New Trends and Technology in Sports Turf

Featuring Representatives from STMA Commercial Companies:

- UBU Sports, Inc.
- g2 turftools, inc.
- Spectrum Technologies, Inc.
- Bulldog Field Equipment
- Xtreme Turf Makeover
- Wiedenmann North America
- Performance Nutrition
- PICKSEED
- Campey Turf Care Systems
Please Welcome UBU Sports, Inc.

Please click the mouse or the arrow key to advance to the next slide and begin the presentation.
The Future of Synthetic Turf
Mark Nicholls

Email: markn@ubusports.com
The Future of Synthetic Turf
Mark Nicholls

Advanced Equipment  Infill Reclamation  Portable Surfaces

Field Safety

ground gear for athletes
The Future of Synthetic Turf
Mark Nicholls
The Future of Synthetic Turf
Mark Nicholls

OUTFILL
Infill Extraction and Removal
Infill Reconditioning
Surface Hardness Remediation
The Future of Synthetic Turf
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TURFqubes
Portable Synthetic Turf System
Injection Molded Trays
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Blue Hand
Advanced Turf Gear

Removable End Zones

Active Panels

ground gear for athletes
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ground gear for athletes
The Future of Synthetic Turf
Mark Nicholls

Field Safety

Clegg Hammer

A - Triax

TURFindustry
Gmax Testing Equipment
Shock Attenuation
A-Triax
Clegg Hammer
The Future of Synthetic Turf
Mark Nicholls

Field Safety

Infill Depth Evaluation

Evenness Planarity

Temperature Requirements

H.E.A.T. Heat Evaluation Action Tool

TURFindustry

ground gear for athletes
Field Safety
The Future of Synthetic Turf

UBU SPORTS

Mark Nicholls
Email: markn@ubusports.com
Please Welcome
g2 turftools, inc.

Please click the mouse or the arrow key to advance to the next slide and begin the presentation.
BOOTH 501

g2 turf tools™

commission turf equipment for sports fields and golf courses
2012 STMA Award for Commercial Innovation

PATENT PENDING TURFPLANER
SPORTS TURF SOLUTIONS
LASERED SURFACE RENOVATION
SENECA HIGH SCHOOL FOOTBALL STADIUM
SCHEDULE A DEMO AT YOUR FACILITY

BASEBALL LIP REMOVAL
STARRS MILL HIGH SCHOOL
Please Welcome Spectrum Technologies, Inc.

Please click the mouse or the arrow key to advance to the next slide and begin the presentation.
Measurement Technology

“To Measure is to Know”
Common Problems for Turf Managers....Spectrum Has Solutions

- Soil Moisture
- Compaction
- Salinity
- Light
Firmness and Soil Moisture have a Relationship
Deeper Roots = More Stable Playing Surface
Spectrum TDR
Moisture Meters

Four Different Probe Lengths
Easily Changeable

- 1.5 “ (3.8 cm)
- 3” (7.5cm)
- 4.8” (12cm)
- 8” (20cm)
Readings are Quick and Easy

Displayed as %VWC

A = Average

N = Number of Readings Taken
Heavy Foot Traffic

Surface Compaction
Compaction

- Decreased Infiltration
- Decreased Microbial Activity
- Decline in Root/Shoot Growth
- Extreme Firmness at Surface

![Diagram showing the effects of compaction on soil and plant growth.](image)
Field Conditions can Prevent or Assist in Player Injury
Analog Compaction Tester

Data logging with GPS option
Salinity Damage

- Reduced Infiltration Rates
- Reduced Nutrient Uptake
- Contributes to Rapid Blight
#1 Reason for High Salt Levels

Inadequate Leaching
Spectrum Direct Soil EC Probe

- Directly Insert into Soil
- No Need to Mix Paste
- Auto Temperature Compensated
- Accurate Readings within Seconds
- Available in 8” or 24” T-Handle Probe
Patent Paired Sensor

Digital Display
SHADE = Unfriendly Turf Environment

Drawing of Al-Khor Stadium - 2022 Qatar World Cup

Estadio Nacional in Brazil – 2014 World Cup
Quantum Light Meter
(PAR Light 400-700nm)

- Measurement made in mmol/m/s
- Instantaneous
Rule of Thumb

Warm Season Turf Requires, on Average, 30+ Mols per day

Cool Season Turf Requires, on Average, 15+ Mols per day

Current research is being done to better define optimal light ranges for all turf species.
One of the many ‘other’ challenges of a sports turf manager
Thank You!!
Please Welcome Bulldog Field Equipment

Please click the mouse or the arrow key to advance to the next slide and begin the presentation.
Chad & Cathy Kropff
Founders/Owners
Certified SWaM owned business
WHO

Chad
- Sports Turf Professional

Cathy
- Sports Marketing and Management Professional

Combined total of 45 years of sports business experience
Why Bulldog?

- Known to be sturdy, strong, kind, and loyal
- Our beloved Fester was part of our family for 14+ years
Our Mission

• Invent Equipment & Tools to help sports turf managers
• No one focused on sports turf managers and groundkeepers
• First product – adult pitching rubber
WHY the Pitching Rubber

- Problem with twisting & bowing
- Short lifespan & unsafe
- Waste of time and $$ to replace
WHEN

- **Oct-Dec 2011**: Prototypes arrive
- **January 2012**: Debuted and sold pitching rubber at STMA Conference
- **2012**: Sold over 320 pitching rubbers. Also tested and enhanced adult & youth pitching rubber.
Beacon Athletics Testing Results

“Just finished a year long test of the Bulldog Pitching Rubber at our Field Maintenance Research Site in Madison, WI. The site has 3 fields, each of which host over 400 events (games, clinics & practices) per year so they see over 800 hours of use. We installed a Bulldog Pitching Rubber in the main mound of the 90’ diamond which hosts baseball from ages 13 - 16 yr olds with both metal and rubber spikes used. We packed the bore in the pitcher’s block with mound clay during the install process. The results? Absolutely NO bubbling on the surface of the pitching rubber was observed. The thicker rubber, in the Bulldog Rubber, with the smaller bore appears to have answered all of the problems that most present day pitching rubber blocks have. In the past, the other pitching rubber blocks were easily malformed and bubbled during the course of one season. The quality of the rubber used to make the Bulldog appears to be also of good quality as metal spikes used by the pitchers did mostly minor damage to the front edge of the pitching rubber.

Paul Zwaska, Technical Sales Support
Beacon Athletics
Comparison of BFE pitching rubber vs others

**Others**
- Cost $120
- Last less than half a season
- Can only use 1 side before bowing & twisting
- Increased labor, product, & shipping costs to place during season

**BFE**
- Cost $250
- Last 2-3 seasons
- Can use 3-4 sides with NO bowing & twisting
- Reduced labor, product, & shipping costs for the season
The Hardness Issue

- Justin Scott, Milwaukee Brewers
- Clark Cox, University of South Carolina
- Chad Laurie, Buffalo Bisons
Fixing the Hardness Issue

- Testing of different rubber combinations
- Interviews & suggestions from Akron Rubber, APR, Dr. Turner and other rubber experts
- Had 2-4 different prototypes made & tested
Improved in 2013

- Improved product made with a new combination of rubber to enhance the hardness of the pitching rubber
- 40 lbs structure remains the same to prevent bowing & twisting
- Will last even longer
Our rubbers, while holding their shape and position extremely well, have likewise experienced some wear, but not to the extent of the pictures you attached. I did a 180 degree flip of the game mound rubber last week just to establish a clean front edge since I was doing some mound work anyway. What our rubbers have shown is a lot of surface, cleat mark indentions, which is more cosmetic than anything else. With the enhanced hardness of your new rubbers, I think your product will continue to flourish. I will be purchasing two more in the off-season (to replace our other bullpen).

Keith Winter, Fort Wayne TinCaps
We are experiencing similar wear but on the back portion of the rubber. It’s kind of peeling off like paint would from a wall. We have very slight indentations from spikes, but other than that she’s a beast. I’m very happy with it and on Wednesday had some talked with the Greensboro Grasshoppers about your rubber. They are having difficulties with theirs and had to flip it prior to the start of the ACC Tournament. I told them they needed to order 5 of yours!

Scott Strickland, Durham Bulls Baseball Club
Testimonial #3

Chad the pitching rubber did great at softball. It looks better than the picture shows. The worn area at the front is from visiting pitchers trying to dig. Of course if you can make it stronger that would be great. Overall I am happy with my purchase.

Craig Potts, University of Texas A & M
Ugly Dogs

We inspect each pitching rubber and have some rubbers that have some small defects such as a few dimples, discolorations, and/or some edges that are not perfectly square.
Bulldog Field Equipment Pitching Rubbers Around the World
Thank you to our Customers

Arizona Diamondbacks
Athletic Field Design
Atlanta Braves
Blacksburg High School
Bridgewater College
Buffalo Bisons
Carolina Green
Christiansburg Parks & Rec
City of Salem Parks & Rec
Columbus Clippers
Conserv FS
Diamond Pro (TXI)
Dublin Scioto High School
Duke University
Durham Bulls

ESPN Wide World of Sports
Ferrum College
Fort Wayne TinCaps
GCA Services Group, Inc.
Harrisburg Senators
Kansas City Royals
Lancaster Barnstormers
Long Island Ducks
Los Angeles Dodgers
Miami Marlins
Milwaukee Brewers
Myrtle Beach Pelicans
New Hampshire Fisher Cats

Odeys Field Experts
Old Dominion University
Philadelphia Phillies
Radford University
Roanoke City Parks & Rec
San Diego Padres
Scranton Yankees (Railriders)
Sportscape
Staten Island Yankees
Texas A&M
Texas Rangers
TLI Sports, Inc.
USA Baseball
Washington Nationals
Giving Back in 2012

The 1st Annual Salem Red Sox Challenger Baseball Clinic
FUTURE

- Stop by Booth #1012
- Youth Pitching Rubber
- Double-sided Home Plate
- Twin-Blade Scuffle Hoe
- Bulldog Tamp
- Opportunity to recycle BFE pitching rubbers into souvenir displays
Thank you!
Please Welcome
Xtreme Turf
Makeover

Please click the mouse or the arrow key to advance to the next slide and begin the presentation.
More than 7,000 multi-use synthetic turf sports fields are in use throughout the USA. As the popularity of synthetic turf continually increases, so does the need for services to protect, clean and rejuvenate the turf.
Most companies get their warranty, file it away, and don’t follow proper maintenance. Without proper maintenance, your warranty may be VOID!

**Typical warranty period is 8 years**

Most buyers get their warranty, file it away, and don’t follow proper maintenance. Without proper maintenance, your warranty may be VOID!
Know and maintain your warranty

- Maintenance log
- Maintain infill levels
- Periodic g-max testing
"Maintenance of an infilled synthetic surface is essential to maintain its appearance and to provide consistency of play, permeability and longevity."
G-max represents the shock absorbency on a turf field.

Over time, turf can become hard due to compaction and infill loss, which increases g-max.

Higher g-max = unsafe playing surface
<table>
<thead>
<tr>
<th>Condition</th>
<th>G-Max Value</th>
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<tbody>
<tr>
<td>New Field</td>
<td>95–110</td>
</tr>
<tr>
<td>Recommended Performance</td>
<td>Below 165</td>
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<tr>
<td>Unsafe Conditions</td>
<td>175 and above</td>
</tr>
<tr>
<td>Probable Field Closure</td>
<td>200 and above</td>
</tr>
</tbody>
</table>

*Source: STC, ASTM, CPSC guidelines*
As a turf field ages, safety, quality and performance levels decline.

Does your field show these problems?

- Premature aging
- Uneven surface
- Broken fiber
- Poor shock absorption
- Loss of infill
- Reduced traction
- Drainage issues
- Hardened surface
Warranty length does **NOT** indicate the life of your field!

**Bring your field back to life with**

**XtremeTurf™ MAKEOVER**
We check for

- Matting of fibers
- Infill levels and uneven surfaces
- Inspect base, curbs, drainage
- Premature wear, torn turf and seams
- Dangerous conditions
- G-max levels
PROTECT YOUR FIELD!

Level 1
Decompaaction, deep cleaning, conditioning, repair

Level 2
Xtreme Clean* - includes infill extraction, separation, cleaning, and reinsertion

Level 3
Xtreme Clean service, removal and repurposing of old turf, and site inspection

* Xtreme Clean is a patent pending rubber infill cleaning process
Xtreme Clean™: Exclusive patent pending infill cleaning process!

1. Remove existing infill.
2. Cleaning machine separates and removes all dust, debris, sand and yarn
3. Infill is returned to field in "like new" condition
4. Additional infill added as needed.
If a field is determined to be at the end of its life, we can extract and clean the existing infill, and remove the old turf.

The extracted turf is repurposed or recycled—nothing is taken to the landfill.

The site is left clean and ready for new synthetic turf.
G-max testing before and after all services.

We are the only company offering these levels of service and diagnostic testing!
We are committed to producing minimal waste and maintaining sustainable practices.

**NOTHING is taken to a landfill!**

**Level 2**
Infill is cleaned, recycled and reused on-site.

**Level 3**
Old turf is removed and repurposed for alternate uses.

*Eliminates expensive hauling and disposal fees for the owner*
XTREME TURF MAKEOVER RESULTS

- Bring your field back to life
- Lower g-max levels to improve safety
- Improve playing surface
- Better filtration
- Infill as clean as new with Xtreme Clean
- Visually improved appearance, and more
- Nothing goes to a landfill
CASE STUDY: PITTSBURG STATE

Level 1 and Level 3 services performed on existing turf field.
• Decompaction to demonstrate g-max reduction by over 25 points
• XTM lowered g-max more than traditional grooming methods
• Xtreme Clean
• Extracted infill, cleaned and separated sand, rubber and debris
• Cleaned infill staged on sidelines ready for reuse in new field
• Turf removal
Protect your athletes and gain more years from your field with XtremeTurf™ Makeover.
Thank you for your time.

Contact: Kevin Chessher
KevinC@XtremeTurfMakeover.com
281.989.5550
Please Welcome
Wiedenmann
North America

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2013
Leading by Example
The new ground driven Terra Clean M
(for sweeping artificial turf)
The same basic concept as the Terra Clean 120 and the Terra Clean 160
More Affordable
Similar Results
(Separates and Re-Distributes the Crumb Rubber while Collecting the Debris)
The new Terra Clean 160 M Separates, Filters and Re-Distributes the Crumb Rubber while Collecting any Debris
63” Working Width
(Approx. 2 hrs. to Clean a Field)
Additional Dust Filtering System
The new Core Recycler
Separates the Sand from the Thatch and Redistributes the Sand while Collecting the Thatch
Collects the Thatch
The Thatch is Collected and the Sand is on the Turf
Rotating Screens to Separate the Sand from the Thatch
Inserts for Core Collecting
Super 600
5.9 Cubic Yard Capacity
(Sweeps, Collects, Verticuts, Flail Mows, Pulverizes)
Unbelievable Results
Dumps to a height of 83”
Mega Twister
14,500 CFM
Chute Rotates 270 Degrees
Quiet
Super 120M
2.1 Cubic yard capacity
Thank You

www.wiedenmannusa.com
Please Welcome
Performance
Nutrition

Please click the mouse or the arrow key to advance to the next slide and begin the presentation.
Patented Eco-Fertilizer
from CK Life Sciences
NutriSmart®-B

Starch  8-9%
Lignite/Leonardite  89-90%
6 strains of yeast  1%
NutriSmart® converts the resources found in the soil and atmosphere into available plant nutrients.
Prolonged use of NutriSmart will restore soil balance; it will improve soil’s physical and chemical properties.
• Granular Eco-Fertilizer
• Can replace 25 - 50% of soil applied fertilizers
• Fixes N from atmosphere
• Mobilizes P in soil
• Un-locks K tied up in the soil
• Works for up to 5 months
• Nourishes soil microbes
A Pro-Active Approach to Tomorrow’s Challenges

- A solution for improving soil quality;
- A technology to improve the nutrient use efficiency (NUE) of chemical fertilizers;
- A partner for organic settings
- An ideal program to implement future fertility practices

**IPNS** (Integrated Plant Nutrient System)
**BMP** (Best Management Practices)
• Improves Soil Structure
• Delivers high quality organic matter
• Improves water-holding capacity
• Improves nutrient uptake
• Helps increase soil oxygen content
• Improves exchange of gases
NutriSmart • Non-Leaching, NPK-Free Nutrition on Demand
Get Off the Roller Coaster!

Nutrient level vs. No. of days graph showing:
- **Turf Requirement**
- **NutriSmart Application**
- **Fertilizer Application**

- **Leaching can occur** when nutrient levels exceed the crop requirement.
- **More NPK than crop requires** indicated by downward trend before reaching 0.
- **Less NPK than needed** indicated by upward trend from 0 before 5 days.

Comparison of fertilizer application to nutrient Smart Application showing better control of nutrient levels.
Cypress Ridge GC, San Luis Obispo
Rye Grass

Treatments

1. Grower Practice (GP) - 215 lb/A of 20-3-20 + 6% Fe applied June 30, 2001

2. NutriSmart (NS) - 350 lb/A applied July 31, 2001
Cypress Ridge GC, San Luis Obispo – Rye Grass

Soil Organic Matter Content

Before Fertilization: 1.4%
After GP: 1.8% (+36.7%)
After NS: 1.9% (+51.7%)
Cypress Ridge GC, San Luis Obispo – Rye Grass

Soil Potassium Content

![Bar chart showing the increase in soil potassium content before and after fertilization. Before Fertilization: 150 ppm, After GP: +140% (225 ppm), After NS: +177% (262.5 ppm).]
Cypress Ridge GC, San Luis Obispo – Rye Grass

Tissue Nitrogen Content of Ryegrass

Week 5 Week 12 Week 16 Week 20
%
Tissue Cypress Ridge GC, San Luis Obispo – Rye Grass

Tissue Nitrogen Content of Ryegrass

%-6.0
GP NS

Week 5 Week 12 Week 16 Week 20
0.0 1.0 2.0 3.0 4.0 5.0 6.0
%
Cypress Ridge GC, San Luis Obispo – Rye Grass

Tissue Iron Content of Ryegrass

<table>
<thead>
<tr>
<th>Week 5</th>
<th>Week 12</th>
<th>Week 16</th>
<th>Week 20</th>
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</thead>
<tbody>
<tr>
<td>250</td>
<td>150</td>
<td>100</td>
<td>100</td>
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</tbody>
</table>

GP
NS
Cypress Ridge GC, San Luis Obispo – Rye Grass

Groundwater Nitrate Content

Before After 14 weeks
NO$_3$-N (mg/L)

Groundwater content increased by 58.3%.

Groundwater content decreased by 44.7%.
Cypress Ridge GC, San Luis Obispo – Rye Grass

Conclusions

- Organic matter, soil phosphorus and potassium levels increased after NS application.
- Tissue iron levels were higher in the NS plots throughout the 4 month experimental period.
- Tissue nitrogen levels remained equivalent to the standard practice.
- Ground water nitrate levels near the NS plots dropped, whereas levels near the GP plots increased during the 3 month study.
- Superintendent’s observation was that the NS plots were more uniform and dense than the GP plots.
Blending of NutriSmart with Chemical fertilizers

NS:NPK - approx. 60:40

* CF = 20:10:0
Benefits of NS:NPK Blends – To Crop

• Improves & sustains plant growth and yield

• Improves crop quality

• Provides long efficacy

• Healthier plants - improved of root system development
Benefits of NS:NPK Blends – To the Ecosystem

- Reduces the use of chemical fertilizer
- Natural & Environmentally Friendly
- Much less pollution caused by the leaching of excess nitrogen
- Improves soil quality
  - increases the soil organic matter
  - improves soil environment for beneficial microorganisms
Benefits to NPK:NS Blender

- Increase N, P, & K nutrients use efficiency
- Enable product differentiation
- Meet UN/FAO recommended agricultural system, e.g., IPNS & balanced fertilization
- Stable supply
- Ease of blending
- Enable environmentally-friendly claims
- Better image and corporate citizenship
Thank you for your interest in NutriSmart
Come See Us at Booth 212

Performance Nutrition
A Division of LidoChem, Inc.
20 Village Court
Hazlet NJ 07730
Phone: 732 888 8000
Email: info@lidochem.com
www.performancefertilizers.com
Please click the mouse or the arrow key to advance to the next slide and begin the presentation.
Superior Blends for Sports Turf

Dr. Leah A. Brilman
Director of Research and Technical Services
Why Blends and Mixtures?

- No single variety is perfect
- Balance strengths and weaknesses
- Blends can be tailored for individual sites
- Mixtures (2 or more species) can increase diversity
Futura Sport

Bluegrass Based Blend
3 to 4 Divergent Bluegrasses
Bluegrass Based Mixture
Add in 2 Perennial rye grasses
Selecting Kentucky Bluegrass

- Excellent wear tolerance or shear strength
- High performance overall or in your area
- Excellent disease resistance (complementary)
- Can compare across multiple NTEPS
- Shade tolerance, fall and spring growth
Selecting Kentucky Bluegrass

- Aggressive-type
- Midnight-type
- America-type
- Mid-Atlantic-type or Texas Hybrid
Selecting Kentucky Bluegrass

Midnight-type
- Blue Velvet - Wear tolerance, NJ, Sod strength, drought tolerant, turf quality
- Granite - Wear tolerance, drought tolerant, turf quality
- Quantum Leap - Sod strength, wear tolerant, turf quality, drought tolerant
Selecting Kentucky Bluegrass

America-type

- America - spring and fall growth, drought tolerant, shade tolerant, wear tolerant
- Mercury - superior shear strength, shade tolerant, drought tolerant, early spring green-up
- Armada - Salinity tolerant, drought tolerant, shade tolerant, excellent rhizomes
- Langara - Shade tolerant, wear tolerant, drought tolerant, reduced water use, fall and spring growth
Selecting Kentucky Bluegrass

Texas hybrid
• Bandera - Excellent rhizomes, heat tolerant, drought tolerant, salinity tolerant (perform like Mid-Atlantic)

Aggressive-type
• Touchdown - Industry standard for sod strength, wear tolerance. Long term performance
Perennial Ryegrass – Advantages in Mixtures

• Quick establishment
• Very dark green color
• Moderately high salt tolerance
• Resistant to different diseases than Kentucky bluegrass or tall fescue
• Endophyte-enhanced, helps with crown and leaf feeding insects
• Primary emphasis – Gray Leaf spot resistance, stress tolerance, dark green color, Crown Rust resistance
## Gray Leaf Spot Resistance

2004 NTEP National Perennial Ryegrass Trial Gray Leaf Spot Ratings - Mean of 2 Locations - 2005 Data Disease Rating: 1-9; 9=No Disease

<table>
<thead>
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<th>Variety</th>
<th>Mean</th>
<th>Variety</th>
<th>Mean</th>
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<td>Fiesta 4</td>
<td>9.0</td>
<td>Gray Star</td>
<td>6.7</td>
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<tr>
<td>Dasher 3</td>
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<td>Manhattan 5 GLR</td>
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<td>Hawkeye 2</td>
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<td>Zoom</td>
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2004 NTEP National Perennial Ryegrass Trial –
Turf Quality with Traffic Starting Fall, 2005 at Puyallup, WA.  2006 Data

*Quality: 1–9; 9=Best*

<table>
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<td>Variety</td>
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<td>Number of branched rhizome/unit area</td>
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Perennial Ryegrass Newest Advances

- **Wicked (4RHD)** - highest rated cultivar in New NTEP. High Gray Leaf Spot Resistance. Excellent wear tolerance.

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Ryegrass for Repairs

Repair Options

• High seeding rates of perennial ryegrass

Transitional Ryegrass

• Intermediate ryegrass - germinate under colder soil temperatures than perennial

• Transist 2600
Ryegrass for Repairs

Repair Options
Turf-type Annual Ryegrass
- Excellent Nurse Grass
- Quick repairs
- TXR
THE END
Please Welcome
Campey Turf Care Systems

Please click the mouse or the arrow key to advance to the next slide and begin the presentation.
Thank you for attending the session.

If you have any questions for our presenters, please visit them at their booth on the trade show floor.