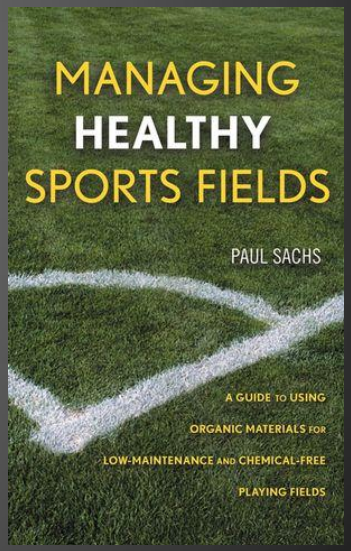

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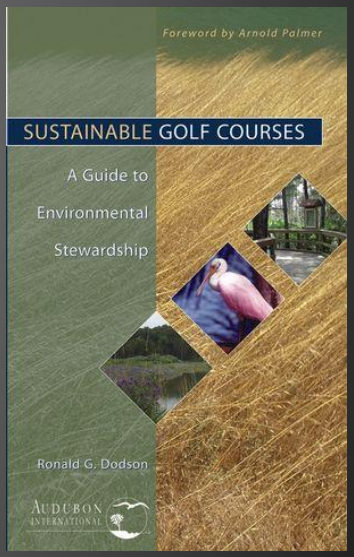

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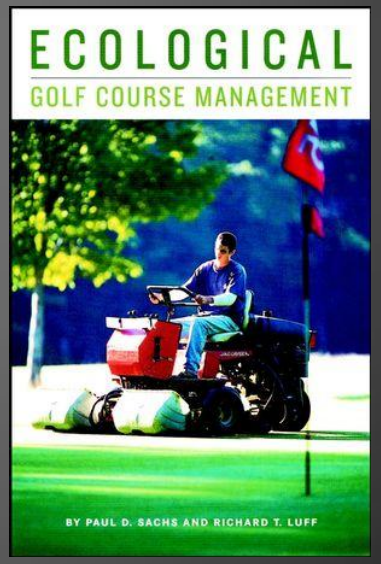

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Sports Turf | August 2012

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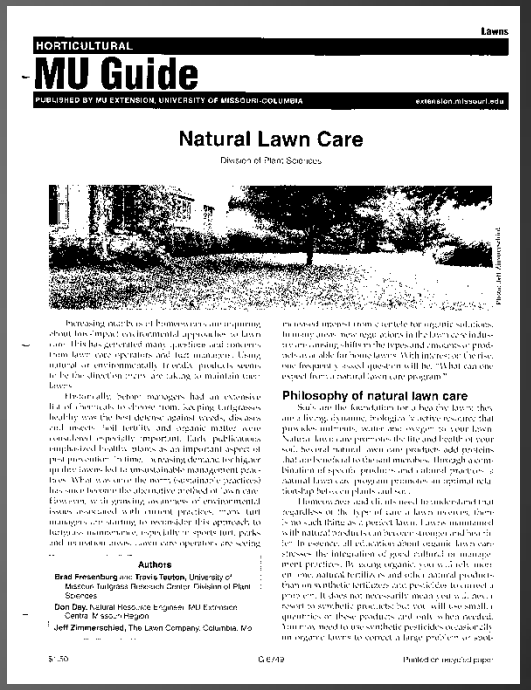
Natural Lawn Care

Brad Fresenburg, Don Day, & Jeff Zimmerschied



Lawns

HORTICULTURAL

MU Guide

PUBLISHED BY MU EXTENSION, UNIVERSITY OF MISSOURI-COLUMBIA extension.missouri.edu

Natural Lawn Care

Division of Plant Sciences

Authors

Brad Fresenburg and Travis Teuton, University of Missouri Turfgrass Research Center Division of Plant Sciences

Don Day, Natural Resource Engineer, MU Extension Central Missouri Region

Jeff Zimmerschied, The Lawn Company, Columbia, Mo

Philosophy of natural lawn care

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Questions???

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Contact Information:

Brad S. Fresenburg

University of Missouri Turfgrass Sciences

214A Waters Hall

Columbia, Missouri 65211

fresenburgb@missouri.edu

573 884-8785 (office), 573 268-2545 (cell)

Website: www.turf.missouri.edu/stat/

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