
ADVANCED WEED CONTROL
FOR ATHLETIC FIELD TURF
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CASE STUDY #1
BASEBALL

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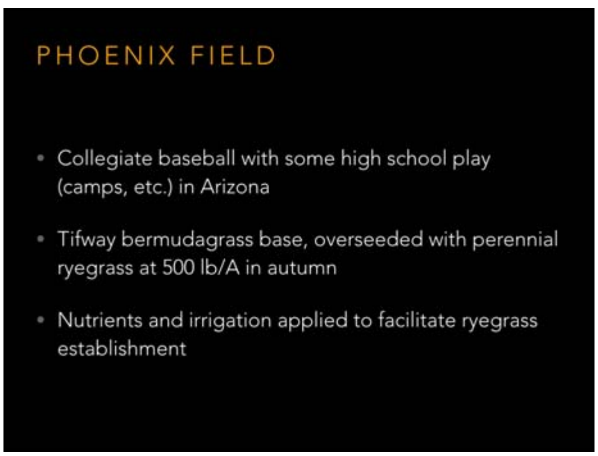
PHOENIX FIELD
Collegiate baseball with some high school play (camps, etc.) in Arizona
Tifway bermudagrass base, overseeded with perennial ryegrass at 500 lb/A in autumn
Nutrients and irrigation applied to facilitate ryegrass establishment

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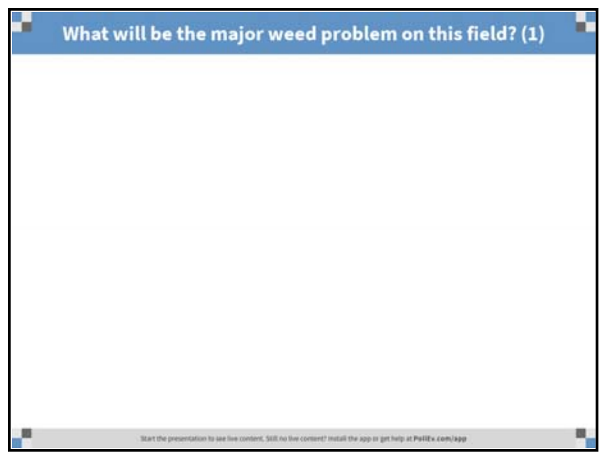
What will be the major weed problem on this field? (1)

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ANNUAL BLUEGRASS
Poa annua
C3 grass - cool-season
Peak germination at soil temp of 68F
Bunch type growth habit
Folded vernation
Pronounced ligule

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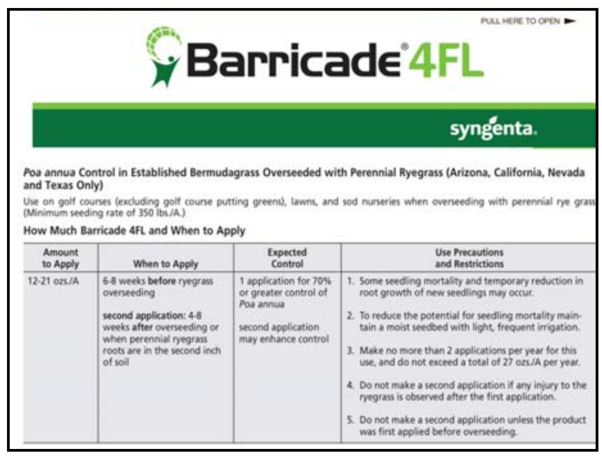

Poa annua Control in Established Bermudagrass Overseeded with Perennial Ryegrass (Arizona, California, Nevada and Texas Only)

Use on golf courses (excluding golf course putting greens), lawns, and sod nurseries when overseeding with perennial rye grass (Minimum seeding rate of 350 lbs./A.)

How Much Barricade 4FL and When to Apply

Amount to Apply	When to Apply	Expected Control	Use Precautions and Restrictions
12-21 ozs./A	6-8 weeks **before** ryegrass overseeding **second application:** 4-8 weeks **after** overseeding or when perennial ryegrass roots are in the second inch of soil	1 application for 70% or greater control of *Poa annua* second application may enhance control	1. Some seedling mortality and temporary reduction in root growth of new seedlings may occur. 2. To reduce the potential for seedling mortality maintain a moist seedbed with light, frequent irrigation. 3. Make no more than 2 applications per year for this use, and do not exceed a total of 27 ozs./A per year. 4. Do not make a second application if any injury to the ryegrass is observed after the first application. 5. Do not make a second application unless the product was first applied before overseeding.

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Sulfonylurea Herbicides

Herbicide	Rate	Interval to Seeding
Revolver	17.4 fl oz	7 days
Monument	0.53 oz	14 days
Katana	1.5 fl oz	14 days

Will require POST application in spring

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RESPECT THOSE LABEL INTERVALS

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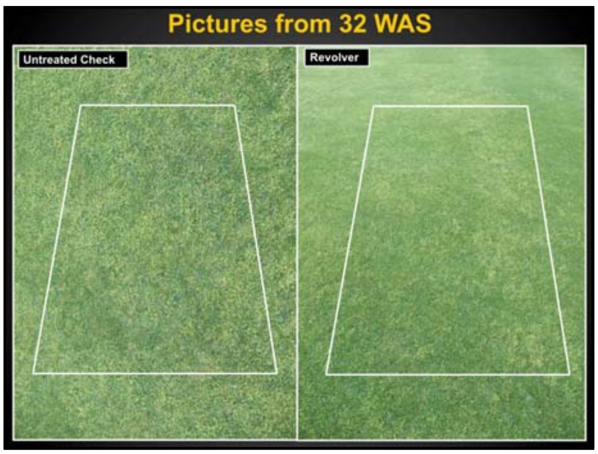

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Resistance to ALS Inhibitors in *Poa annua* is common

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Tenacity®

WEEDS CONTROLLED

Common Name	Scientific Name	Preemergence[1]	Postemergence[2]
Barnyardgrass	*Echinochloa crusgalli*	Y	Y
Bentgrass, Creeping	*Agrostis stolonifera*	Y	Y
Bluegrass, Annual	*Poa annua*	Suppression	N
Buckhorn Plantain	*Plantago lanceolata*	Y	Y
Buttercup	*Ranunculus sardous*	-[3]	Y
Carpetweed	*Mollugo verticillata*	Y	Y
Chickweed, Common	*Stellaria media*	Y	Y
Chickweed, Mouseear	*Cerastium vulgatum*	Y	Y
Clover, Large Hop	*Trifolium aureum*	Y	Y
Clover, White	*Trifolium repens*	Y	Y
Crabgrass, Large	*Digitaria sanguinalis*	Y	Y[4]
Crabgrass, Smooth	*Digitaria ischaemum*	Y	Y[4]
Crabgrass, Southern	*Digitaria ciliaris*	Y	Y[4]
Curly dock	*Rumex crispus*	-	Y
Dandelion, Catsear	*Hypochoeris radicata*	-	Y
Dandelion, Common	*Taraxacum officinale*	-	Y
Florida Betony	*Stachys floridana*	-	Y
Florida Pusley	*Richardia scabra*	-	Y
Foxtail, Yellow	*Setaria glauca*	Y	Y

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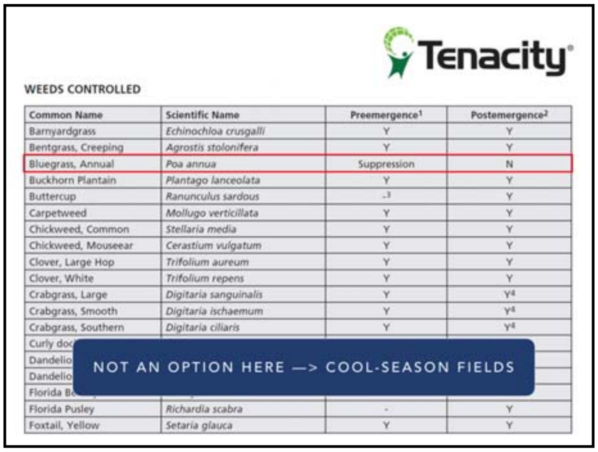

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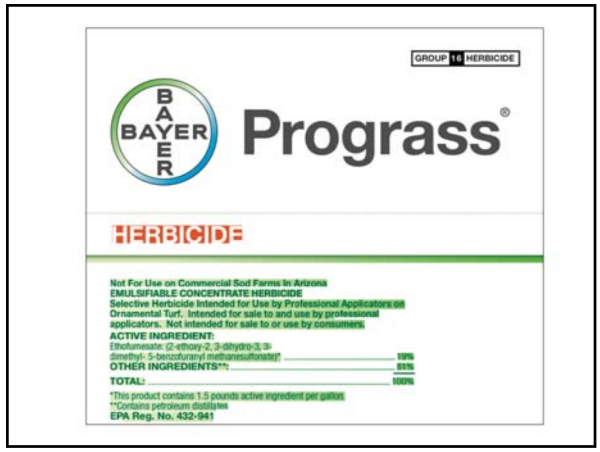

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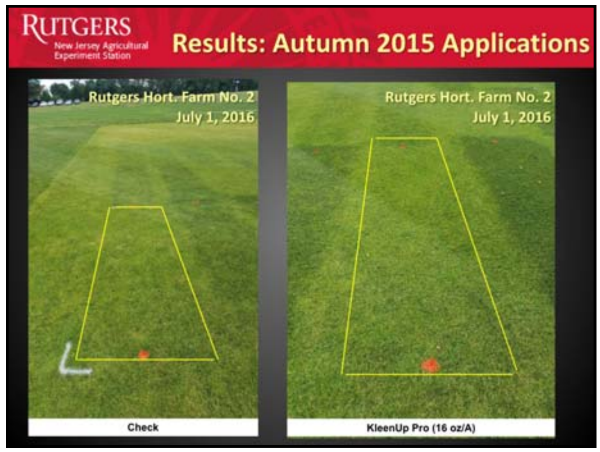

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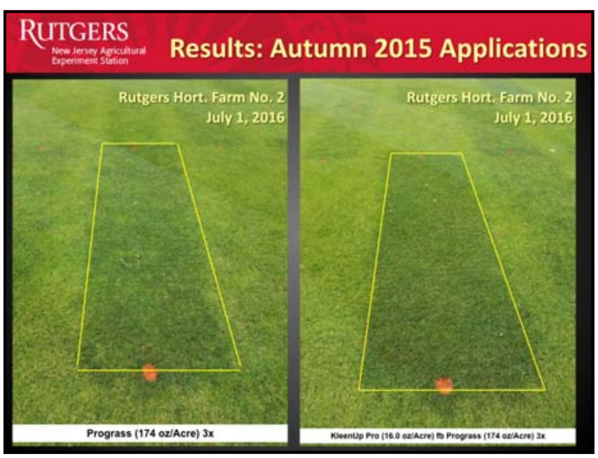

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RESULTS - FRAZE MOWING

	ABG PLANTS (M⁻²)†	
TREATMENT	FEBRUARY	APRIL
FRAZE MOWED‡	45 B	53 B
NON-TREATED CHECK	62 A	72 A

†Annual bluegrass plant counts taken 2 & 9 Feb. 2016/2017 and 7 April 2016/2017 using a 1 m² grid with 81 squares measuring 7.6 cm². Presence or absence of annual bluegrass in each score was recorded. Data were averaged over years with different letters indicating statistical significance using Fisher's protected $LSD_{0.05}$

‡Fraze mowing zoysiagrass (*Zoysia japonica*, cv. Meyer) to a 2.5 cm depth 8 June 2015 or 6 June 2016 in Knoxville, TN

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RESULTS - FRAZE MOWING

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TREATMENT	FEBRUARY	APRIL
FRAZE MOWED‡	~26% REDUCTION	53 B
NON-TREATED CHECK		72 A

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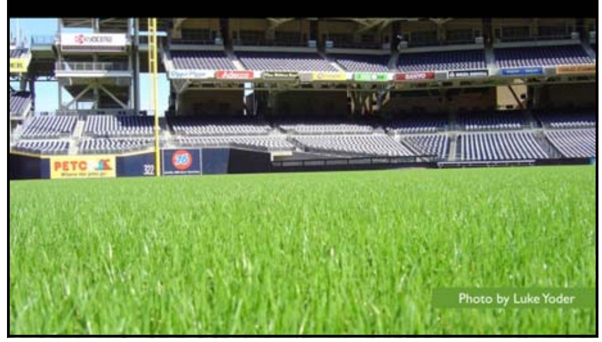
POA ANNUA CONTROL

AFTER OVERSEEDING



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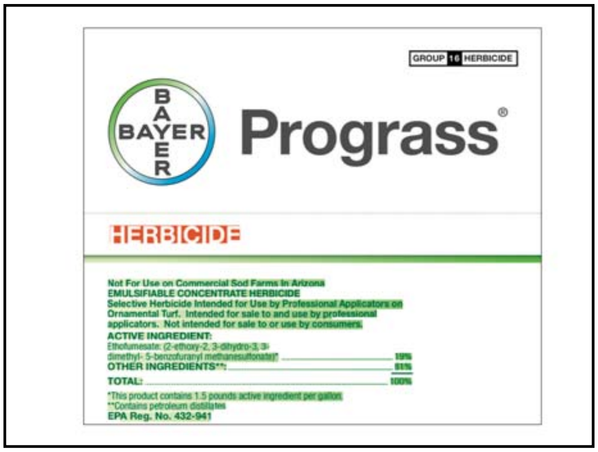

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Turf Species	Rate (fl oz/1000 ft²)
Perennial Ryegrass	2 to 4
Kentucky Bluegrass	1.5
Tall Fescue	2 to 4
Creeping Bentgrass	1.5

Two (or more) applications will be needed

Use lower rates on mixed stands

Overseeding restrictions are common — see label

Emergence restrictions -- see label

Has both PRE and POST activity

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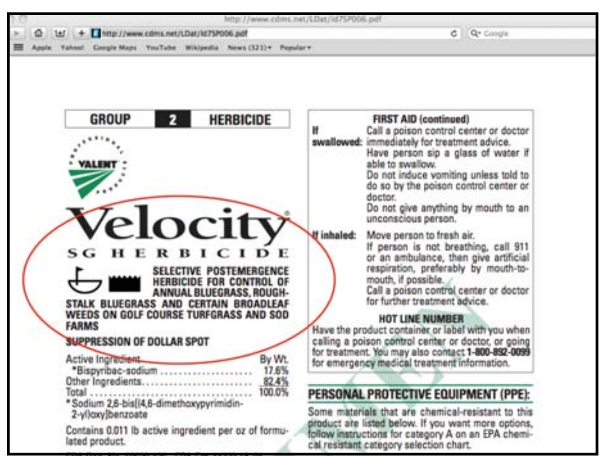

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rate of 2.0 oz/A (10 g ai/A). Begin application early in the recommended use season, and continue until the desired level of control is achieved during the current use season. This program should be considered for turf with a heavy infestation of annual bluegrass and/or roughstalk bluegrass, where complete removal of these weeds during a single season could result in an unacceptable stand of creeping bentgrass or perennial ryegrass.

- **Rapid Conversion to Creeping Bentgrass or Perennial Ryegrass**
  Apply *Velocity* SG up to four times at the rate of 6.0 oz/A (30 g ai/A) on a 14 to 21 day interval. Use a 21 day interval if turf is exhibiting undesirable chlorosis at 14 days after application. Efficacy may be decreased if application interval exceeds 21 days. This program should be considered for turf with light infestations of annual bluegrass and/or roughstalk bluegrass, and where complete removal of these weeds during the current use season would not result in an unacceptable stand of turfgrass. In general, this program is best suited to turfgrass areas where there are no large patches of annual bluegrass and/or rough bluegrass, and where the level infestation of these weeds is less that 10 percent.

- Do not apply to turfgrass exhibiting symptoms of pythium blight or growing under stress due to drought, high or low temperatures, low fertility, heavy thatch, mechanical injury or other stresses.
- Do not apply *Velocity* SG between 10 days before and 30 days after seedling emergence of creeping bentgrass or perennial ryegrass.
- *Velocity* SG has not been evaluated for safety on all creeping bentgrass and perennial ryegrass cultivars.
- *Velocity* SG has not been evaluated under all microclimates or against all biotypes of annual bluegrass and roughstalk bluegrass. Therefore, performance may be less effective in some locations, and against some biotypes of these weed species.
- *Velocity* SG should not be applied in heavy traffic and/or heavily shaded turf areas.
- *Velocity* SG may dramatically reduce overall turfgrass cover due to its high activity against annual bluegrass and roughstalk bluegrass.

SPRAY DRIFT
- Do not spray if winds are gusty or if wind speeds are greater than 5 mph.
- Do not apply within 15 ft of native plant communities when sustained winds will carry *Velocity* SG towards these native plant communities.

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XONERATE 2SC

Xonerate 2SC Herbicide

- Labeled for ABG control in bermudagrass overseeded with perennial ryegrass at 6 to 11 fl oz/A
  - Two to Three POST applications recommended on 14-21 day intervals
- Injury if rates are higher, or overlaps
  - Used for perennial ryegrass removal at 14 to 29 fl oz/A
- Spring product applied to well-established turf

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STOP USING

THE SAME SIEVE

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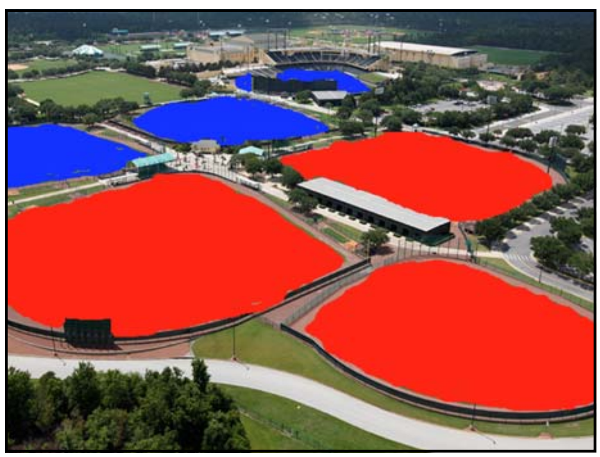

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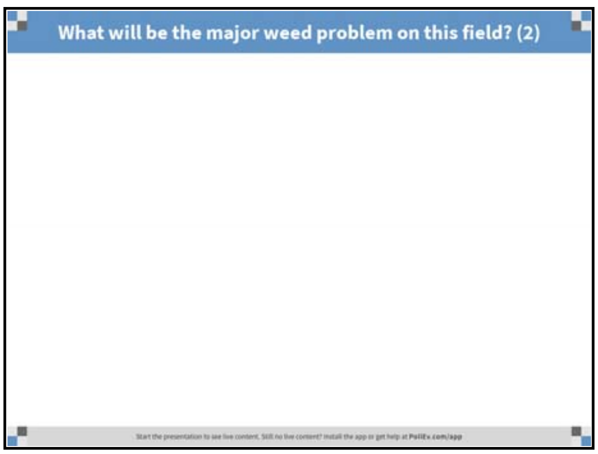

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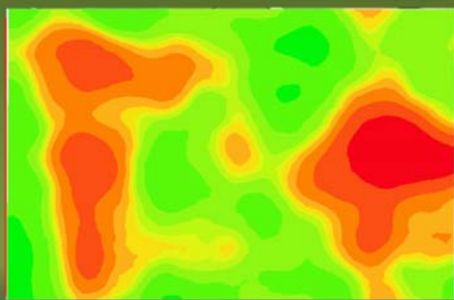
Multi-use Creates Challenges



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Limited Budget

- Outdated or lack of maintenance equipment
- Small turfgrass management crew
- Restrictions on pesticide applications
  - Cost and possible parental concerns

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Management Approach

- Evaluate current management practices
  - Weeds as indicators
- Adjust cultural practices to favor turfgrass
- Choose effective herbicides and application techniques

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Published December 28, 2016

Long-term Effect of Open-Spoon Aerification on Plant and Soil Properties of Community Level Sports Fields

Chase M. Straw,* Rebecca A. Grubbs, Gerald M. Henry, Robert N. Carrow, and Van Cline

Applied Turfgrass Science

ACCEPTED

Core Ideas

- In 2013, 47% of sports turf managers reported using open-spoon aerification.
- Long-term effect of open-spoon aerification was minimal on measured properties.
- It is recommended that sports turf managers

- STMA survey (2013) – 47% reported using OS aerification
- Aerification events – 0, 1, 2, 3, or 4 times/year – 2 year study

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Core Aerification

Fracturing caused by the weight plus impact of the device

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Weeds as Indicators

- Soil Compaction
  - Associated with high traffic, poor water infiltration, etc.
  - Presence of prostrate knotweed, goosegrass, annual bluegrass, prostrate spurge, broadleaf plantain, etc.

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Weeds as Indicators

- Low Soil Nitrogen Fertility
  - Associated with low fertility inputs, sandy soil, etc.
  - Presence of clover spp., black medic, common lespedeza, corn speedwell, hawkweed, etc.

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Weeds as Indicators

- Wet/Saturated soils
  - Associated with poor water infiltration, heavy clay soils, low-lying areas
  - Presence of sedge spp., annual bluegrass, goosegrass, mosses, etc.

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Alleviating Soil Compaction

- Hollow tine aerification with significant impact with the soil profile
- Limited time and budget
  - Focus on heavily trafficked areas
- Conduct during periods of low turfgrass stress

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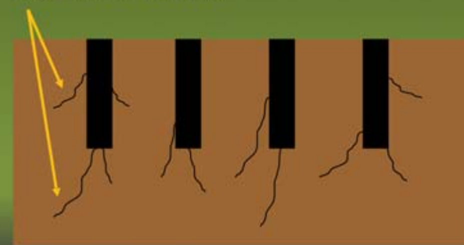
Core Aerification

Fracturing caused by the weight plus impact of the device



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Soil Compaction

- Penetrometer
- Determines soil compaction (to a depth of 18 inches) and potential water infiltration
- Recorded in pounds per square inch (PSI)

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Surface Hardness

- Clegg Impact Tester
- Determines surface hardness in the upper 2 inches of the soil profile
- Recorded in gravities (G-max)

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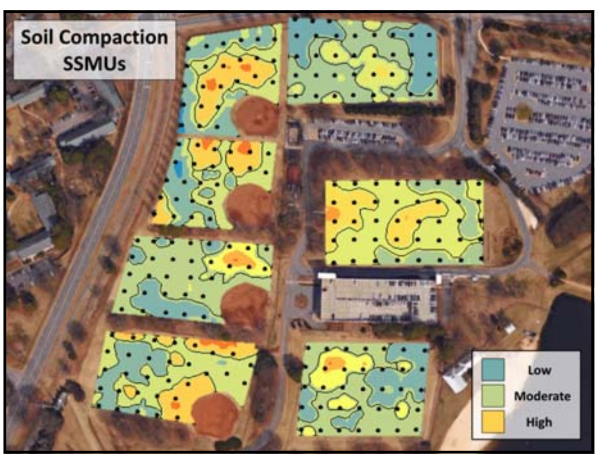

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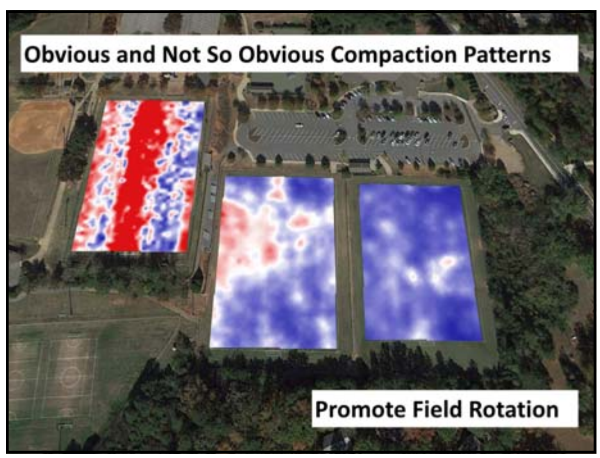

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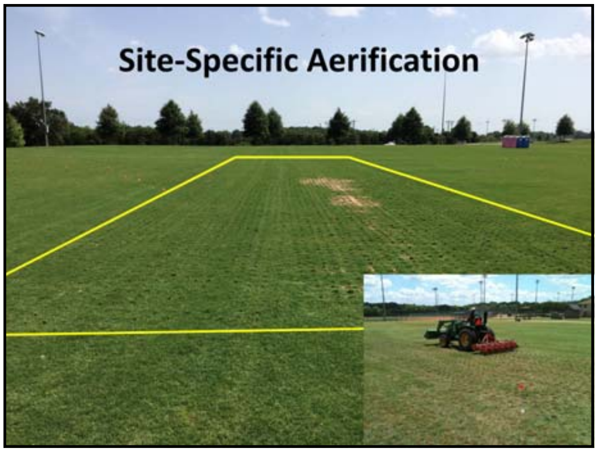

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Potential Weed Issues

- Weeds that tolerate frequent mowing, soil compaction, traffic/wear……..
- Annual grass weeds – annual bluegrass, goosegrass, and smooth crabgrass
- Broadleaf weeds – low growing/spreading, rosettes, etc. – annuals and perennials

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White Clover

- Perennial
- Indicates low N fertility



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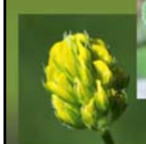
Similar Weeds

- Black Medic
- Summer or Winter Annual
- Legume




- Yellow Woodsorrel
- Perennial



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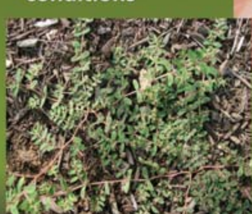
Prostrate Spurge

- Summer Annual
- Indicates dry soil conditions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Prostrate Knotweed

- Summer Annual or Perennial
- Indicates compacted soil


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Common Dandelion

- Perennial

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Similar Weeds

- Hawkweed
- Perennial
- Indicates low N fertility

- Buckhorn Plantain
- Perennial
- Indicates high soil pH

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Preemergence Herbicides

- Concerns:
  - Kentucky bluegrass tolerance
  - Overseeding timing
  - Spring nitrogen applications
    - Cost effective to apply granular pre with fertilizer

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Overseeding

- Sports turf managers should be constantly seeding thin areas to recover turf
  - Multiple fall seeding dates (heavy use areas)
  - Even spring seeding in heavy use areas
  - Allow athletes to track in seeds with cleats

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Preemergence Herbicide Options

Kentucky Bluegrass Tolerance

- Benefin (Balan)
- Benefin + Trifluralin (Team Pro)
- Dithiopyr (Dimension)
- Mesotrione (Tenacity)
- Oxadiazon (Ronstar)
- Pendimethalin (Pendulum)
- Prodiamine (Barricade)
- Siduron (Tupersan)

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Preemergence Herbicides

Kentucky Bluegrass - overseeded

- Tupersan 50 WP (siduron) – 4 to 12 lbs/A
  - 0 WBO
- Balan 2.5G (benefin) – 120 lbs/A
  - 6 to 8 WBO or 8 WAO
- Team (benefin + trifluralin) – 75 to 100 lbs/A
  - 6 to 8 WBO or 8 WAO
- Dimension 2EW (dithiopyr) – 1.5 pts/A
  - 8 WBO or 6 to 8 WAO (some ryegrass damage)

WBO = Weeks before overseeding, WAO = Weeks after overseeding

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Preemergence Herbicides

Kentucky Bluegrass - overseeded

- Barricade 4 FL (prodiamine) – 10 to 30 fl oz/A
  - 8 WBO or 4WAO
- Pendulum 60 WDG (pendimethalin) – 3.4 lbs/A
  - 12 WBO
- Ronstar 2G (oxadiazon) – 100 lbs/A
  - 16 WBO

WBO = Weeks before overseeding, WAO = Weeks after overseeding

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Safe on Newly Seeded Turf

- Mesotrione (Tenacity)
- Carfentrazone (Quicksilver)
- Quinclorac (Drive XLR8)
- Topramezone (Pylex)

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Safe on Established Turf

- Many, many products —> to fit ALL BUDGETS
- Most are mixtures of multiple AIs
  - Widens the spectrum of species controlled in a single application

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HALAUXIFEN-METHYL

- Synthetic auxin herbicide, Group #4
  - Similar to fluroxypyr and triclopyr in structure, different binding site
- Developed for weed control in wheat
- Potential tool to replace 2,4-D in synthetic auxin herbicide mixtures
  - Need for this as public pressure against 2,4-D use increases
- Foliar and root absorption, moves through both xylem and phloem
- Rainfast in 1 hour, low volatility
- No drip line issues on trees —> rapidly degrades in soil and plant tissue

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SWITCHBLADE

pbi / gordon corporation
Employee-Owned

- Began research in 2014
- **Halauxifen-methyl (0.22%) + fluroxypyr (4.73%) + dicamba (3.53%)**
- 1.5 to 4 pt/A
  - Maximum of 8 pt/A per year
- Broadleaf weeds in warm- and cool-season turf
- **Use sites**: Residential and commercial lawns, golf courses, sports fields, sod farms, parks, and many more.

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GameOn

- **Active Ingredients:**
  - Fluroxypyr + 2,4-D choline + halauxifen-methyl
- **Herbicide Rate:**
  - 3 to 4 pts/A
- **Turfgrass Tolerance:**
  - Kentucky bluegrass, perennial ryegrass, tall fescue
- **Target Weeds:**
  - Broadleaf weeds

GameOn
SPECIALTY HERBICIDE

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SurePower

- NuFarm herbicide launched in 2018
- 2,4-D (36.3%) + triclopyr (3.6%) + fluroxypyr (3.6%) + flumioxazin (0.2%)
- Cool season option (TF, FF, KBG, PR) designed for BLW control
  - Ground ivy and wild violet

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CASE STUDY #3

HIGH SCHOOL FOOTBALL

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FRANKLIN FIELD

- High school football (Varsity game, JV game, some practice) in Tennessee
- Tifway bermudagrass base, non-overseeded in winter
- Native soil field —> aerification minimal for several years
- Struggle to supply enough fertilizer but have some budget for weed control

92

What will be the major weed problem on this field? (3)

Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

93

94

GOOSEGRASS

- Summer annual grassy weed
- Bunch type growth, folded vernation
- Flattened stems from a central rosette, often white/silver in color
- Germinates at day/night air temps greater than 90/68F (Nishimoto & McCarty 1997)
- Soil temperature for germination is 60-65F at a 4 inch depth

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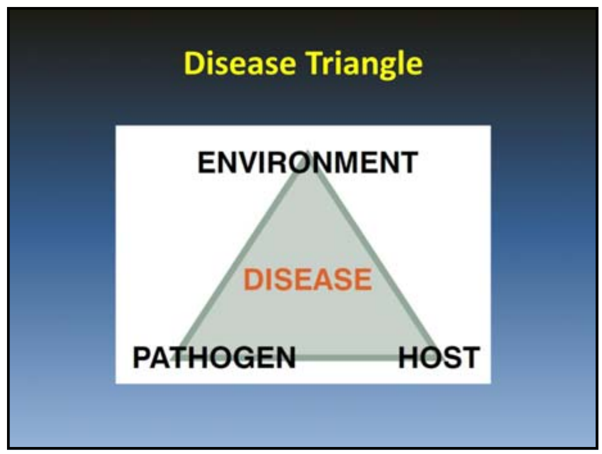

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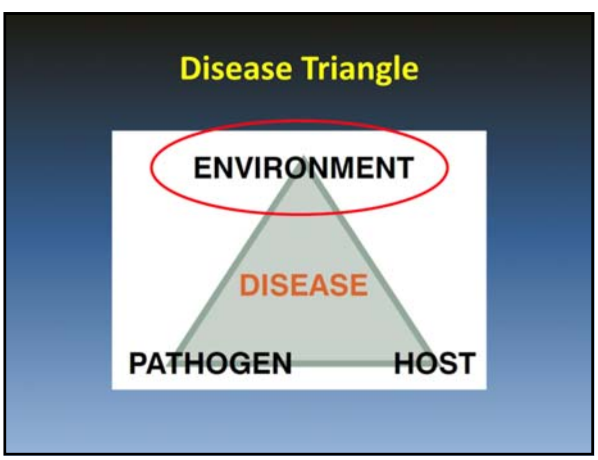

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RESIDUAL GRASS CONTROL HERBICIDES

HERBICIDE	GROUP #	TOLERANT TURF
BARRICADE	3	B, Z, SP, ST. A, CENT
RONSTAR	14	B, Z, SP, ST. A
SPECTICLE FLO	29	B, Z, ST. A, CENT
SUREGUARD	14	B
PENDULUM	3	B, Z, SP, ST. A, CENT
DIMENSION	3	B, Z, SP, ST. A, CENT
FREEHAND	3 +15	B, Z, SP, ST. A, CENT
ECHELON	3 + 14	B, Z, SP, ST. A, CENT
TOWER	15	B, Z, SP, ST. A, CENT
PENNANT MAGNUM	15	B, Z, ST. A, CENT
PRINCEP	5	B, Z, ST. A, CENT

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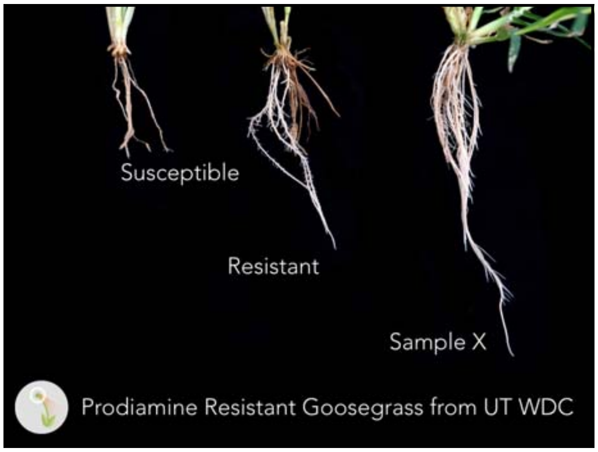

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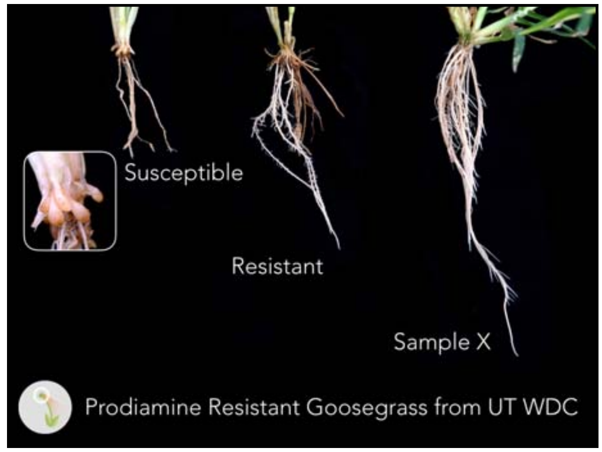

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Accepted for publication 3 October 2011. Published 28 November 2011.

Preemergence Herbicide Efficacy Under Athletic Field Traffic

J. T. Brosnan, G. K. Breeden, A. W. Thoms, and **J. C. Sorochan,**
Department of Plant Sciences, University of Tennessee, Knoxville, TN 37996

Corresponding author: J. T. Brosnan. jbrosnan@utk.edu

Brosnan, J. T., Breeden, G. K., Thoms, A. W., and Sorochan, J. C. 2011. Preemergence herbicide efficacy under athletic field traffic. Online. Applied Turfgrass Science doi:10.1094/ATS-2011-1128-01-BR.

Preemergence (PRE) herbicides are used to control smooth crabgrass (*Digitaria ischaemum* Schreb. ex Muhl.) in warm-season turf. Use of PRE herbicides on athletic fields is often discouraged as many have been shown to negatively affect bermudagrass (*Cynodon* spp.) recovery following winter injury and overall root growth (2,3). Moreover, effects of traffic (e.g., losses in turf coverage) may negatively affect efficacy of these herbicides for weed control. Data describing effects of herbicides under athletic field conditions are limited. The objective of this research was to evaluate the weed control efficacy and bermudagrass response to PRE herbicide applications under athletic field traffic.

106

Herbicide	Yearly Rate
Dimension	32 fl oz
Ronstar G	200 lb
Pendulum	101 fl oz
Barricade	37 oz
Echelon	36 fl oz

Applied PRE in 2009-2010

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108

No reductions in smooth crabgrass control
or traffic tolerance/recovery (Spring, Fall)

109

110

Herbicide	Yearly Rate
Dimension	20 oz
Ronstar	96 oz
Pendulum	123 fl oz
Barricade	18.5 oz
Specticle	2.5, 3.75 oz

Applied PRE in 2012 and 2013

111

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113

Divots at 1, 2, and 3 months after treatment

114

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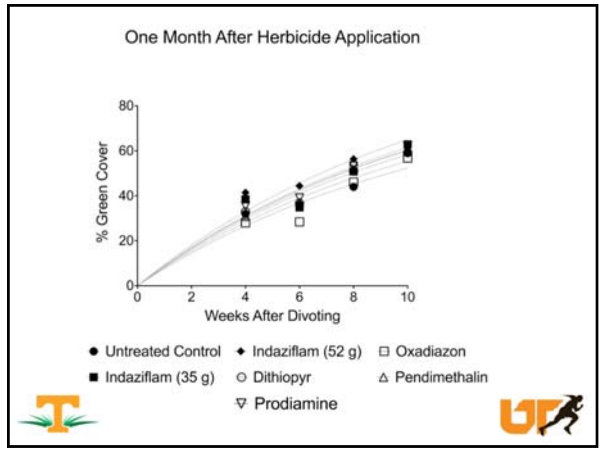

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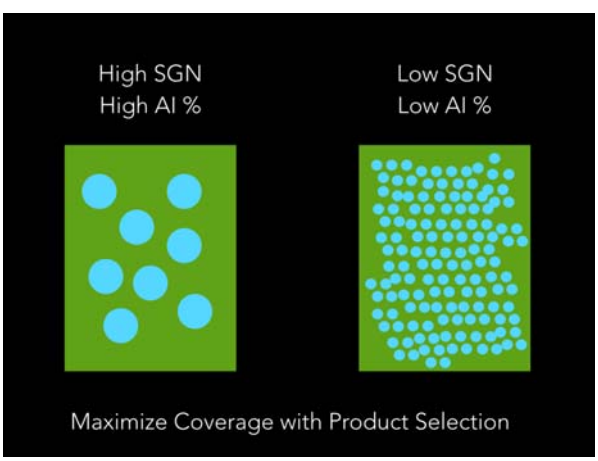

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POSTEMERGENCE OPTIONS

WARM-SEASON	COOL-SEASON
TRIBUTE TOTAL	PYLEX
REVOLVER	ACCLAIM EXTRA
PYLEX*	SPEEDZONE
SPEEDZONE	
ILLOXAN	
MSMA + SENCOR*	

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RESISTANCE TO:

ACCASE INHIBITORS (DICLOFOP, ACCLAIM)

PSII INHIBITORS (METRIBUZIN)

ALS INHIBITORS (FORAMSULFURON)

(Heap 2015)

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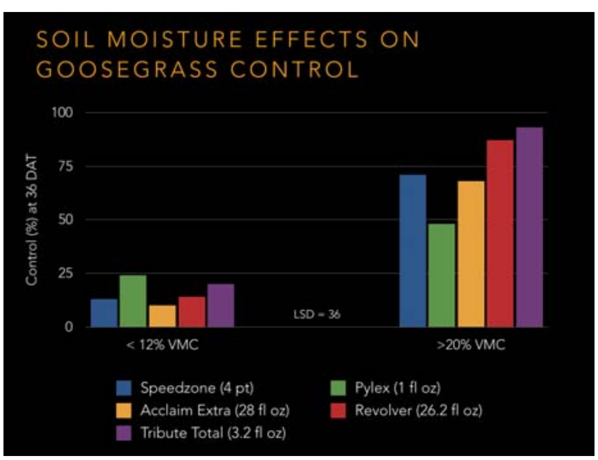

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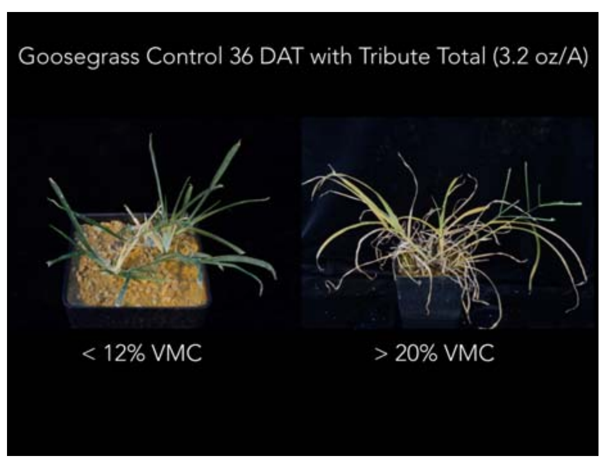

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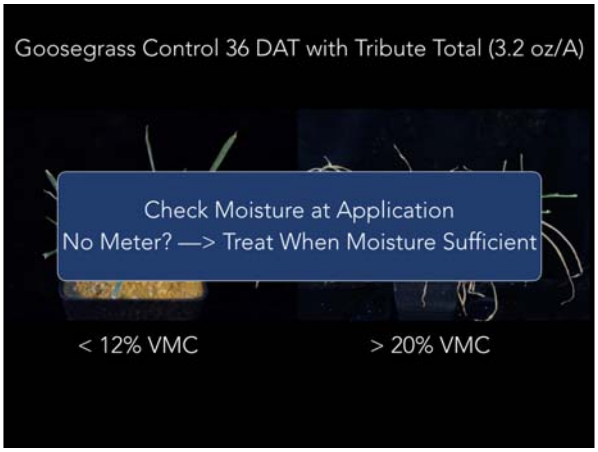

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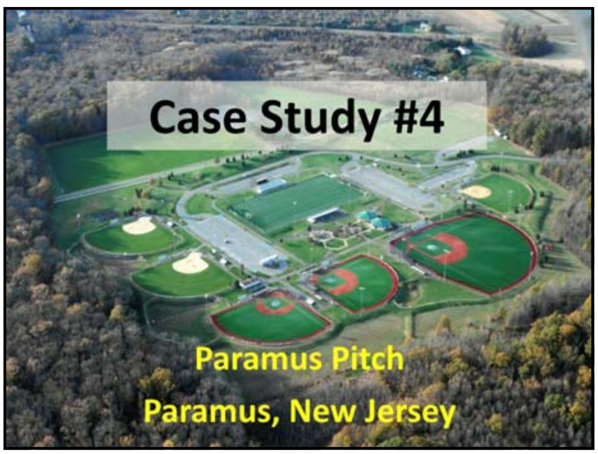

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Paramus Pitch

- Parks & Rec Facility in New Jersey (multi-use)
- Kentucky bluegrass, perennial ryegrass, and turf type tall fescue mix
- Limited budget
- Clay soil with poor drainage capability

130

What will be the major weed problem on this field? (4)

131

Management Approach

- Similar challenges with multi-use facility and budget as Case Study #2
- Evaluate current management practices
  - Weeds as indicators
- Adjust cultural practices to favor turfgrass
- Choose effective herbicides and application techniques

132

Alleviating Poor Drainage

- May be related to several agronomic issues
  - Soil compaction from wear and traffic
  - Irrigation system performance/scheduling

133

Alleviating Soil Compaction

- Need hollow tine aerification with significant impact to soil profile
- Limited time and budget
  - Focus on heavily trafficked areas
- Conduct during periods of low turfgrass stress
- May not be successful if irrigation system is deficient…..

134

Decrease Weed Competition

Photo: Matt Elmore, RU

135

Journal of Soil and Water Conservation 2018

Uniformity and spatial variability of soil moisture and irrigation distribution on natural turfgrass sports fields

C.M. Straw, R.N. Carrow, W.J. Bowling, K.A. Tucker, and G.M. Henry

Abstract: Emerging technology that couples spatial irrigation distribution data with spatial plant and soil property data may provide a more robust assessment of irrigation system perfor-

Irrigation Association suggests the target catch can DU_{lq} for turfgrass and landscape areas be between 65% and 75% for rotary irrigation heads (Irrigation Association 2010).

The catch can DU_{lq} method provides insight on distribution uniformity of an irrigation system, but it does not indicate water infiltration or redistribution (Li and Rao 2000; Dukes et al. 2006; Kiefer and Huck 2008). Devices that measure soil moisture (volumetric water content [VWC]) are becoming more readily available to turfgrass managers (Mecham 2001; Dukes et al. 2006; Kieffer and O'Connor 2007; Vis et al. 2007; Straw et al. 2016). It is not uncommon to determine VWC DU_{lq} of irrigated areas

Improving the efficiency of your irrigation system

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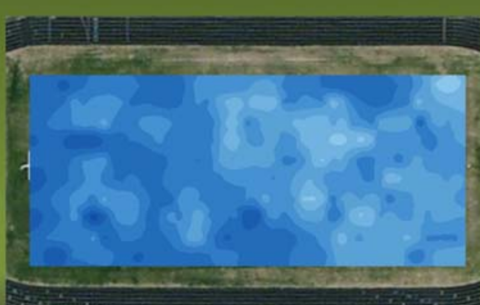
Uneven Irrigation Coverage



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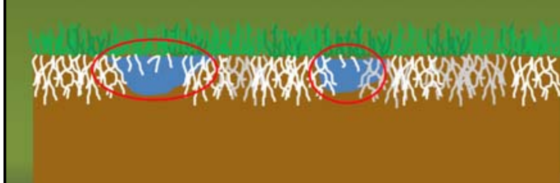
Influence of Soil Moisture



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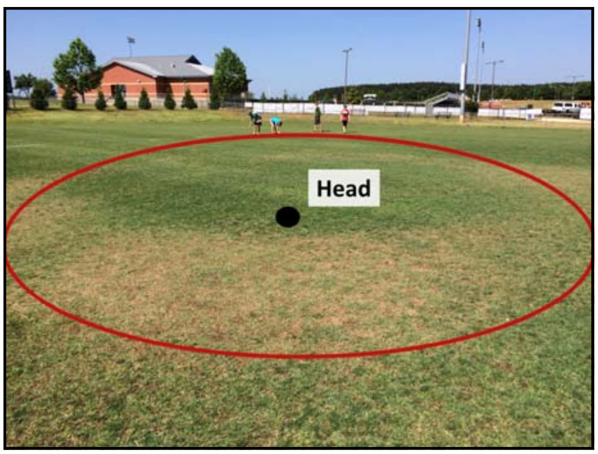

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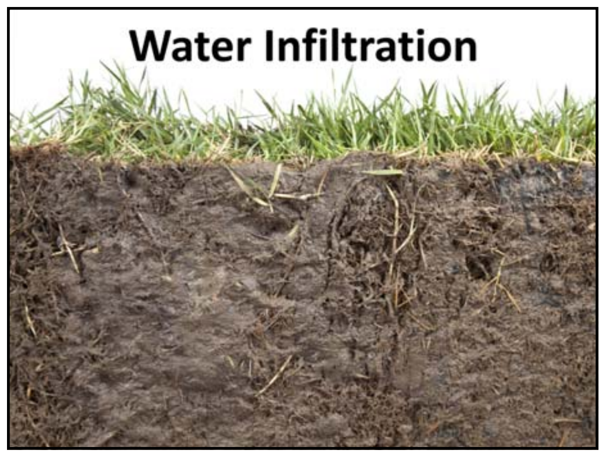

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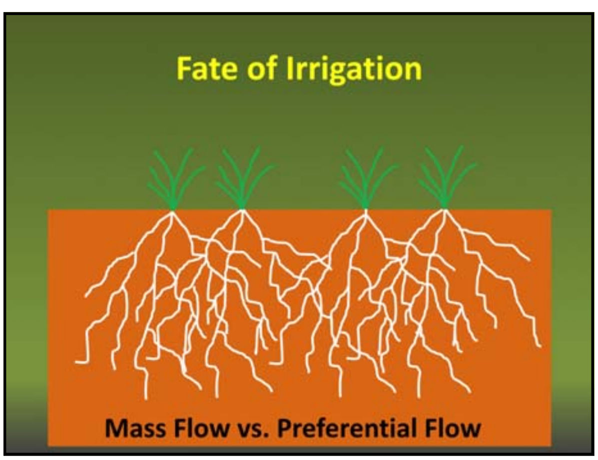

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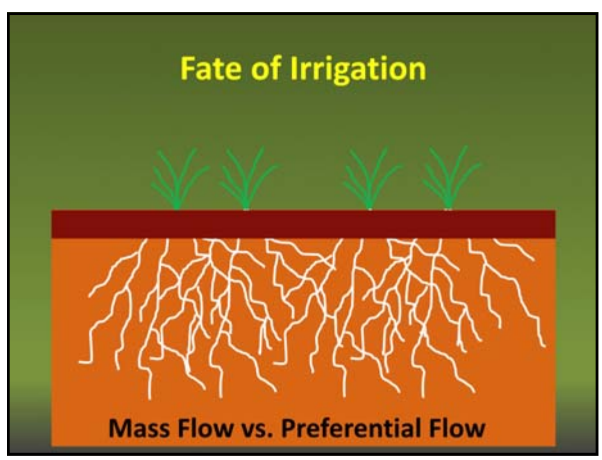

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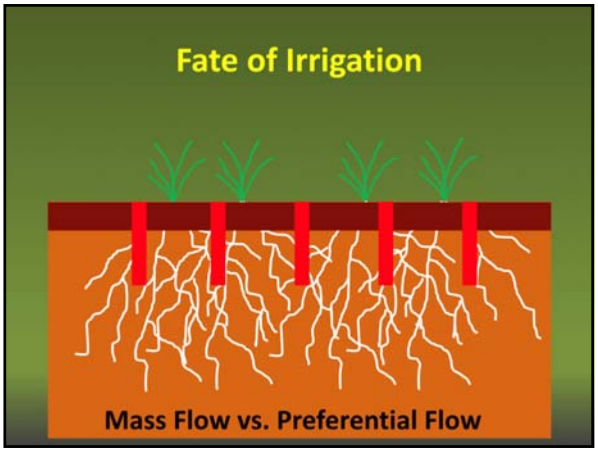

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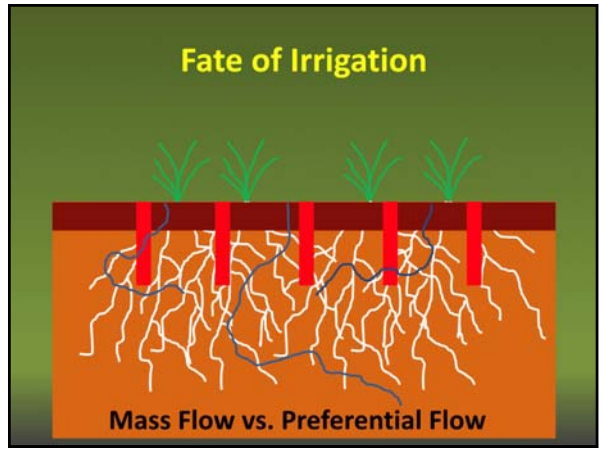

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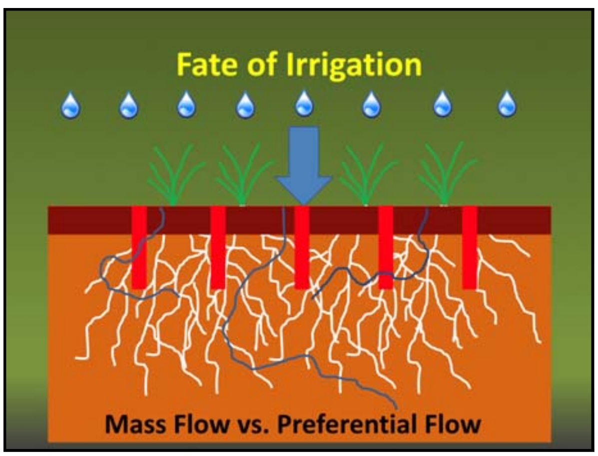

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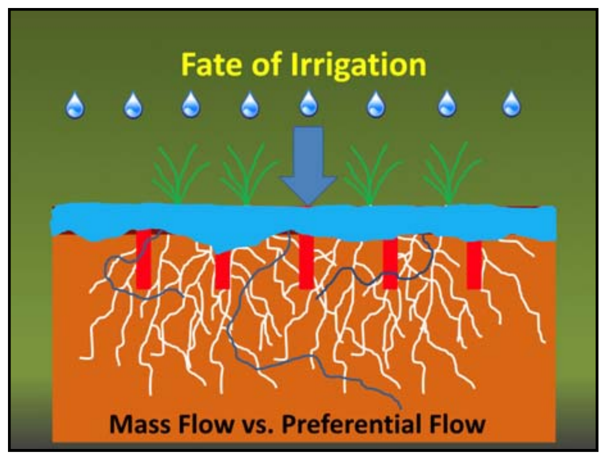

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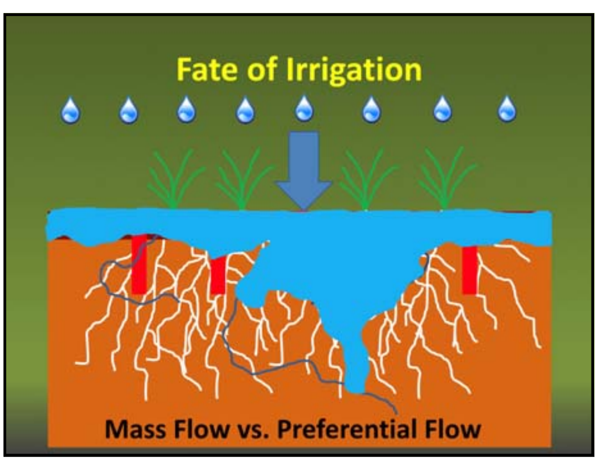

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Uniformity vs. Efficiency

- The use of a soil moisture meter following irrigation application will provide more valuable information
  - Water infiltration location
  - Rewetting potential
  - Soil compaction/thatch issues
  - Need for wetting agent applications

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Soil Moisture Meter

- TDR Probe
- Measures soil moisture from a depth of 1.5 to 8 inches
- Recorded as % volumetric water content (%VWC)
- GPS compatible

151

New Water Audit Approach

- Initial mapping:
  - Conducted under "drier" conditions
  - Determine areas of concern (poor drainage, localized dry spot, leaking heads, etc.)
- Map following irrigation application:
  - Conducted after loss of gravimetric water

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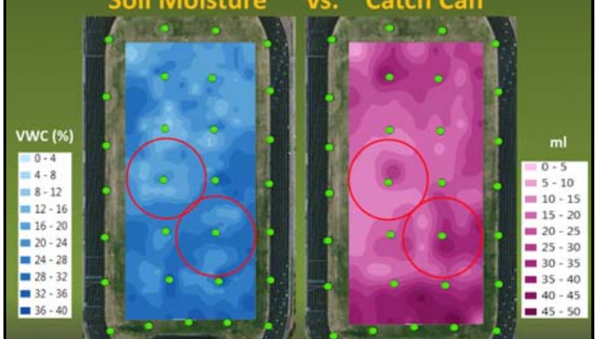
Irrigation Efficiency Audits

Soil Moisture vs. Catch Can



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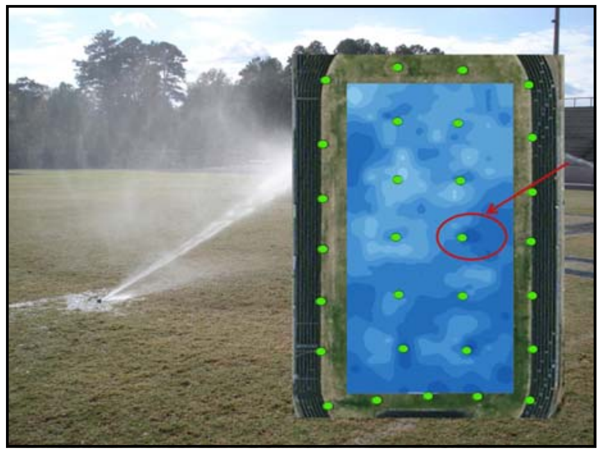

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ID of Easily Correctable Problems

When a problem head is identified, field investigation is conducted to determine:

- Incorrect scheduling
- Localized dry spot
- Head alignment
- Head not operating
- Head spacing
- Wrong nozzle size
- Sprinkler or nozzle wear
- Mismatched sprinklers or nozzles

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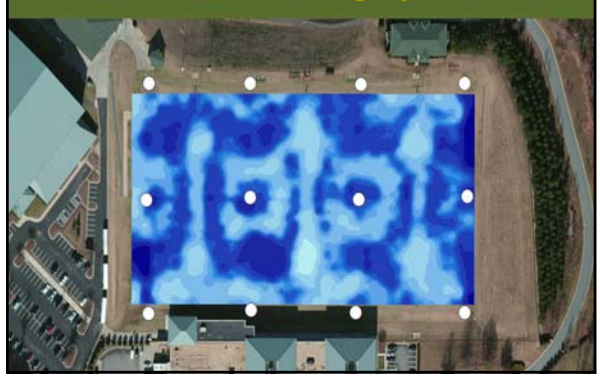
Water Cannons – Highly Variable



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Potential Weed Issues

- Weeds that tolerate frequent mowing, soil compaction, traffic/wear, saturated soils
- Annual grass weeds – annual bluegrass, goosegrass, and smooth crabgrass
- Broadleaf weeds – low growing/spreading, rosettes, etc. – annuals and perennials
- Sedges – annual sedge, yellow nutsedge, Kyllinga spp.

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Annual Sedge

- Summer annual
- Clumpy growth habit
- Indicates saturated soils

158

Yellow Nutsedge

- Perennial
- Indicates saturated soils

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Kyllinga spp.

- Perennial
- Rhizomatous
- Indicates saturated soils

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Weed Science, 48:501–507. 2000

Effect of mowing on perennial sedges

Jimmy R. Summerlin, Jr.
Corresponding author. Department of Crop Science, North Carolina State University, Box 7620, Raleigh, NC 27695. Current address: Department of Plant and Soil Science, The University of Tennessee, 369 Ellington Plant Science, Knoxville, TN 37996; jsummerl@utk.edu

Harold D. Coble
Fred H. Yelverton
Department of Crop Science, North Carolina State University, Box 7620, Raleigh, NC 27695

Field studies were conducted in 1996 and 1997 to determine the response of *Cyperus rotundus* and *Cyperus esculentus*, *Kyllinga brevifolia*, and *Kyllinga gracillima* to mowing regimens common to recreational turfgrass. Treatments were selected to simulate *Cynodon dactylon* golf course management and included mowing at 1.3 and 3.8 cm with mowing frequencies of three times per week and once a week, respectively. A nonmowed check was included for comparison. Reductions in *C. rotundus* shoot number were observed beginning 6 wk after initial treatment (WAIT) in 1996 and 9 WAIT in 1997 for the 1.3-cm mowing regime. The 3.8-cm mowing regime did not reduce *C. rotundus* shoot number until the final evaluation of each year. Reductions in *C. rotundus* rhizome length, tuber number, and tuber size were observed for both mowing regimes in both years. *Cyperus esculentus* shoot number was reduced by the 1.3-cm treatment at each evaluation date in 1996 and 1997. *Cyperus esculentus*

Kyllinga spp.

1.5-inch height – 1x/wk (rough)
- 23% reduction in plant spread
- 51% reduction in rhizome length

0.5-inch height – 3x/wk (fairway)
- 55% reduction in plant spread
- 91% reduction in rhizome length

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Effect of Mowing Height on Crabgrass

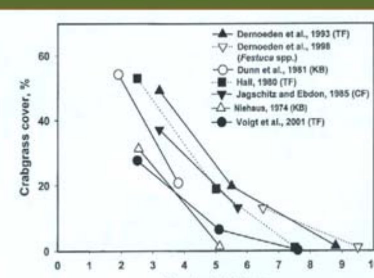

Fig. 1. Relationship of mowing height to cover of crabgrasses [smooth crabgrass (*Digitaria ischaemum*) or not specified (*Digitaria* spp.)] in cool-season turfgrasses. Species of turfgrass is Kentucky bluegrass (KB, *Poa pratensis*), Chewings fescue (CF, *Festuca rubra* subsp. *fallax*), or tall fescue (TF, *F. arundinacea*).

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Safe on Established Turf

- Products containing sulfentrazone (Dismiss NXT)
  - Prodiamine + sulfentrazone (Echelon) – pre & post
  - Solitaire, Q4 Plus, Surge, SureZone, TZONE
  - Some only suppress – reduced sulfentrazone
- Halosulfuron (SedgeHammer)
- Mesotrione (Tenacity)

164

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VEXIS

- Pyrimisulfan
- Granular formulation with activity on sedge, kyllinga, and some grasses
- Root absorption allows applications to dry turf —> no need for dew
- **Use sites**: Residential and commercial lawns, golf courses, sports fields, sod farms, parks, and many more.
- Sequential applications on harder to control perennial weeds
- Mixtures will be coming
  - Warm-season turfgrass = Aethon (Vexis + penoxsulam)
  - Cool-season turfgrass = TBD (Vexis + ???)

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Dismiss NXT Herbicide

- Carfentrazone (3.5%) + sulfentrazone (32%)
  - 1:9 ratio of carfentrazone to sulfentrazone
- 3.5 lb active/gallon formulation
- All cool-season grasses: CBG, PR, KBG, RBG, FF, TF
- Rates of 5.1 to 10.2 fl oz/A
- Residential & Commercial Lawns, Golf (Fairway and Rough), Sod Farms, Rights-of-Way, Other Non-Crop Areas

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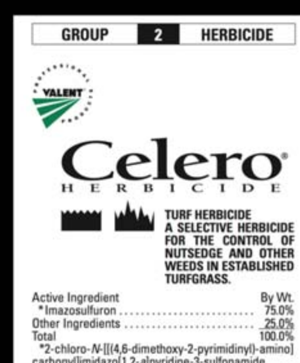
CELERO

- New product from NuFarm
- imazosulfuron
- Labeled for CBG, FF, KBG, PR, TF, B, C, Z, St. A
- 8 - 14 oz/A
- Sedge and Kyllinga control via ALS inhibition



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Attention! A fellow alum needs our help; he's been in the hospital for nearly a month....please help however you can!
@UTturfweeds | jbrosnan@utk.edu

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I am currently looking for an Asst. Super on the Palmer Course at St. Andre CC Boca. Formal posting still to come. DM if interested.
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Questions?

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