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## Thanks Van Wall!

A big thank you to Van Wall for donating a skid steer and trencher to use at Rocky Ford. This certainly will help with research and the irrigation install. Your donation is greatly appreciated!



## Kansas Turf & Ornamentals Field Day

Mark your calendar to attend the 2017 Kansas Turfgrass Field Day on Thursday, August 3 at the John C. Pair Horticulture Research Center, Wichita. Registration is at 8:00 a.m., with the tour starting at 9:00 a.m. The cost is \$30 and includes lunch.

### Tour Highlights:

- Turfgrass Weed Control Update—*Jared Hoyle*
- Turf & Ornamental Diseases—*Megan Kennelly*
- Bermudagrass & Zoysiagrass Cultivar Selection—*Jack Fry & Yanqi Wu*
- Using Kansas Mesonet to Improve Accuracy in Landscape Irrigation—*Dale Bremer*
- Right Plant FROM the Right Place—*Jason Griffin*
- Prairie Star Flowers—*Cheryl Boyer*
- Tall Fescue NTEP—*Steve Keeley*
- Turf & Ornamental Insect Control—*Ray Cloyd*

11:30 Lunch

### Recertification credit hours for commercial pesticide applicators:

1 hr 3A and 3B .25 GCSAA education points.

**Exhibitors:** Contact Christy at 785-532- 6173 if you are interested in exhibiting.

To register, download a copy of the [brochure](#), or register online at <https://2017turffieldday.eventbrite.com>

## Message from the President



I hope this finds everyone in good spirits. We should all realize by now, the only thing constant is change! In this high tech world, it's amazing the quantity of information available at our finger tips. But, there is something to be said about learning and experiencing first-hand.

We are looking forward to another successful field day, and it won't be long before the December conference in Topeka. I urge you to attend both. These events deserve a reminder to us all of the value they provide to our industry. The Turf & Ornamentals Field Day will be held in Wichita this year on August 3. The day consists of another solid tour highlighting turf and ornamental topics. Our lineup for the December conference is shaping up nicely. There were 27 different speakers from 6 universities who participated in last year's event. There may be opportunities throughout the year to earn credit hours, but realize that attending KTF events is *much* more!!

Please do not hesitate to provide feedback or comments. I hope to see you in Wichita on August 3! (*Wes Kleffner*)

## Equipment Dealers that Support K-State Turf for Use at Rocky Ford

**Excel Sales**  
Out-front Rotary Mower

**Z-Spray Sprayer/Fertilizer Spreader**  
John Deere Landscapes &  
L.T. Rich Products, Inc.

**Kansas Golf & Turf**  
Electric Greens Mower  
Smithco Sprayer

**Professional Turf Products**  
Toro Triplex Greensmower

**RMI Golf Carts**  
Utility Cart

**Van Wall Equipment Co./John Deere**  
John Deere Triplex Tee Mower  
Skid Steer & Trencher

If your company is interested in supporting K-State turfgrass research by providing equipment, contact Cliff Dipman at (785) 770-7191.

## Influence of Tall Fescue Baseball Infield Mowing Height on Ground Ball Speed

Athletic field conditions have been shown to influence playability. Results of ball-roll speed studies can be used to predict success of infield hits. Field trials were conducted at Rocky Ford Turfgrass Research Center to determine the influence of tall fescue baseball infield mowing height on ground ball speed and batter on-base success. Mowing heights of 2.5, 5, and 7.6 cm resulted in 1.77, 2.08 and 1.88 s ground ball times, respectively.

Tall fescue is a drought tolerant turfgrass species commonly used as a baseball infield playing surface. Cultural management practice studies on athletic surfaces have shown direct influences on playability. Minimal information exists on the influence of infield mowing height and ball-roll speed. Results of ball-roll speed studies can be used to predict success of infield hits.

The objective is to determine the influence of tall fescue baseball infield mowing height on ground ball speed and batter on-base success.

Research trials were initiated on November 21, 2016 at the Rocky Ford Research Center (RF) in Manhattan, KS to determine the influence of tall fescue baseball infield mowing height on ground ball speed and batter on-base success. Research trials were conducted on 30.5 m long simulated tall fescue infield. Two experimental runs were conducted on three different infield mowing height treatments; 2.5, 5, and 7.6 cm. Six individual replications of a simulated ground ball were applied to each infield condition and experimental run. Ground balls were applied with a pitching machine set to 112.6 kph. Simulated ground balls were timed in seconds (s) from simulated pitched ball and bat contact (insertion into machine) to baseball fielder location (30.5 m distance). Successful infield hits were calculated using constant athletic ability data and infield ball-roll data. Data was subjected to ANOVA in SAS and means were separated according to Fisher's protected LSD at 0.05 significance level. (*Continued*)

## Influence of Tall Fescue Baseball Infield Mowing Height (*cont.*)

Mowing heights of 2.5, 5, and 7.6 cm resulted in 1.77, 2.08 and 1.88 s ground ball times, respectively (Figure 1). Utilizing ground ball speed results, researchers were able to predict that a simulated batter, if a ground ball was hit to the shortstop position (30.5 m distance), would result in an unsuccessful at bat if a tall fescue infield was mown at 2.5 cm and successful if mown at 5 and 7.6 cm, utilizing consistent player athletic ability data (Figure 1 and Table 1). (*Jared Hoyle & Gage Knudson, KSU Turfgrass Undergraduate Research Assistant*)

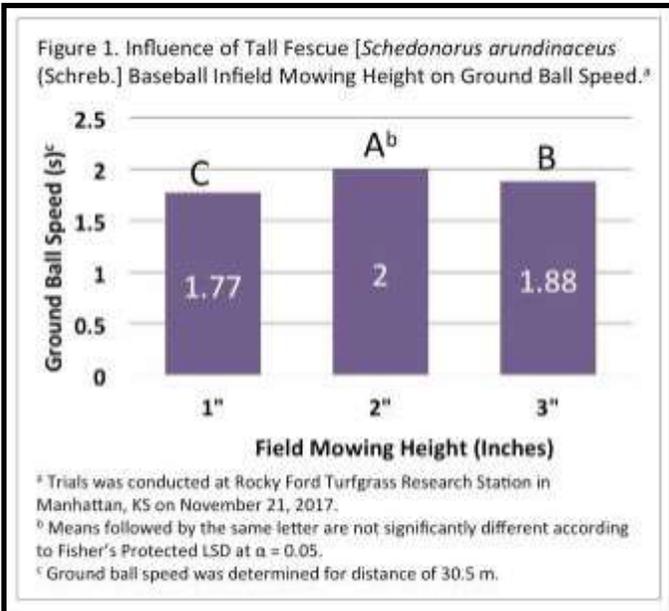


Table 1. Total fielding team time (s) including mean ground ball speeds and player athletic ability values to predict at-bat success.<sup>a</sup>

A+B+C		D	
Total Fielding Team Time (Seconds)		Batter Speed from Home to First-base (Seconds) <sup>b</sup>	At-bat Success (Safe or Out at 1B) <sup>b</sup>
4.47	<	4.5	Out
4.70	>	4.5	Safe
4.58	>	4.5	Safe

<sup>a</sup> Consistent player data was utilized from MLB for each model.

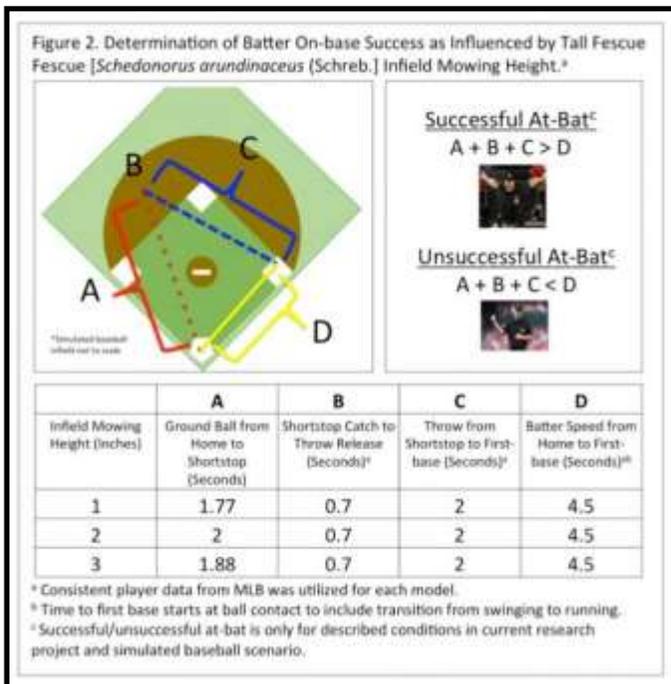
<sup>b</sup> Time to first base starts at ball contact to include transition from swinging to running

<sup>c</sup> Successful/unsuccessful at-bat is only for described conditions in current research (Ground ball hit to shortstop, thrown to first base).

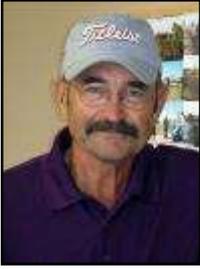
## Blast from the Past



Can you identify the KTF member in the white hat? Taken from a 1991 Turf Field Day.....Hint—he is a KTF Board of Director. *Answer on page 11.*



# Rocky Ford Update



I can't believe it is July! Time sure flies!

There is a lot happening at Rocky Ford. New research has begun and there are a lot of different projects being started. A new rainout shelter has been installed and the older one has a new skin. There are a lot of drought studies being conducted, as well as weed, fertilizer and diseases studies. The researchers at K-State work hard to help you grow great turf and make your life a little easier.

As always, I want to thank the distributors that help us out at all our research sites. Van Wall has blessed us with a skid steer and trencher which will help greatly in finishing our irrigation on the new site. The skid steer will save this old man's back! Thanks Richard Shumate for getting this lined up for us!

Thanks also to WinField and Helena for the fertilizer donation this past month. Thanks to every company who donates product to help in our research projects.

It was good to see a great turnout at the KGCSA S&R tourney on June 19 at Colbert Hills GC. The money raised goes to scholarships and research at K-State. Thanks to the Kansas Golf Course Supt. Association for hosting this important fundraiser!

I hope to see everyone at the Kansas Turf & Ornamentals Field Day this year at the John C. Pair Horticulture Research Center in Wichita on August 3! *(Cliff Dipman)*



Mark the Dates!

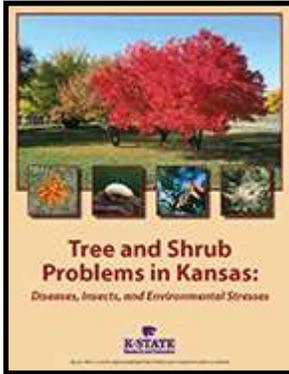
**August 3, 2017**  
**Turfgrass Field Day**  
**Wichita**

**December 5, 6 & 7, 2017**  
**Kansas Turfgrass Conference**  
**Topeka**

## When your Plants Need to Go to the Doctor

Summer is a tough time for cool-season turf and many other plant species. Where can you turn when things go wrong? First, you can always contact your local K-State Research and Extension office (use the map here: <http://www.ksre.ksu.edu/Map.aspx>) or email me at kennelly@ksu.edu. In addition, if you aren't already signed up, I encourage you to sign up for the K-State Turf and Landscape e-news/blog. It's a great way to keep up on what is going on around the state, with posts by Dr. Jared Hoyle, me, and our colleagues. To sign up, just shoot me a quick email.

For turf fungicide information, one of my favorite resources is the annual guide from University of Kentucky: <http://www2.ca.uky.edu/agc/pubs/ppa/ppa1/ppa1.pdf> In addition, we have some disease-by-disease information here: <http://www.plantpath.k-state.edu/extension/publications/turf.html>



Okay, but there's more than just turf out there. What about trees and shrubs? You can check out our publication *Tree and Shrub Problems in Kansas: Diseases, Insects, and Environmental Stresses*. It is available as a pdf here: <http://www.ksre.ksu.edu/bookstore/pubs/MF3132.pdf> Alternatively, you can order copies by calling the KSU Extension Bookstore at 785-532-5830. There are over 100 color photographs,

text descriptions, and a big table of information. All the sections are cross-referenced with each other.

Still need help? You can submit a sample to your local K-State Research and Extension Office (use the map here: <http://www.ksre.ksu.edu/Map.aspx>) and/or to the KSU Plant Disease Diagnostic lab.

*What to send?* Since trees are big, it's not always obvious what to send. You can always start with digital photos. Take one or two of the whole tree, then focus on an individual branch or two, then close-ups of leaves. You can email them to clinic@ksu.edu or kennelly@ksu.edu. When it comes to physical samples, more is better. Check out the photo of me with the giant shrub – we love big samples that come in pickup trucks! However, that is not always feasible! Several branches, at least a foot long, with leaves is a good start. Choose branches at the beginning stages of decline. It's hard for us to work with samples that are totally dead and dry. You can always cut the branches to make them fit in the box or envelope. For more details you can check out the guidelines here: <http://www.plantpath.k-state.edu/doc/extension-factsheets/submission-form-tree.pdf>



With turf, digital photos are helpful there, too. Take a photo of the whole stand, then a series of close-ups at different ranges. Just like with trees, you can email them to me or to the clinic address above. For physical samples, just like with trees, "more is better." Ideally, we'd like a sample that is several inches across and deep enough to get the whole root-zone. At golf courses they usually use a cup-cutter, so that is a good image to have in mind for size. Take it at the edge of the damage so it includes both healthy and damaged grass. For more info on sending turf samples, check out these guidelines: [http://www.plantpath.k-state.edu/extension/documents/turf/Turf\\_News\\_sample\\_submission-2017.pdf](http://www.plantpath.k-state.edu/extension/documents/turf/Turf_News_sample_submission-2017.pdf)



I hope you have smooth sailing this year and do NOT need any of these resources. Every year at the turf conference in December, a couple of folks say things like "Don't be offended – but I'm glad I didn't need to email you this year! And I hope I don't have to NEXT year either!" No offense taken ☺. But, I'm here, and these resources are here when you need them! And don't forget to sign up for the e-newsletter/blog! (*Megan Kennelly*)

## Who Are You Mentoring? Sage Advice from Some Great Mentors

We all have people around us we can invest in. I've wanted to be a more effective mentor to the young people in my life, so while I was on sabbatical leave this spring, I sought out eight people who I knew were good mentors. They included coaches (you'll recognize a couple of the names), teachers, a business owner, a campus minister, and a 92-year-old community volunteer. They all graciously let me sit down for a chat with them and I've recounted some of what I learned here. A few themes emerged; see if you can pick them up! So, without further ado, here are some nuggets of wisdom from some great mentors.

Take-away from Suzie Fritz: ***It's about them, not me, and it takes intentionality to be a good mentor.***

The first person I met with was Suzie Fritz, K-State's Head Volleyball Coach. After our meeting, I wrote in my journal, "It was kind of a humbling meeting. That is a good thing." You see, I have this regrettable, persistent tendency to focus on myself in relationships (can anyone relate?). My thought process before walking into Coach Fritz's office was something like, "I want to have great mentoring relationships because they are fun and fulfilling *to me*." Coach Fritz, in her warm, confident way, helped me get my focus off myself and onto the mentee. She described how she has to work extra hard to connect with some of her athletes. She meets with them individually and asks them questions like: "What's important to you?" "What are your goals?" and "How can I coach you better to help you reach those goals?" Her focus was squarely on her players, and she was willing to put in the hard work to help them.

Take-away from Joel Johnson: ***Let them know you're there to help them with life, not just their job.***

Joel Johnson is a campus minister at K-State. I asked him my simple question: "How can I be a better mentor?" Joel suggested letting my students know, when I meet with them in groups and individually, that, of course, I am there to help them prepare for their career, but that I want to help them be successful in *life*. Like Suzie Fritz, he advocated asking them the question: "What do you want out of life?" This made me think of the great Stephen Covey "Imagine Your 80<sup>th</sup> Birthday" video (google it, you won't regret it!). More specifically, Joel said to ask, "What are your goals for career, family, community and faith? How can I help you reach them?" Joel's message was to *care about the whole person*.

Take-away from Randy James: ***Being transparent and having a team-mentality builds trust.***

Randy owns a landscape construction/maintenance business. He works hard to foster a team environment, and he is very transparent with his employees. For example, all the company's financials are shared with everyone, including his salary. Everyone gets a share of the company profits, and he wants everyone to feel like they are "in this thing together," helping one another succeed. He also makes sure his employees know he is interested in helping them have *the life* they

want, not just the job they want. He believes that being transparent with them helps them to trust him. Randy's style challenged me, because I am a fairly private person by nature, but it got me thinking about ways I can be more transparent and build that team mentality with those under my care.

Take-away from Susan Melgares: ***Enjoy the journey and care for the people around you.***

Susan is a teacher and cross-country/track coach at Manhattan High School. Her teams have won two state championships in the last four years. Susan helps her student athletes set specific goals and emphasizes "enjoying the journey" of working toward those goals. She teaches them to be thankful, appreciative, and to not take anything for granted. In high school and as an All-American distance runner at Emporia State, she said her intense focus on becoming a great runner sometimes took precedence over being a friend to those around her. She learned along the way that it's the people around you that matter most. Now her focus is on helping her student athletes enjoy the process of getting better, while learning to appreciate and encourage those around them.

Take-away from Pat Melgares: ***Be confident in passing on your values.***

Pat (married to Susan, above) is the founder of the Manhattan Cross Country Club, a running club for youth in grades 8 and below. Pat was an All-American distance runner at Adams State where his coach, the legendary Joe Vigil (19 national championships!), worked as hard at instilling great character in his athletes as he did at improving their times. Pat recounted the daily 2:30 pm meetings where Coach Vigil would talk to his team about various character attributes for 30 minutes before they would go out to practice. Pat had so much respect for him that he literally didn't want to let him down by not giving his best effort every day. Now he tries to emulate him by passing on strong values to kids through his cross-country club.

Take-away from Bill Snyder: ***Caring, persistence, and grind it out.***

The last person I met with was the head football coach of the Wildcats, Bill Snyder. I was originally supposed to meet with Coach in February, but a bout with throat cancer (him) and a bout with the flu (me) pushed our meeting back until June. I asked him about *his* mentors and wondered about the traits that made them good mentors. He mentioned his mother, coaches, an assistant principal, and many others, and said the unifying trait they all shared was that they cared, and he knew they cared.

I knew he was intent on passing on certain values to his players, and I wondered how he mentored players who were less receptive to his values. He pointed to a glass plaque on his desk that was inscribed with the word "Persistence," and said "I think that's it right there." He told of how, when he first came to K-State and met with the players for the first time, he went around the room asking each one about their goals and how they planned to achieve them. (*continued*)

## Who are you Mentoring? (cont.)

He recalled, I think they probably thought, ‘This guy will probably go away soon’, but when I kept it up, day after day, they knew I was serious and they started to give me serious answers.”

Finally, I asked him if he ever dealt with burn-out. He said, “I have those thoughts sometimes, you know, like ‘Why am I doing this?’ But I just put them out of my mind and get back to work. There is something about that phrase, ‘Grind it out.’” I wasn’t expecting that answer, but probably should have been, given the man I was interviewing!



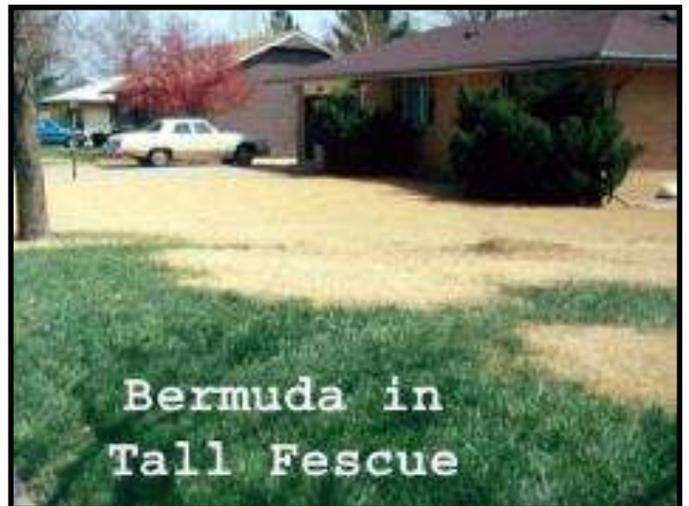
Guess what I told my 23-year-old daughter, who was second-guessing her decision to go back to school to get a credential that would make her more employable? Yep, I told her what Coach Snyder does when he has doubting thoughts: Ignore them, and give your best to the work at hand!

I was honored that each of these outstanding mentors allowed me to sit down with them and simply ask questions. And I didn’t even tell you about the 92-year-old community volunteer; that would fill a whole separate article. Did you catch the themes? Caring about the whole person, building into them, sharing values, persistence, intentionality.... Any others? We all have people around us we can invest in and I hope you’ve found these nuggets of wisdom as helpful as I have as we reach out to the young people in our lives. **(Steve Keeley)**

## Bermudagrass Control

Bermudagrass can make a nice lawn if you don't mind its invasiveness and short growing season. But many people dislike both these characteristics. Warm-season grasses, such as bermudagrass, zoysiagrass and buffalograss, green up later than cool-season grasses such as tall fescue and Kentucky bluegrass. They also go dormant earlier in the fall, which can make a lawn unattractive.

Bermuda that invades a cool-season lawn will be brown during much of the spring and fall while the tall fescue portion of the lawn is green. Bermuda is much more drought and heat resistant than cool-season grasses, so it will take over a cool-season lawn during the summer months if it is in full sun.



So, how do you control bermudagrass that has invaded a cool-season lawn? Research conducted in 1996 showed that glyphosate (Round-up, Kleen-up, Killzall, Kleeraway) is the best herbicide for the job. Glyphosate is a nonselective herbicide and will kill everything—including tall fescue or Kentucky bluegrass. Therefore, you will need to reseed treated areas. In our study, we applied a 2% solution of glyphosate on July 15 and again on August 15 on a bermudagrass plot that was more than 15 years old. More than one year later, we saw no regrowth. Glyphosate works best if bermuda is growing well. The better the bermudagrass is growing, the more chemical is taken up and pushed into the roots. Water and fertilize if needed to get it going.

Spray about the middle of July (or when the bermuda is growing well). Use glyphosate (2% solution). Wait two weeks and scalp the lawn (mow as low as possible and remove clippings.) This will prevent dead grass from covering any bermuda that starts to recover. Wait another two weeks and spray again with glyphosate if there is any green. Wait two more weeks and reseed. **(Ward Upham)**

## K-State's Zoysiagrass Goes to Golf Courses for Evaluation

Several golf course superintendents will be evaluating K-State's newly released zoysiagrass, KSUZ 0802, on site, including Jeff White (Indian Hills Country Club), Spencer Roberts (The National), Matt Gourlay (Colbert Hills), and Trampis Nickel (Wamego Country Club). KSUZ 0802 is a cold hardy, dense, fine textured zoysiagrass that was formally released by K-State and Texas A&M in 2015. A license for growers and its distribution is presently under negotiation.



Cliff Dipman and Gage Knudson, student intern, cut and roll the KSUZ 0802 sod.



Jeff White (right) arrives early to load KSUZ 0802 and then sod a tee at Indian Hills Country Club.

## New Turfgrass Publications



The KSU Turfgrass Team has been busy updating turfgrass extension publications. Some of the most recent publications include benefits of a healthy turf, lawn fertilization guide and turfgrass mowing. (*Jared Hoyle*)

### **Benefits of Heathy Turfgrass**

Environmental, economic, health, and safety benefits of turfgrass found in lawns, athletic fields, parks, and roadsides.

<https://www.bookstore.ksre.ksu.edu/Item.aspx?catId=545&pubId=12800>

### **Lawn Fertilizing Guide**

This guide helps homeowners determine how much fertilizer to apply to keep lawn vigorous and healthy.

<https://www.bookstore.ksre.ksu.edu/Item.aspx?catId=545&pubId=10639>

### **Turfgrass Mowing: Professional Series**

Mowing basics for professional turfgrass managers. Information on mowing height and frequency, clippings, mowing pattern, mower operation, blade sharpening, mower selection, maintenance, and safety

<https://www.bookstore.ksre.ksu.edu/Item.aspx?catId=545&pubId=712>

### **Mowing Your Lawn**

Mowing basics for homeowners. Includes information on mowing height and frequency, pattern, mower operation, maintenance, and safety. <https://www.bookstore.ksre.ksu.edu/Item.aspx?catId=545&pubId=615>

### **Recycling Grass Clippings**

Information for homeowners on why and how to recycle grass clippings.

<https://www.bookstore.ksre.ksu.edu/Item.aspx?catId=545&pubId=701>

For more turfgrass publications visit the KSRE Bookstore.

<https://www.bookstore.ksre.ksu.edu/Category.aspx?id=528&catId=545&Page=1>

# The Effect of Human Insect Repellents on Perennial Ryegrass Growth and Recovery

Turfgrass damage has been observed from misapplications of human insect repellents. Minimal research has been conducted to determine the cause of the damage. Greenhouse research trials were conducted to survey various human insect repellents on turfgrass growth and recovery. Insect repellents resulted in a wide range of damage. No common trend was observed although research trial shows possible repellents to be utilized around turfgrass that will minimize turfgrass injury.

Human insect repellents containing diethyltoluamide (DEET) commonly damage turfgrass due to non-target application. Common visual damage results in two areas of healthy growing turfgrass in the shape of footprints with necrotic and chlorotic turfgrass surrounding. Damage results in unacceptable turfgrass quality and playability. Minimal research has been conducted to explore the influence of human insect repellents on turfgrass injury and recovery.

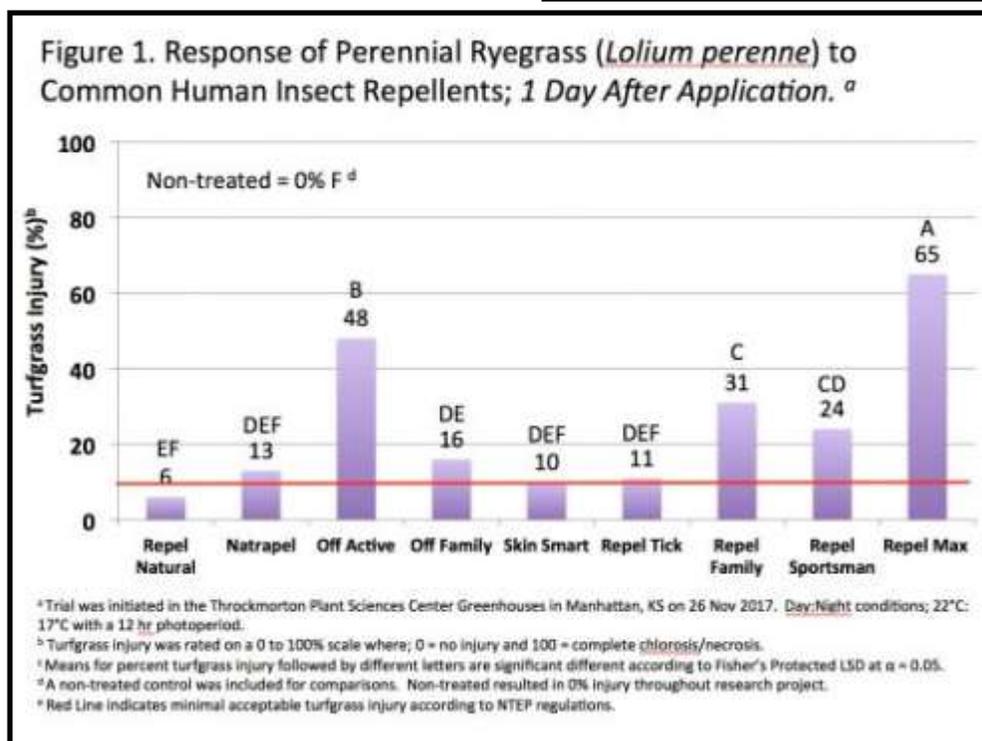
The objective was to evaluate the influence of human insect repellants on perennial ryegrass growth and recovery.

Research trials were initiated in November of 2016 at the Throckmorton Plant Sciences Center Greenhouses in Manhattan to determine the influence of human insect repellents on perennial ryegrass growth and recovery. Perennial ryegrass was established in 10 by 10 cm pots at 387 kg ha<sup>-1</sup>, maintained at 4.4 cm and were irrigated to prevent drought stress. Greenhouse environment was a 12 hr photoperiod at 15.5°C/ 22.2°C (night/day). Insect repellent treatments were applied to perennial ryegrass plants arranged in a randomized complete block design with 4 replications. Treatments included 9 insect repellents and a non-treated control for comparison (Table 1). Five treatments contained the active ingredient DEET. Other commonly used insect repellents were also included for comparison. Collected data included visual percent injury on a 0%- 100% scale, where 10% represented maximum acceptable injury. Data was subjected to ANOVA in SAS and means were separated according to Fisher's protected LSD at 0.05 significance level.



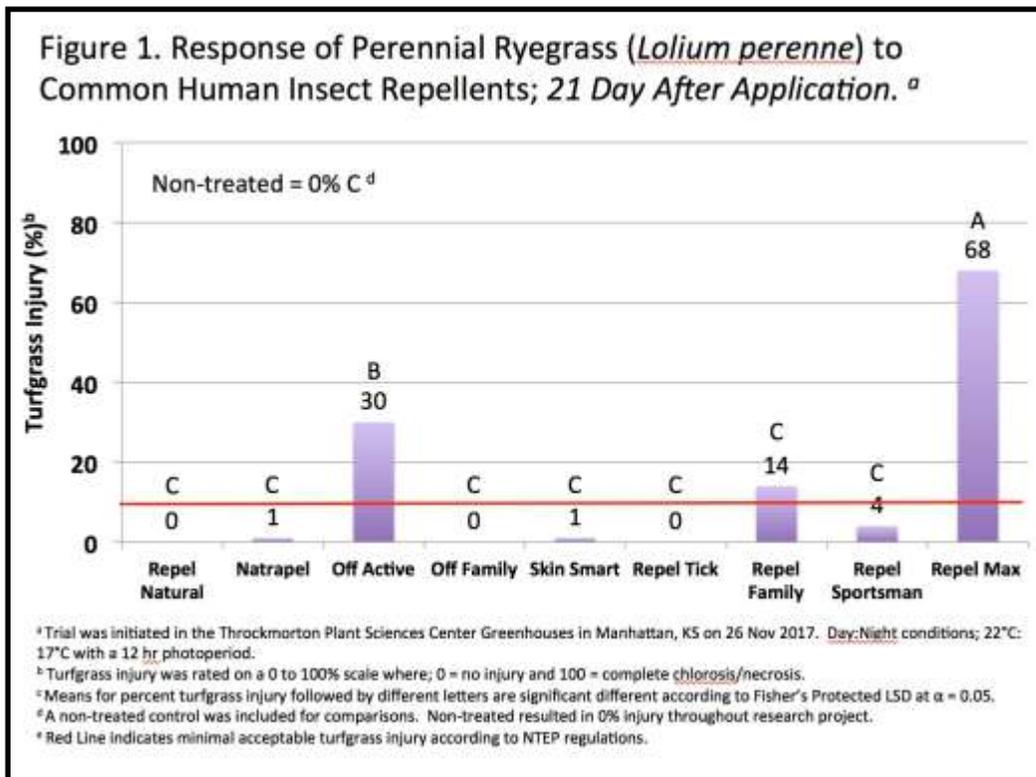
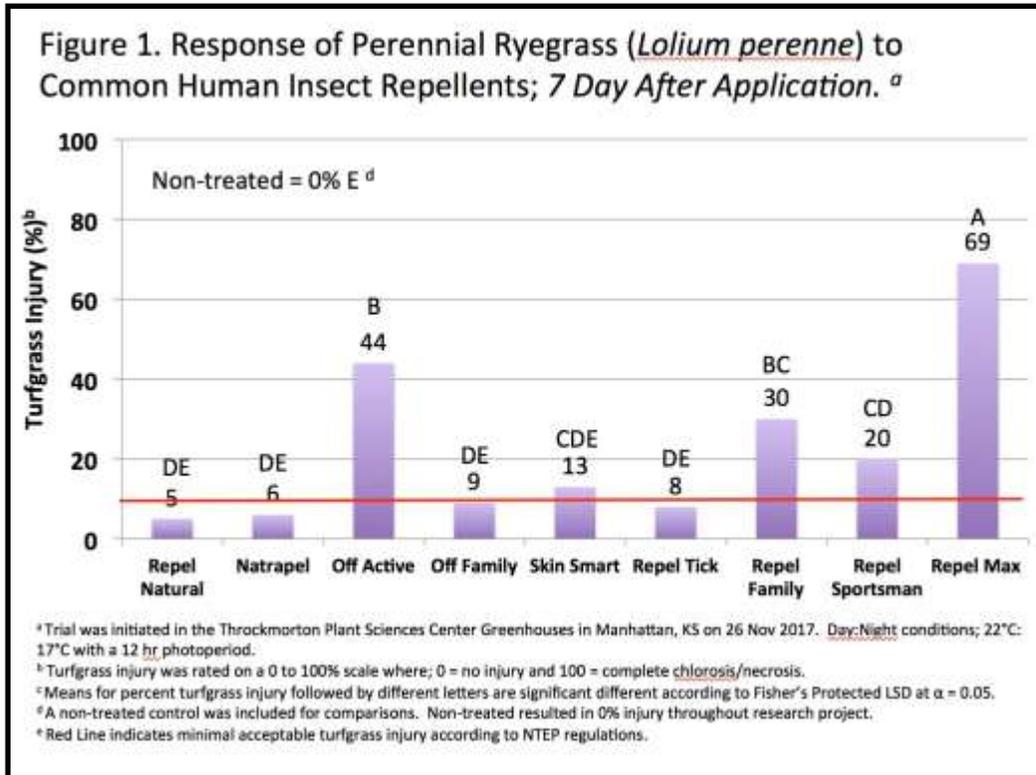
Table 1. Treatments and corresponding active ingredients (%) for human insect repellent influence on perennial ryegrass research trial

Treatment	Active Ingredient (AI)	% AI
Repel Natural	Geraniol + Soybean oil	5% + 2%
Natrapel	Picaridin	20%
Off Active	DEET	15%
Off Family	DEET	15%
Skin Smart	Propionic acid	20%
Repel Tick Defense	Picaridin	15%
Repel Family	DEET	15%
Repel Sportsmen	DEET	25%
Repel Max	DEET	40%
Non-treated	-	-



## The Effect of Human Insect Repellents (cont.)

All treatments except the control resulted in at least 6% turfgrass injury 1 day after application (DAA). Repel Max (40% DEET) and Off Active (15% DEET) resulted in 68% and 30% injury, respectively 21 DAA. At 21 DAA all other treatments resulted in turfgrass injury similar to the non-treated. Insect repellants with the same active ingredient percentage resulted in various perennial ryegrass injury and recovery. Although no different in % DEET, Off Active and Off Family resulted in 30% and 0% injury, 21 DAA, respectively. Results also demonstrate that permanent non-target turfgrass injury could occur if Off Active and Repel Max are applied as a human insect repellent. Further greenhouse and field trials are needed to confirm results as well as determine if other non-labeled ingredients influence turfgrass injury. (*Jared Hoyle & Peyton south, KSU Turf Undergraduate Research Asst.*)



## Blast from the Past

And the answer is.....Mike Kipper, Supreme Turf

**Check out the K-State Turfgrass Blog  
at:  
<https://blogs.k-state.edu/turf/>**

## Interested in Joining the KTF Founders Society?

The Kansas Turfgrass Foundation Founders Society was established in 1990 to provide support for research and education in turfgrass science. Faculty at K-State conduct research to help solve problems associated with turfgrass culture in Kansas. Joining the Founders Society is one more way your company can help support the goals of the KTF.

Any lawn care company, golf course, parks department, sports complex, association, or individual who benefits from turfgrass research should consider becoming a KTF Founder. Membership is accomplished by a one-time donation of \$1,000 (payable at once or in installments) to the KTF Founders' Investment Account. Golf courses and others who work from an annual operating budget may want to include KTF Founders membership in the upcoming year. Interest accrued will be used to compliment annual research contributions.

You can download the [KTF Founders Society](#) application and join the turfgrass research team working to improve turfgrass quality in Kansas!

## KTF Founders Society Members

*Bayer Environmental Science  
Flint Hills National Golf Club  
Gard'N Wise  
Merrin Godfrey  
Heart of America Golf Course Supt. Assn.  
Jim Heinze  
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Kansas City CC  
Kansas Golf Assn.  
Kansas Golf Course Supt. Assn.  
McPherson College*

*Midwest Turf  
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A \$1,000 contribution (at once, or over time) is all that is required to become a KTF Founder. Our goal is to recruit a total of 100 Founders over the next several years. These funds are untouched with hope that one day accumulated interest will help to support turfgrass research.

For more information on how to become a KTF Founders Society member, contact Jack Fry, Horticulture Division, Throckmorton Hall, Kansas State University, Manhattan, KS (785) 532-1430 [jfry@ksu.edu](mailto:jfry@ksu.edu)

## Effect of Dormant ‘MidIron’ Bermudagrass Colorant Applications on Clothing Blemishing

Minimal research exists on potential clothing blemishing when athletes contact turfgrass applied with colorants. Field trials were conducted to test the effect of turfgrass colorant applications on clothing blemishing if a athlete is to come in contact with the playing surface. Turfgrass colorants will adhere to turfgrass leaf blades and do not blemish clothing. Although, tested turfgrass pigments did result in significant blemishing of clothing.

Bermudagrass (*Cynodon dactylon*) is a warm-season turfgrass used on athletic fields in the Midwest. Although a desirable turfgrass species for athletic fields it fails to maintain acceptable green color during winter. Turfgrass colorants have been utilized to maintain acceptable green turf color through dormancy periods. Athletes of all ages play on sports fields where colorants have been applied. Extensive research has explored turfgrass colorants on turfgrass quality but minimal research exists on potential clothing blemishing when athletes contact turfgrass applied with colorants.

The objective of this research was to determine if turfgrass pigments and paints blemish athletic clothing after the recommended dry time.

Field research trials were initiated Feb. 16, 2017 at Rocky Ford Turfgrass Research Center in Manhattan, KS on dormant ‘MidIron’ bermudagrass maintained at 3.8 cm. Treatments were applied to 1.5 by 1.5 m plots arranged in a randomized complete block design with four replications. Treatments consisted of three paints (Wintergreen Plus, Green Lawnger, Endurant Premium), one pigment (Envy) and a non-treated control for comparison. All colorant treatments were applied at 1:6 (v:v) dilution in 1,234 L ha<sup>-1</sup> spray volume. After recommended drying time (4 hrs), a white cotton t-shirt was pulled 1.5 m across the plot weighted down with 11.4 kg. Digital image analysis was used to determine percent blemishing of t-shirt area. Data was subjected to ANOVA in SAS and means were separated according to Fisher’s Protected LSD at 0.05 significance level.

Envy (turfgrass pigment) resulted in the highest blemished clothing percentage (60%). All other treatments were no different than the non-treated (Figure 2). Results demonstrate that the tested turfgrass paints safely adhere to the turfgrass canopy and do not blemish athletic clothing. *(Jared Hoyle & Daniele McFadden, KSU Turf Undergraduate Research Assistant)*



Figure 1. Dormant colorant field trial plots located at Rocky Ford Turf Research Center, Manhattan.

