TPI
NATURAL GRASS
TURFGRASS PRODUCERS INTERNATIONAL

July/August 2018

Turf News

A publication of Turfgrass Producers International

The only magazine devoted ***exclusively*** to turfgrass production

Annual Seed & Vegetative Stock Issue

IN THIS ISSUE

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PRESIDENT'S **TURF**

Jimmy Fox

A Culture of Caring

I received one of those calls yesterday… "restricted number." I never answer those calls because they are usually irritating sales people or automated messages. This was a customer who went out of his way to get my phone number. "Mr. Fox, we have never met, but you have impressed me." I was thrown off guard at his introduction. "The people in your company have impressed me. From the first lady who took my order, bilingual and professional, to the lady who took my complaint, calm and patient, to the salesman who came to my house, you have impressed me. Your salesman didn't have to come by my house, but he did. He patiently explained, in terms I could understand, the problems that I was experiencing, how to resolve them, and then he gave me some herbicide to spray my weeds, which was not even your problem. Through every interaction with your employees, each of them exceeded my expectations, and none of it was forced, it was natural."

"Now, Mr. Fox, you need to know my background. I trained customer service personnel for Intel for many years, 5,000 customer service employees. I understand customer service. Mr. Fox, I have never seen customer service that exceeded yours. You have developed a culture of caring that is engrained in the people you work with."

Creating a genuine culture of caring is one of the hardest things to accomplish, yet when people in your organization "buy-in" and begin to care for each other, amazing things happen! Employees look for the best in others, they look to protect your investment, they put others' needs before their own—all with a smile and without complaining. The "drama" disappears and productivity rises. What? No drama!? Yes, it is possible. How do you create this culture?

1. It starts with hiring for attitude. You can teach people about grass, but you can't teach attitude! The saying, "people don't care how much you know, until they know how much you care," will come shining through when you hire people for their attitude first.
2. Develop relationships with your employees and let them see the relationships you develop with your customers. When your people know you genuinely care about them, and they see how you genuinely care for others, it creates a holistic environment of caring.
3. Communicate your vision to everyone in your company, personally. It's not about "vision statements" and "mission statements," but personal communication and relationships, your vision in action.
4. Focus on strengths, not weaknesses. This creates an environment of positive attitude and feedback. Yes, weaknesses need to be addressed, but the strengths are highlighted, praised, and recognized.

I hope you are fostering an attitude of caring in your business, it makes a difference! I hope you feel and see an attitude of caring in TPI…

May God bless you abundantly,

Precious. Pure. Perfect.

When you choose sod seed, you're making a commitment. Just like a diamond ring in a long-term relationship, you choose the best and purest because she deserves it and you're in it for the long haul.

We've made that same commitment with our TURF PRODUCERS' SELECT™ seed. We produce it in blending facilities dedicated to blending sod seed, ensuring purity. We dig in, analyzing test reports and collecting data on every region, grower and field history, just like a jeweler with a magnifying glass. Because you deserve it.

Relationships are what we like to grow most.

Sod Seed Specialist Larry Humphreys has been on the leading edge of seed genetics for more than 40 years. For questions or to order your TURF PRODUCERS' SELECT™ today, contact Larry Humphreys at larry@turfproducersselect.com.

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LANDMARK
TURF & NATIVE SEED

EXECUTIVE DIRECTOR'S **TURF**

Casey Reynolds, PhD

The 2018 NEW Membership Year Commencement

Commencement... Ask any college or high school graduate what that term means, and you will get descriptions of graduation ceremonies, hats thrown in the air, and after-hours parties. Ask any of their parents and you may get different descriptions of empty-nests, college tuition bills, and late-night worries. However, while that term often means "*a ceremony in which degrees or diplomas are conferred*," it also means "*a new beginning or start*." As a result, while writing this article not long after college and high school commencement ceremonies around the world have recently occurred, I am also thinking about the commencement, or beginning, of a new 2018 Membership Year for TPI.

The short membership year from July 1 to December 31, 2018, has already seen the beginning of many of the items that were mentioned in the May/June edition of *Turf News*. These include TPI's new consumer and market research for its public relations and media campaign, which began in June. TPI has retained FleishmanHillard, an award-winning, globally-recognized public relations firm to begin market and consumer research on the value of natural turfgrasses. This work is already underway and includes activity on the research and strategic positioning of natural turfgrass; brand narrative development; additions to the TPI Member-Only toolkit; social media audits; and more. We are very excited about this new relationship with FleishmanHillard and can't wait to put new resources in the hands of our members. Look for much of this research to be completed by the end of 2018 and ready for presentation and use at the TPI 2019 International Education Conference in Charlotte, North Carolina.

As well as the beginning of the public relations campaign, new additions to the TPI Member-Only Toolkit are almost complete, including brochures on *Turfgrass Fertilization* and *Measuring for New Sod*, which will both be available this month. Also, newly funded 2018 TLI research projects from the TLI Research Committee Meeting and TLI Auction in Tucson are underway. They include projects from Rutgers University, The University of Missouri, Texas A&M University, Mississippi State University, and The University of California, Riverside.

These research projects will be gathering information on harvest aids for improved turfgrass shelf life and transplanting, turfgrass water use, environmental impacts of turfgrass removal, and turfgrass' cooling effects in urban areas. Another project that was funded is the production of a 120-plus page book on *Turfgrass Weed, Insect, and Disease Control* for TPI Members Only. So, be sure to keep an eye out for more information in 2018 as these projects have officially launched!

Last, but not least, 2018 TPI Membership Renewals have officially been mailed. TPI members will notice that these dues are pro-rated for the short, 6-month fiscal year ending December 31, 2018. As always, we appreciate your commitment and support of TPI and the many initiatives that are underway to promote natural turfgrasses and the industry that we all hold so dear. As we think about the recent spring and summer commencements that occurred, let us not overlook the other use of that term in the commencement or beginning of an exciting 2018 TPI Membership Year. We look forward to serving you!

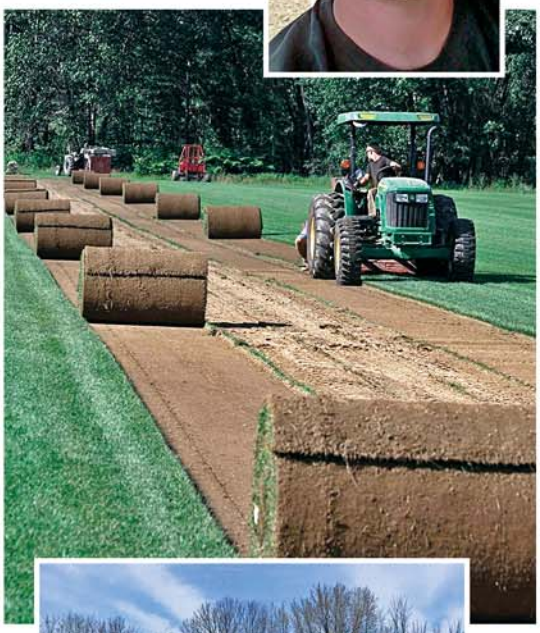
Cheers,

Commencement...
"a new beginning or start."

Please follow us on Twitter!

Turfgrass Producers International: @TPITurfTalk
The Lawn Institute: @TLIhealthylawns

Welcome Our New Sod Specialist, Simon Hilarides!



After extensive discussions with Simon, we knew that he would be a great addition to our sod sales team. Simon has first hand knowledge of growing high quality turf grass sod. He has worked on a sod farm for the past eight years, with six of those years as the Farm Manager.

Simon applied for the sales job that we advertised in Turf News Magazine, writing this letter of introduction:

"There are changes coming for the turf industry, with emphasis on less pesticide usage (and even pesticide bans in places like Portland, ME, Takoma Park, MD, and large parts of Canada), reduced reliance on irrigation, and more interest in organic methods and soil health. I think that these changes represent big opportunities. Lawns are a central part of the American identity, and they aren't going away, but the 'landscape' is changing. Jonathan Green is well positioned to take advantage of these opportunities, especially with its Black Beauty Turf Type Tall Fescues, its Blue Panther Kentucky Bluegrasses and the New American Lawn Plan. I really appreciate Jonathan Green's non-dogmatic approach of including both synthetic and organic materials for an integrated approach to turf management and soil health. If sod farms want to stay relevant and continue to thrive in this changing environment, they would do well to follow your lead.

"Salesmen sometimes get a bad rap, but I believe that sales is simply the art of educating people and helping them make good decisions. When you are selling a product that you believe in, sales is a noble endeavor."

Please join us in welcoming Simon Hilarides to Jonathan Green. Simon will be headquartered in the Midwest and will be calling on sod growers in person in late June.

Simon looks forward to meeting with you and walking your fields. Simon can be reached at:

732-804-1743
shilarides@jonathangreen.com

Jonathan Green
QUALITY LAWNS SINCE 1867

Turf-pro™ PROFESSIONAL TURF PRODUCTS

sodpro™ PROFESSIONAL SOD DIVISION

BLACK BEAUTY™ SUPERIOR GRASS SEED PRODUCTS

BLUE PANTHER

TPI NEWS

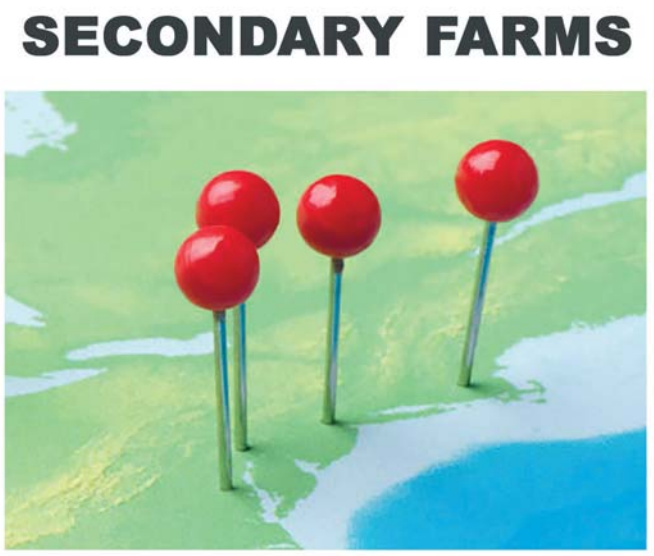
WHAT TO **KNOW**

IT'S YOUR TIME TO GROW: 2018 MEMBERSHIP RENEWALS HAVE BEEN MAILED!

TPI Membership dues statements were mailed to all members at the end of May. If you do not receive your dues invoice in the mail, please contact TPI at 847-649-5555 and we can send you a new one. You can also log in to the TPI website and renew online.
Remember that this statement will reflect a half-year of dues because of the recently-approved membership year change.

If you have questions about the membership renewal process, please contact Karen Cooper at *kcooper@TurfGrassSod.org* or 847-649-5555. Thank you for your continued support of TPI and TLI.

ATTENTION SOD PRODUCERS WITH SECONDARY FARMS



Ensure that your local customers can find you.

Turfgrass producers who own and operate multiple farm locations can purchase a membership for their secondary farms for only $150. Secondary farm locations will receive the same benefits as primary locations including *Turf News* and a separate listing online and in the TPI Member Directory. Customers use the online listing to search by postal code, so be sure to list all of your locations to secure their business.

NOW IS THE RIGHT TIME TO CONTRIBUTE TO THE TLI ANNUAL CAMPAIGN

Please consider including a donation for The Lawn Institute when you renew your membership dues. Your donations will enable TLI to continue promoting the industry by supporting education, turfgrass research, scholarships, and TLI's new international marketing campaign.

Currently funded research projects include:

- Turfgrass Cooling Effects and Ability to Reduce Heat Islands and Energy Consumption
- USGA/NTEP Cool-season and Warm-season Water-Use Trials
- Environmental Impacts of Turfgrass Removal
- Harvest Aids for Improved Shelf-life and Transplanting of Sod
- TPI 120+ page Pest Management Guide for Weed, Insect, and Disease Control
- Public Relations and Marketing Campaign for Natural Turfgrass

The new international marketing campaign will provide TPI members with professionally-designed tools they can use to promote their businesses in print and online and will result in a new TLI website that will help educate members of the public on the value of natural turfgrass.

TPI NEWS

MARK YOUR **CALENDAR**

TPI INTERNATIONAL EDUCATION CONFERENCE IN CHARLOTTE, NORTH CAROLINA!

INTERNATIONAL EDUCATION CONFERENCE | THE WESTIN CHARLOTTE
CHARLOTTE, NORTH CAROLINA
FEBRUARY 18-21, 2019

Plans are coming together for the 2019 International Education Conference in Charlotte, North Carolina, February 18-20. The week will kick off on Monday evening with the President's Reception, hosted by 2019 President Eric Heuver. Tuesday's activities will include the annual business meeting, several outstanding education sessions, and evening exhibit hall time. Wednesday kicks off with the Inspirational Breakfast, more cutting-edge education sessions, exhibit hall time, and the annual Show & Tell sessions with the new 2019 board of trustee members. The conference will wrap up with a big finale on Wednesday night: the 2019 TLI Banquet and Auction at the NASCAR Hall of Fame! Don't miss your chance to relax with friends and colleagues while enjoying the activities and displays at this outstanding facility. Watch your email inbox and future *Turf News* issues for more information!

DO YOU HAVE KNOWLEDGE OR EXPERIENCES YOU WOULD LIKE TO SHARE WITH YOUR PEERS AT THE 2019 INTERNATIONAL EDUCATION CONFERENCE IN CHARLOTTE?

The TPI Conference and Education Working Group is seeking participants for several panel discussion sessions to be held as part of the annual conference in February. The topic of the first session is "What I Wished I had Known When I Started" and the committee is looking for individuals from various size farms or companies who can share their experiences in a moderated format. They are also looking for companies that have implemented unique processes or setups to increase efficiency or improve employee benefits or retention. For example, have you recently remodeled your office to improve workflow and atmosphere? Have you built an onsite kitchen to make lunches easier for your employees?

If you are interested in participating or have questions, please contact Karen Cooper at *kcooper@turfgrasssod.org*.

TPI 2019 SUMMER CONVENTION & FIELD DAY

JULY 23 - 25, 2019 | BLOOMINGTON-MINNEAPOLIS, MINNESOTA - USA

A field day at Wagner Sod Company's farm will highlight the 2019 Summer Convention & Field Day. Plan now to join TPI members for an exciting array of learning tours and activities. A preliminary schedule will be announced in an upcoming issue of *Turf News*!

THANK YOU TO ALL 2018 DONORS

The Lawn Institute sincerely thanks all members that have donated to The Foundation in 2018. In recognition of the Forever Green, Gold Benefactor, Green Partner and 500 Club members, the lists below recognize those who have donated as of 6/1/18.

FOREVER GREEN/LEGACY GIVING

Hank & Mary Kerfoot (Modern Turf)

For more information go to:
www.TheLawnInstitute.org/page/forevergreen/

GOLD BENEFACTOR/over $5,000

Bethel Farms—**Will Nugent**
Brouwer Kesmac—**Eric Brouwer**
Coombs Sod Farm, LLC—**John Coombs**
Eagle Lake Professional Landscape Supply—**Eric Heuver**
Firefly Automatix—**Steve Aposhian**
GO Turf—**Anthony Heilig**
NG Turf—**Aaron McWhorter**
Texas Sod Leasing—**Chance Stone**
Trebro Manufacturing Inc.—**Gregg Tvetene**
Tri-Turf Sod Farms, Inc.—**Jason Pooler**

GREEN PARTNER/$1,000–$4,999

Bucyrus Equipment Co., Inc.—**Steven Dover**
Buena Vista Turf Farm—**Mike Selman**
Carolina Turfgrass Sales & Landscape Supply—**William Hiers**
DeBuck's Sod Farms of NY—**Greg DeBuck**
Emerald View Turf Farm—**Eddie Keeven**
Fairgreen Sod Farms, Ltd.—**John Fairty**
Hydrostraw LLC—Summit Seed—**Ed Lee**
Jasperson Sod Farm—**Randy Jasperson**
JB Instant Lawn, Inc.—**Mark Tribbett**
Modern Turf—**Hank Kerfoot**
North Carolina Sod Producers Association
RTF Turf Producers—**Jenny Carritt**
Sales Midwest—**Tim Wollesen**
Saratoga Sod Farm, Inc.—**Steve Griffen**
SelecTurf Inc.—**Jim Keeven**
Sod Solutions—**Tobey Wagner**
Turf Merchants, Inc. (TMI)—**Nancy Aerni**
Turf Mountain Sod, Inc.—**Fred Pittillo**
Turf Mountain Sod, Inc.—**Linda Bradley**
Waltz Green Acres Sod Farm, Inc.—**Steve Chont**
Winstead Turf Farms, Inc.—**Bobby Winstead**

500 CLUB/$500—$999

Blue Valley Sod, Inc.—**Bob Weerts**
Brillion Farm Equipment—**Mike Irish**
Cameron Financial—**Darryl Yochem**
Campey Imants—**Julia Campey**
Coosa Valley Turf Farms—**Thomas Wolf**
First Products, Inc.—**Carey Parrish**
Harmony Outdoor Brands—**Mike Pope**
Hol-Mac—**Brian Ely**
Jonathan Green & Sons, Inc.—**Barry Green**
Laytonsville Landscaping, Inc.—**Doug Lechlider**
McCall Sod Farm, Inc.—**James Maulden**
Michigan Sod Growers Association
Northern Hills Sod Farm LLC—**Roch Bestgen**
Oregon Turf & Tree Farms—**Tom DeArmond**
Patten Seed Co./Super Sod—**Ben Copeland, Sr.**
Personal Donation—**Ronald Juip**
R. B. Farms LLC—**Robbie Brady**
Reid Sod Farm—**Randall Reid**
Somerset Seed & Sod, Inc.—**Andy Hutchison**
Sumter Sod—**Chip Block**
Zander Sod Farm—**Claus Zander**
The Turfgrass Group—**Bill Carraway**
Trimax Mowing Systems—**Ray LeProu**
Turf Mountain Sod—on behalf of **Jim Novak**

For more information on how you can support TLI and make a donation in 2018 go to: *www.The LawnInstitute.org/* and click on SUPPORT TLI. Contributions help support turfgrass research, education and scholarships. Donations made in the calendar year will receive recognition in our publications and personal recognition in The Lawn Institute booth at the following levels:

FOREVER GREEN/LEGACY GIVING
GOLD BENEFACTOR/OVER $5,000
GREEN PARTNER/$1,000–$4,999
500 CLUB/$500—$999

PERSONALIZE THE NEXT PAGE (Helpful Hints from The Lawn Institute) Insert your company's business address and contact information by going to *www.TheLawnInstitute.org/pages/helpful-hints-from-the-lawn-institute/* to access The Lawn Institute's easy-to-use template. Then print and share with your customers—**it's free!**

FLOODING AND TURFGRASS HEALTH

Whether it's a large landscaping project or a weekend cookout, anyone who spends time outdoors is aware of the impacts of heavy rainfall. Summer thunderstorms or tropical systems often bring much needed rain to lawns and outdoor plants, but their volatility and uncertainty also have the potential to wreak havoc by delivering water faster than it can be handled. This is particularly true in urban areas where rainfall hitting hardscapes such as roads, rooftops, parking lots, etc. has little to no open space to infiltrate into the soil except for green spaces such as parks, lawns, golf courses, roadsides, etc. When water does find its way to these areas, it often takes hours or even days to infiltrate, resulting in prolonged submersion of plants, including turfgrasses.

Perennial turfgrasses are more tolerant of flooding than many horticultural or agricultural plants. Their extensive stem tissue such as rhizomes (below ground lateral stems) and stolons (above ground lateral stems) store carbohydrates including sugars, starches, cellulose, etc. that can be used to produce new leaf tissue once floods recede. It is not uncommon for perennial turfgrasses such as bermudagrass, bahiagrass, tall fescue, and others to survive several days or more of being fully submerged under water. Generally speaking, bermudagrass, bahiagrass, St. Augustinegrass, creeping bentgrass, and tall fescue are highly to moderately tolerant to flooding while zoysiagrass, centipedegrass, Kentucky bluegrass, perennial ryegrass, and fine fescue are not quite as tolerant.

There are many impacts of flooding to consider when managing turfgrasses in lawns, athletic fields, golf courses, and other sites. First are the physiological effects of hypoxia (low oxygen) and anoxia (no oxygen) which result in decreased aerobic respiration of plant roots due to the inability of oxygen to diffuse into the roots through saturated soils. Many people often think of plants as producing oxygen, which they do as a by-product of photosynthesis. However, aerobic respiration is an equally important process in plants whereby they require oxygen to break down and release the energy stored in carbon compounds for cellular use and growth. When respiration ceases due to flooding, plant cells can no longer support the function and growth of existing tissues or convert sugars into new tissues. If submerged long enough, this can result in significant turfgrass injury or mortality.

Floods also have the ability to leach or move soil nutrients off-site, break down or shorten the life of pre-emergent herbicide barriers, displace arthropods, deposit weed-seed or silt, and even bring in human debris such as trash, nails, etc. They also can encourage the growth of certain weed species such as sedges, rushes, and annual bluegrass (*Poa annua*). Important turfgrass management techniques and tools to remediate flood damage include verticutting/dethatching, sweeping/vacuuming, and aeration to remove debris, break through silt layers, and improve oxygen in the soil profile.

Flooded sites also may require diligent scouting and follow-up treatments for specific weed species. However, in many cases the hardy and perennial nature of turfgrasses will allow them to fully recover with time, attention, and cooperative weather.

For more information on lawn care and helpful "How to" tips, visit The Lawn Institute at:
www.TheLawnInstitute.org.

THE AMERICAN LIVING LANDSCAPE

91% OF AMERICANS HAVE A YARD & **86%** SAY IT'S IMPORTANT TO HAVE A LIVING LANDSCAPE & GRASS

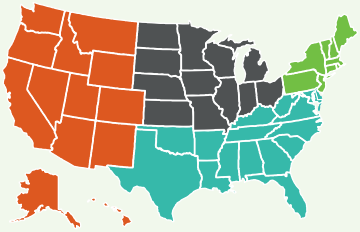
89% OF THOSE WITH GRASS IN THEIR YARD
BELIEVE IT IS GOOD FOR THE ENVIRONMENT

WHAT ARE THE BENEFITS OF HAVING A LAWN?

- O_2 PRODUCES OXYGEN
- CO_2 SEQUESTERS CARBON
- REMOVES DUST AND POLLUTION
- CLEANSES STORMWATER
- CAN HANDLE PLAY AND TRAFFIC FROM KIDS AND PETS

MORE THAN 2/3 ENJOY
TAKING CARE OF THEIR YARDS
72% MEN • 66% WOMEN

WHO ENJOYS WORKING IN THE YARD?



PEOPLE IN THE SOUTH ENJOY IT THE MOST - 74%
MIDWEST - 68%
NORTHEAST - 66%
WEST - 63%

WHAT DO PEOPLE PUT IN THEIR YARDS TO MAKE THEM #BACKYARDREADY?

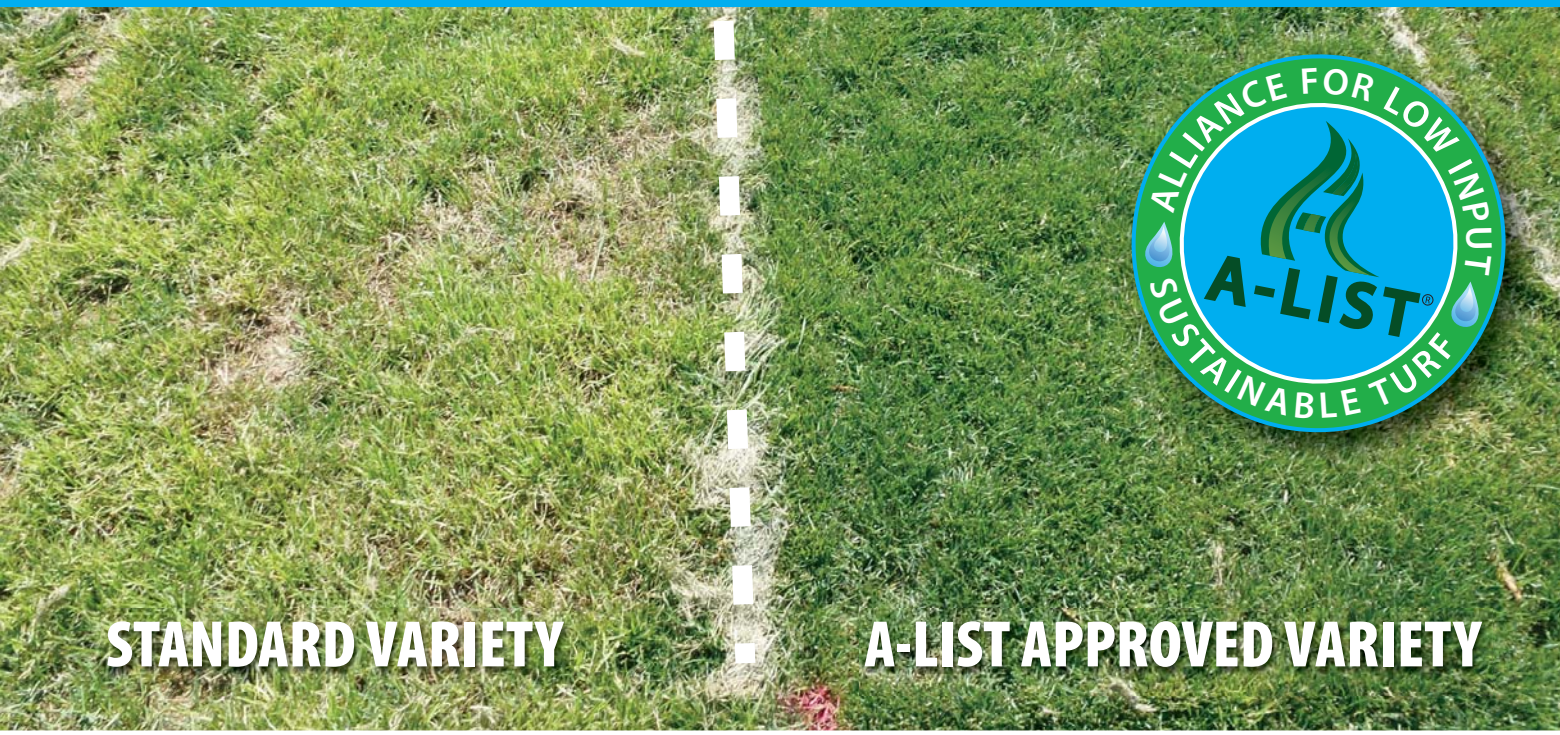
- GRASS - 86%
- TREES, BUSHES, SHRUBS - 80%
- GARDENS - 55%
- HARD PAVERS, CEMENT, BRICK, PATIO - 51% — MORE LIKELY TO BE WOMEN
- LANDSCAPING ROCKS OR GRAVEL - 47%
- MULCH - 43%
- GROUNDCOVER - 32%

#SaveLivingLandscapes | SaveLivingLandscapes.com

Source: Harris Poll for OPEI, 2018.

OPEI
OUTDOOR POWER EQUIPMENT INSTITUTE

High quality, low input turf varieties.



Use 40% less water without sacrificing turf quality with A-LIST approved varieties.

The A-LIST is an independent, non-profit, industry initiative, fostering development of sustainable turfgrass varieties and related products that perform their function with less maintenance inputs, thus benefiting the environment. A-LIST monitors a voluntary evaluation program including metrics like water conservation, reduced fertility and traffic, heat, and drought stress tolerances, all with no fungicide or insecticide applications.

Products that meet the acceptance criteria can utilize the A-LIST Approved symbol in their marketing and receive the A-LIST Approved tag for use in packaging.

To become an A-LIST Approved Variety, a variety must have demonstrated superior performance in A-LIST trials as defined by:

- The top LSD group for drought tolerance as measured by percent green cover for each of two years in at least two locations.
- Acceptable or better turf quality for each of the two years in at least two locations.
- Have been entered into an NTEP trial for the species. For new cultivars that have met the approval standards for performance in A-LIST trials, final approval will be withheld until the cultivar(s) have been entered into an NTEP trial.

SUSTAINABLE VARIETY

REDUCED INPUTS

DECREASED WATER USE

HEAT TOLERANCE

FOR APPROVED VARIETIES VISIT WWW.A-LISTTURF.ORG

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SEED RESEARCH OF OREGON
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LANDMARK TURF & NATIVE SEED
DLF PICKSEED SEEDS & SCIENCE

UP TO SPEED:
YOU ARE WHAT YOU PRODUCE

By Thomas A. Nikolai, PhD

Turfgrass is known to be a cosmetic enhancement, but the plant also has positive environmental, economic and social impacts, including curbing crime.

Part one of "You Are What You Produce" was published in the May 2014 issue of *Golf Course Management (GCM) http://gcmdigital.gcsaa.org/i/302556-may-2014/80*. The setting for that column was Flint, Michigan, where I led a team of Michigan State University (MSU) researchers in carrying out a field study. We mowed, applied fertilizer, and made herbicide applications around abandoned homes and in neglected parks. My column described the direct results—including the numerous social benefits—of our turfgrass maintenance project in Flint.

A social benefit not measured or mentioned in that article was the main topic of a scientific study published in 2017. Richard Sadler, PhD, an urban geographer from MSU, looked at nine years of crime statistics in Flint, from 2005 through 2014. He compared crime statistics from neighborhoods where abandoned lots were neglected with those from neighborhoods where abandoned lots were regularly mowed and maintained.

Although it is well documented that turfgrass decreases stress, depression and hopelessness in urban settings, Sadler was the first to perform an in-depth space-time analysis concluding that maintained grass also leads to lower crime rates, including fewer assaults, burglaries and robberies. Regarding the benefits of maintained turfgrass, Sadler says, "It's people looking out for their own neighborhoods. If you know somebody's watching, you're not going to go out and vandalize something. It's the overall change in perception created by cleaning up blighted property."

Turfgrass is probably the most abundant and misunderstood plant. For the most part, it is taken for granted, and some people actually believe turfgrass is bad for the environment. Some negative perceptions about the presence of turfgrass in lawns, parks or on golf courses include:

- Fertilizer can cause nutrient pollution.
- Turfgrass requires use of pesticides.
- The plant uses too much water.
- Two-cycle engines produce noise and air pollution.

All the concerns listed above are legitimate—if those who care for the turf are not educated in proper turfgrass maintenance. Given the opportunity, it is important that those of us who practice the art of turfgrass maintenance carry the torch for our plant to shed light on its many attributes.

For instance, proper fertilization increases turfgrass density, which reduces sediment runoff into surface bodies of water and increases soil microbial populations that filter water heading into our groundwater and drinking water. A study in Flint, MI, showed that fertilizing a sloped lawn with 0.8 pound of nitrogen twice annually reduced sediment runoff by 50 percent. Furthermore, three identical fertilizer applications the following year resulted in 90 percent less sediment runoff compared with non-fertilized plots.

Turfgrass water management research has led directly to the use of time-domain reflectometry (TDR) to make immediate on-site measurements of volumetric moisture content. This easy-to-use technology minimizes water use by allowing experienced managers to irrigate within the confines of plant-available water. TDR has been embraced by agriculture and is being simplified for homeowner use in gardens, flower beds and lawns.

If you are what you produce, then turfgrass is not only a cosmetic enhancement, but also a plant that provides numerous social, economic and environmental benefits, plus the safest recreational playing surfaces. We should all be proud to work in an industry where our focus is on making the world a better, and, according to Sadler, safer place. Now, if we could only get everyone to appreciate what we do and compensate us for it. Key point: Educate, don't legislate.

Thomas A. Nikolai, PhD, the "Doctor of Green Speed," is the turfgrass academic specialist at Michigan State University in East Lansing, MI, and a frequent Golf Course Superintendents Association of America (GCSAA) educator.

This article was reprinted, with permission, from GCM First Cut (GCMOnline.com): http://www.gcmonline.com/voices/2018/05/01/turfgrass-social-benefits?utm_source=Informz&utm_medium=email&utm_campaign=General

OUTDOOR REMODELING PROJECTS OFFER FINANCIAL RETURNS AND OWNER SATISFACTION, SAY REALTORS® AND LANDSCAPE PROFESSIONALS

Editor's note: The following is reported by the National Association of Landscape Professionals (NALP).

Home and commercial property owners looking to take on a remodel should consider undertaking an outdoor project, according to the National Association of Realtors®' and National Association of Landscape Professionals' 2018 Remodeling Report: Outdoor Feature. To read the full report, go to: *https://www.nar.realtor/research-and-statistics/research-reports/remodeling-impact-report-outdoor-features*

The report takes a deep dive into 13 outdoor residential projects and 10 commercial property projects, highlighting the reasons why property owners complete these projects, the value both financial and emotional that these remodels bring, and the increased happiness the finished projects bring homeowners.

"Realtors® understand that a home's first impression is its curb appeal, so when it comes time to sell, a well-manicured yard can be just as important as any indoor remodel," said NAR President Elizabeth Mendenhall, a sixth-generation Realtor® from Columbia, Missouri and CEO of RE/MAX Boone Realty. "Even homeowners with no immediate plans to sell can gain more enjoyment and satisfaction from their home by taking on a project to revive their outdoor spaces."

When asked which outdoor projects produce the most substantial financial payouts at resale, Realtors® ranked standard lawn care service at the top, which recovers 267 percent of the project cost at resale. Next, Realtors® named landscape maintenance and tree care, both recovering 100 percent of the cost at resale, and installing an irrigation system, recouping 86 percent.

When it comes to the enjoyment homeowners gain from these projects, a fire feature and irrigation system tied for first, both receiving a perfect Joy Score of 10; Joy Scores range between 1 and 10 and higher figures indicate greater joy from the project. Eighty-three percent of homeowners who installed a fire feature said they have a greater desire to be home since completing the project, and 69 percent of homeowners who installed an irrigation system said they feel a major sense of accomplishment when they think of the project. The next most appealing projects were a new wood deck (Joy Score of 9.8), a water feature (9.8), statement landscaping (9.7) and an overall landscape upgrade (9.6).

"This report validates that landscaping is an investment worth making, offering the immediate benefits of increased enjoyment of your property, as well as desirable long-term value that holds if or when it comes time to sell," says Missy Henriksen, vice president, public affairs, NALP. "From lawn and tree care to installing a new fire or water feature or landscape lighting, there's no shortage of opportunities to enhance your landscape and to reap the benefits these upgrades provide."

This year, the report also covered outdoor projects for commercial properties. The report found that 43 percent of Realtors® have suggested a commercial client improve the curb appeal of a property before listing it for sale. The most frequently recommended projects are standard lawn care (39 percent), completing a landscape management service (27 percent) and an overall landscape upgrade (26 percent).

"It is not just homeowners that need to think about curb appeal when it comes time to sell; a beautiful exterior is just as important for commercial property owners. In fact, 81 percent of Realtors® said they believe curb appeal is important in attracting a buyer," said Mendenhall.

The National Association of Landscape Professionals is the trade association for the landscape industry, which employs nearly 1 million landscape, lawn care, irrigation and tree care professionals who create and maintain healthy green spaces for the benefit of society and the environment. Member companies specialize in lawn care, landscape design and installation, landscape maintenance, tree care, irrigation and water management and interior plantscaping. More information about NALP is available at: www.landscapeprofessionals.org.

The National Association of Realtors® is America's largest trade association, representing 1.3 million members involved in all aspects of the residential and commercial real estate industries. Information about NAR is available at: www.nar.realtor.

NEW VARIETY PREVIEW

Use this guide to learn about what your supplier member companies are saying about their 2018 introductions.

BENTGRASS

Coho Creeping Bentgrass

Coho creeping bentgrass has been bred for superior summer performance, stress tolerance, and disease resistance (particularly Dollar Spot). Coho has exceptional brown patch resistance, and will tolerate the lowest of cutting heights, even on the hottest days of the summer. It has a medium dark color and good density. It can be used on tees, greens and fairways. Tested as UCE, Coho is an elite variety from Rutgers bentgrass breeding program.
Vista Seed Partners

BERMUDAGRASS

Bimini™ is an improved hybrid Bermuda that forms a fine-textured, dense turf with beautiful dark green color and upright leaf growth. Its dense, rapidly-spreading growth habit and quick injury recovery make Bimini one of the most durable turfs available. Developed specifically for athletic applications, Bimini is widely used in the Southeast for sporting fields and commercial applications. Its soft texture offers a comfortable place for athletes to land, and an enjoyable lounging area for home lawns.
Bimini bounces back from heavy foot traffic. It tolerates many strenuous weather conditions. Bimini is quick to establish a deep root system which aids in water absorption and heat and drought tolerance. Cold temperatures are no problem; it will survive frost with ease. Bimini will even tolerate neglect and abuse and is resistant to pests and disease. With minimal maintenance required, this is the perfect turf to lower lawn care costs.
Bimini performs best in full sun with mowing heights normally associated with fairways, roughs, sports fields and lawns. Its beautiful deep green color unfurls in the spring, holding through fall. Its beauty coupled with its durable and low maintenance habit makes Bimini one of the most desirable Bermuda varieties on the market.
Bethel Farms

BERMUDAGRASS

Imperial™ is an ultra-dwarf Bermudagrass with a fine leaf texture and extremely tight spacing between the leaves, creating a finer, softer turf that is perfect for putting. With very little grain and a uniform, upright growth habit, Imperial has exceeded other varieties in stimp measurement. It also shows superior divot recovery and wear tolerance, making it great for high-traffic areas. Imperial is very quick to fill and will hold its own, not allowing other grasses to encroach on its growth. Its deep roots allow for drought tolerance and frost resistance. The rich, dark green color of this turf will impress everyone from neighbors to golf club members.
Bethel Farms

MONACO BERMUDAGRASS

Exclusively from Barenbrug, **Monaco** seeded bermudagrass is continuing the legacy founded by Riviera. The newest release from the Johnston Seed breeding program, Monaco, *Cynodon dactylon* var. *dactylon*, is a superior seeded bermudagrass that is excellent for use on golf courses, sports turf, and higher quality lawns. It has excellent density and wear tolerance which are staples in Barenbrug's product line. Bred for a genetically darker green color, it also has quicker spring green-up, high fall color retention, and winter hardiness to help further extend the growing season for transition-zone areas.
In the 2016 NTEP trials, Monaco was a proven performer. Rating high in several categories, Monaco specifically stood out in trials encompassing overall turfgrass quality, early spring green-up and fall color. Included in over 10 trial sites from coast to coast and from the transition zone to the deep south, Monaco exhibits superior adaptability. This range of implementation makes it the perfect choice for traditional bermudagrass regions and transition climates alike.
Barenbrug USA, an international research and seed production company, is continuously seeking new, natural ways to develop stronger turf grasses. For more information about Monaco, visit our website barusa.com, or contact your nearest seed dealer.
Barenbrug USA

MONACO BERMUDAGRASS

The newest release from the Johnston Seed breeding program, **Monaco**, *Cynodon dactylon* var. *dactylon*, is a superior seeded bermudagrass that is excellent for use on golf courses, sports turf, and higher quality lawns. Available exclusively from Barenbrug, Monaco seeded bermudagrass is continuing the legacy founded by Riviera. It has excellent density and wear tolerance which are staples in Barenbrug's product line. Bred for a genetically darker green color, it also has quicker spring green-up, high fall color retention, and winter hardiness to help further extend the growing season for transition-zone areas.
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Barenbrug USA, an international research and seed production company, is continuously seeking new, natural ways to develop stronger turf grasses. For more information about Monaco, visit the Barenbrug USA website barusa.com, or contact your nearest seed dealer.
Johnston Seed

BERMUDAGRASS

Tahoma 31 Bermudagrass (OKC 1131) is the most cold tolerant bermudagrass on the market today. 'Tahoma' is of Native American Indian origin meaning 'that frozen water,' which perfectly describes this variety's key characteristic; its ability to withstand freezing temperatures. Developed by Oklahoma State University in response to a growing need for a cold and drought tolerant variety, Tahoma 31 Bermudagrass fits the bill. Through nationwide NTEP testing, Tahoma 31 Bermudagrass, a vegetative cultivar, excelled in key metrics compared to other bermudagrasses including Tifway, TifTuf, Patriot, Latitude 36 and Celebration. Though it thrives in the cold, Tahoma 31 Bermudagrass is highly adaptable to different climates and soils, including soils with high salt concentrations and areas where drought and water use are an issue. Tahoma 31 Bermudagrass's availability in the wake of last winter's record-setting cold temperatures, is highly anticipated by those who manage sports fields and golf courses. Sod Production Services is currently licensing turf farms across the country to satisfy anticipated demand.

Sod Production Services

KENTUCKY BLUEGRASS

Endurance – Kentucky bluegrass
- Dollar Spot resistance
- Sod Quality
- Stripe Rust resistance
- Low Maintenance
- Traffic Tolerance
- Winter Color

Pure Seed

Heidi - A-LIST! (A00-2882) Kentucky bluegrass is a Compact-type. It has a very dark green color, with superior turf quality and excellent wear tolerance. It is drought tolerant under all maintenance regimes but is superior under low maintenance as shown by being on the A-LIST. Unlike most Compact-types it has early spring green-up. Fast establishment and rapid recovery from drought or wear completes its high performance for sod growers.

DLF Pickseed

Tumalo Kentucky Bluegrass

Tumalo is a dark green, medium dense Kentucky bluegrass variety with excellent turf quality and wear tolerance as demonstrated in the extensive testing it has undergone. Developed at Pure Seed Testing and tested as K8-60, Tumalo is a lower growing cultivar that requires less frequent mowing than many other bluegrasses. Tumalo has very good overall disease resistance to Leaf Spot, Melting Out, and Leaf, Crown and Stem rusts. Tumalo works well blended with other Kentucky bluegrass varieties, or stands well on its own, because of its versatility and overall disease resistance.
Vista Seed will have limited seed available for the first crop in 2018.

Vista Seed Partners LLC

FINE FESCUE

CHORUS CREEPING RED FESCUE

Chorus creeping red fescue is a top rated strong creeper with excellent leaf spot resistance. This variety has a rhizomatous spreading habit. The wear tolerance is good, and the color is improved over other varieties. This is an A-List approved variety that meets the requirements for low input sustainable turf. It will have limited availability in 2018.

Lebanon Turf

CLARINET HARD FESCUE

Clarinet hard fescue provides excellent turf quality along with good wear and shade tolerance. It has a dark green color that blends well with other species. Clarinet also has good resistance to leaf spot. This is an A-List approved variety that meets the requirements for low input sustainable turf. It will have limited availability in 2018.

Lebanon Turf

CONDUCTOR CHEWINGS FESCUE

Conductor chewings fescue has very good drought tolerance and outstanding performance in the summer. This variety also has good leaf spot resistance and shade tolerance. This is an A-List approved variety that meets the requirements for low input sustainable turf. It will have limited availability in 2018.

Lebanon Turf

TALL FESCUE

Bravo 2 Tall Fescue is showing promising advancements in drought tolerance and will be entered in the upcoming 2018 NTEP Tall Fescue Trial. Bravo 2 is one of the three new LESCO varieties that SiteOne Landscape Supply is introducing to our LESCO sod seed program this year. Bravo 2 exhibits a unique compact growth habit for a lower maintenance lawn and prevails in sun or shade situations. Bravo 2 has a deep dark green color with a medium wide leaf blade and increased disease resistance. Bravo 2 is an aggressive turf that should perform well in a variety of lawn or sports turf situations especially in low maintenance turf situations. In limited supply for Fall of 2018.
SiteOne Landscape Supply

Watch out for Jacklin's NEW **Flame** spreading tall fescue (*Festuca arundinacea*). Flame, also sold under the brand name NoNet, was developed over 10 years to ensure that its rhizomatous spreading trait reaches the end user along with the improved turf characteristics you expect from a Jacklin variety. Flame is aimed at eliminating the costly nylon netting used in commercial sod production of bunch-type tall fescue. Netting is a hassle for the sod producer to purchase and install, and it is a hazard for sports fields where player's cleats can catch on the net for years to come. Flame's increased rhizomes and spreading ability enables quick establishment and ability to repair damaged turf on areas with traffic such as sports fields. Flame provides superior density, dark color, and fine leaf texture. In addition to being selected for its spreading ability, the parental clones used to develop Flame have improved crown density.
Jacklin Seed by Simplot

Tara Tall Fescue is the newest Black Beauty variety. It was experimentally designated as NC-1 and was bred in a research partnership between the North Carolina Agricultural Research Service, Dr. Virginia Lehman at Blue Moon Farms in Oregon, and Cascade International Seed Company in Oregon. Tara was specifically bred to withstand the pressures of heat and disease in the transition zone. Tara is the first turfgrass variety released by the North Carolina Agricultural Research Service and Dr. Grady Miller at the Lake Wheeler Turf Field Lab in Raleigh, NC. Significant work was done to improve resistance to summer stress, brown patch, and pythium disease. In the summer of 2014, irrigation was completely withheld for five weeks (July 14 through August 12). Over the drought stress period, significant differences were noted among the tall fescues being evaluated in turf quality and the percentage of ground cover. The individual cultivars which were crossed to create Tara were selected from the most resistant and best looking tall fescues during this time of great stress. Tara has a vibrant, rich, dark-green color and uniform leaf texture similar to Golconda, Montana and Toltec Tall Fescues and will mix very well with these Black Beauty varieties.
Jonathan Green & Sons, Inc./Cascade International Seed Company

Zigzag
Turf Type Tall Fescue

Zigzag is a persistent, endophyte-enhanced tall fescue variety that is well adapted to hot summers, lower fertility soils, and is very wear tolerant. It was selected from spreading type plants exhibiting rhizome production. It has an attractive dark-green color, with medium leaf texture and both good summer performance and stress tolerance. Zigzag can be mowed to 1.5 inches. Zigzag has good overall disease resistance to Pythium, Brown Patch, leaf spot and stem rust. It also performed well to high traffic trials. Zigzag is recommended for wherever a good quality turf with spreading potential is needed.
Vista Seed Partners LLC

PERENNIAL RYEGRASS

Big League is a leading perennial ryegrass in several important turfgrass categories. Big League was specifically selected for overseeding due to its rapid germination and fast establishment. Big League provides cover quickly allowing for use sooner than other varieties. Big League is also a very attractive turf, scoring high in turfgrass color, quality and leaf texture, and ranking second in overall quality at the recent North Carolina State University trial.
In addition, once Big League has completely established, it will grow slower, resulting in fewer mowings and less clippings.
Mountain View Seeds

BLACKSTONE
perennial ryegrass

Blackstone is the ideal perennial ryegrass for all your fine turf needs. Blackstone has excellent turf quality, ranking third in the latest North Carolina State University winter overseeding trial. Blackstone exhibits a very dark green color and retains its color throughout the season. In addition, Blackstone establishes well, providing quality cover quickly. Blackstone was bred for improved transition, both into and out of the overseeding season. In addition, Blackstone's controlled growth during the season means fewer mowings and less clippings.
Mountain View Seeds

PERENNIAL RYEGRASS

Furlong perennial ryegrass has the best new germplasm available and is top ranked in the latest trials. It has a dark green color and excellent Gray Leaf Spot resistance.
Lebanon Turf

Gray Wolf – perennial ryegrass
- Gray Leaf Spot resistance
- Density
- Transition & Overseeding
- Crown Rust resistance

Pure Seed

New Sealand – perennial ryegrass
- Gray Leaf Spot resistance
- Stem Rust resistance
- Transition and Overseeding

Pure Seed

Pimlico perennial ryegrass is a drought and heat resistant variety that establishes quickly. It has a high endophyte level. Pimlico also has good cold hardiness.
Lebanon Turf

Proline ST is a salt tolerant overseeding perennial ryegrass. Proline ST is one of SiteOne's two new LESCO turf-type perennial ryegrasses which have shown superior qualities for over-seeding and permanent turf. Proline ST has a delicate but dense leaf structure with a deep, dark-green color. Proline ST has shown promising persistence when watered with saline solutions and kept at high temperatures. Proline ST is a versatile turf that will excel in overseeding, regions that use effluent water, home lawns and sports turf. Proline ST (LCP186) was entered into the 2016 NTEP Over-seeding Trial and excelled in turf quality for several locations. In limited supply for Fall of 2018.
SiteOne Landscape Supply

Silver Sport – perennial ryegrass
- Spreading Ryegrass
- Exceptional Gray Leaf Spot Resistance
- Top Performer in NTEP
- Dark Green Color and Density
- Turf Quality

Pure Seed

Virte perennial ryegrass has a unique dark green-blue hue with a delicate leaf structure for an ultra-soft refined lawn. Virte is one of SiteOne's two new LESCO turf-type perennial ryegrasses which have shown superior qualities for over-seeding and permanent turf. Virte has abundant tillers for increased density and self-repair. Virte was bred to have increased resistance against Pythium and Brown Patch Disease. Virte would make a high-end turf for home or commercial lawns. Virte was entered into the 2016 NTEP Permanent Trial. In limited supply for Fall of 2018.
SiteOne Landscape Supply

ZOYSIAGRASS

Innovation™ Zoysia is a zoysia grass cultivar developed under the experimental designation KSUZ 0802, jointly released by Kansas Agricultural Experiment Station and Texas A&M AgriLife Research, and commercialized under an agreement with Sod Solutions, Inc. for sublicensing into the turf industry. Innovation Zoysia was bred to overcome the leaf texture and density limitations of Meyer Zoysia, but with similar cold hardiness. Innovation Zoysia has demonstrated confirmed improvements in fineness of texture, density and cold hardiness throughout the transition zones. Winter color and spring green-up have been outstanding in 2018 after a record-setting winter. Innovation has an extensive runner, rhizome, and root system with good shade tolerance. Resistance to billbug damage also has been documented. Based upon the results from research, Innovation can be successfully grown as far north as zone 6a on the USDA Plant Hardiness Zone Map. Evaluations are underway in more southern regions to further define the ideal geographic range of production. Innovation is well suited for use in home lawns, on golf course fairways and tees, and other recreational areas.
Innovation is in the early production phases with plug trays and expansion of plant stock underway. Foundation stock is available in plug trays and slab sod.
Sod Solutions

Primo Zoysia, the new introduction from Doguet Ventures/Bladerunner Farms, has been developed to be used from tee to green.
Doguet Ventures/Bladerunner Farms

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(800) 503-0076
EMAIL: Sales@KWMIequipment.com
www.KWMIequipment.com

TURFGRASS SEED AND VEGETATIVE STOCK SOURCES

The following TPI member companies provided information for the turfgrass seed and vegetative stock issue. Turf News is not responsible for companies that did not submit information by the deadline. You also can use this listing to see the location of company advertisements.

Barenbrug USA
33477 Highway 99E
P.O. Box 239
Tangent, OR 97389
Contact: Micah Gould
Tel. 541-926-5801
Cell 503-602-2388
Fax 541-926-9435
mgould@barusa.com
www.barusa.com
Back Cover

Bethel Farms
8780 NW Bethel Farms RD
Arcadia, FL 32466
Contact: Kaitlin Smith
Tel. 863-884-4269
ksmith@bethelfarms.com
https://bethelfarms.com

Columbia River Seed
P.O. Box 66
Plymouth, WA 99346
Contact: Paul Hedgpeth
Tel. 509-783-4052
Cell 509-832-0287
Fax 509-783-4056
paul@columbiariverseed.com
www.columbiariverseed.com
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Columbia Seeds
130 NW Hickory St.
Albany, OR 97321
Contact: Kirsten Pick
Tel. 541-791-7631
Cell 503-507-8904
Fax 541-791-7540
kpick@columbiaseeds.com
www.columbiaseeds.com

DLF Pick Seed
P.O. Box 229
Halsey, OR 97348
Contact: Austin Lanzarone
Tel. 800-445-2251
Direct 541-918-1001
Cell 541-740-5037
alanzarone@dlfna.com
www.dlfpickseed.com

Doguet Ventures/ Bladerunner Farms Inc.
4406 Merle Drive
Austin, TX 78745
Contact: David Doguet
Tel. 830-276-4455
Fax 830-276-8618
david@doguetventures.com
www.doguetventures.com

GO Seed
4455 60th Avenue NE
Salem, OR 97305
Contact: Duane Klundt
Tel. 503-566-9900
Cell 503-880-2561
Fax 503-566-9901
duaneklundt@grasslandoregon.com
www.GrasslandOregon.com

Jacklin Seed by Simplot
23403 E. Mission, #222
Liberty Lake, WA 99019
Contact: Cathy Sawyer
Tel. 800-688-SEED
Cell 509-934-6569
Fax 509-319-3181
info@jacklin.com
www.jacklin.com

Jersey Seed, Inc.
18B Jules Lane
New Brunswick, NJ 08901
Contact: Ken Griepentrog
Tel. 800-828-5856
Fax 732-247-3514
ken@jerseyseed.com
www.jerseyseed.com

Johnston Seed Company
319 West Chestnut
Enid, OK 73701
Contact: David Gerken
Tel. 580-249-4460
Cell 405-368-0773
Fax 580-249-8301
david.gerken@johnstonseed.com
www.johnstonseed.com

Jonathan Green, Inc./ Cascade International Seed Company
Contact: Barry K. Green II
P.O. Box 326
Farmingdale, NJ 07727
Tel. 800-526-2303
Cell 908-217-0818
bgreenii@jonathangreen.com
Contact: Simon Hilarides
Cell 732-804-1743
shilarides@jonathangreen.com
Contact: Greg Hagen
ghagen@grass-seed.com
www.jonathangreen.com
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Landmark Turf and Native Seed
32320 Brandon Place
Avon Lake, OH 44012
Contact: Larry Humphreys
Tel. 888-763-8873
Cell 440-785-8873
Fax 440-930-2775
larry@turfproducersselect.com
www.turfandnativeseed.com
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Lebanon Turf
1600 East Cumberland St.
Lebanon, PA 17042
Contact: Jeremy Bigler
Tel. 800-532-0090 x 131
jeremy.bigler@lebanonturf.com
www.lebanonturf.com

Mountain View Seeds
8955 Sunnyview Rd. NE
Salem, OR 97305
Contact: Aaron Kuenzi
Tel. 503-588-7333
Cell 503-877-8855
aaron@mtviewseeds.com
www.mtviewseeds.com

Pennington Seed, Inc.
1280 Atlanta Hwy
Madison, GA 30650
Contact: Michael Deaton
Tel. 706-752-4187
Cell 706-319-9827
mdeaton@penningtonseed.com
www.penningtonseed.com
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Pure Seed
29975 S. Barlow Rd.
Canby, OR 97013
Contact: Lucas Solis
Tel. 503-651-2130
Cell 503-519-7377
lsolis@pureseed.com
www.purseed.com

Seed Research of Oregon
PO Box 229
Halsey, OR 97348
Contact: Mike Billman
Tel. 541-369-2251
Direct: 541-918-1011
Cell 541-657-9055
mbillman@sroseed.com
www.sroseed.com

SiteOne Landscape Supply
2775 25th Street SE
Salem OR 97302
Contact: Debra Barnes
Tel. 503-363-6688
Fax 503-363-4257
dbarnes@siteone.com
www.SiteOne.com
or www.Lesco.com

Sod Production Services
18161 Sandy Point Road
Charles City, VA 23030
Contact: Chad Adcock
Tel. 757-345-1120
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www.sodproductionservices.com
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Sod Solutions, Inc.
P. O. Box 460
Mount Pleasant, SC 29465
Contact: Tobey Wagner
Tel. 843-284-2332
Cell 843-224-1435
Fax 843-849-1415
twagner@sodsolutions.com
www.sodsolutions.com

Summit Seed/Hydrostraw, LLC
2110 S. State Rt. 27
Rockford WA 99030
Contact: Ed Lee
Tel. 509-291-6000
Cell 509-710-3875
Fax 815-468-7450
ed@summitseed.com
www.summitseed.com
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The Turfgrass Group, Inc.
1225 Savannah Lane
Monroe, GA 30655
Contact: Bill Carraway
Tel. 770-207-1500
Fax 770-207-6019
bcarraway@comcast.net
Contact: Lindsey Lindsey
Tel. 770-710-8130
llindsey@theturfgrassgroup.com
www.tiftufbermuda.com
www.tifgrand.com
www.theturfgrassgroup.com

Turf Merchants, Inc. (TMI)
33390 Tangent Loop
Tangent, OR 97389
Contact: Nancy Aerni
Tel. 541-926-8649 or 800-421-1735
Cell 503-508-6437
Fax 541-926-4435
nancy@turfmerchants.com
www.turfmerchants.com
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Vista Seed Partners LLC
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Shedd, OR 97377
Contact: Chris McDowell
Tel. 541-491-1019
Fax 541-491-1502
chris@vistaseedpartners.com
www.vistaseedpartners.com

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TPI
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TURFGRASS SEED AND VEGETATIVE STOCK LISTING

Turf News invited suppliers to provide a list of turfgrass seed and/or vegetative stock currently offered by their company. Suppliers are listed alphabetically. Lists are in the order supplied by the companies.

BARENBRUG USA

For more information:
www.barusa.com

COMMON BERMUDAGRASS
Transcontinental
Hot Summer Green
Bargusto
Monaco

ANNUAL RYEGRASS
Panterra Turf
Panterra V Turf
Bar Terra
Terra Bar

PERENNIAL RYEGRASS
Peak
Pinnacle
Parkside
Piroutte II
Pinnacle III
Premier II
Barlennium
Barbeta RPR
Bargamma RPR
Barlibro RPR

FINE FESCUE
Gladiator – hard
Hardtop – hard
Azure – sheeps
Contender – strong creeping red
Boreal – strong creeping red
Bridgeport II – chewings
Sandrine – chewings
Barcrown II – slender creeping red
Barpearl – slender creeping red

TURF TYPE TALL FESCUE
Barrington II
BarRobusto
Barvado
Bearcat

KENTUCKY BLUEGRASS
Barserati
Barrari
Barrister
Barimpala
Baron
Barduke
BarSahara
Barvette HGT

CREEPING BENTGRASS
Alpha
Bengal
Crystal Bluelinks
L-93
Penn A1
Penn A2
Penn A4
Pencross
Penneagle II
Pennlinks II
PennTrio
Proclamation
Pure Distinction
Pure Select
Pureformance
Seaside II

COLONIAL BENTGRASS
Capri

BETHEL FARMS

For more information:
www.bethelfarms.com

BERMUDAGRASS
Bimini
Imperial
TifTuf
Celebration

ZOYSIAGRASS
Empire

ST. AUGUSTINE
Bitter Blue
Floratam
Palmetto
Seville

COLUMBIA RIVER SEED

For more information:
www.columbiariverseed.com

KENTUCKY BLUEGRASS
Blue Coat
Dauntless
Rubix
Corsair
Blue Devil
Blackjack

FINE FESCUE
Gladiator – hard
Sword – hard

COLUMBIA SEEDS

For more information:
www.columbiaseeds.com

KENTUCKY BLUEGRASS
Aviator
Blue Devil
Blue Coat
Corsair
Dauntless
Rubicon
Rubix

TALL FESCUE
Black Tail
Diablo
Talladega
Temple
Thor
Thunderstruck
Trinity

FINE FESCUE
Gladiator– hard
Sword – hard
Castle – chewings
Jamestown IV – chewings
Shadow III – chewings
Kent – creeping red
Blue Mesa – sheeps

PERENNIAL RYEGRASS
Pillar
Premium
Presidio
Primary
Prominent
Provost
Pepper

INTERMEDIATE RYEGRASS
Outlaw

ANNUAL RYEGRASS
Attitude

TURFGRASS SEED AND VEGETATIVE STOCK LISTING

DLF PICKSEED

For more information:
www.dlfpickseed.com

TALL FESCUE
Nightcrawler
Mustang 4
Crossfire 4
Firewall
Bladerunner II
Fayette
Corona
Rhizing Moon
Bloodhound
Houndog 8
Turfway
Unitus
Essential
Garrison
Jamboree
Rhizing Star
Foxhound
Cayenne

KENTUCKY BLUEGRASS
Armada
Granite
Mercury
Blue Velvet
Jackrabbit
Fortuna
Fielder
Blue Ghost
Rhythm
Geisha
Aramintha
Sombrero
Heidi
Explorer
MacMillan

TEXAS X KENTUCKY
Bandera

PERENNIAL RYEGRASS – DIPLOID
Wicked
Karma
Fiesta 4
All Star 3
Mighty
Express II
Thrive
Aspire
Bandalore
Diligent
Banfield
Hancock
Stamina
Derby Xtreme
Gator 3
Monsieur

PERENNIAL RYEGRASS – TETRAPLOID
Tetradark
Replicator

FINE FESCUE
Windward – chewings
Longfellow 3 – chewings
Wrigley 2 – chewings
Garnet – strong creeping red
Jasper II – strong creeping red
Chantilly – strong creeping red
Class One – strong creeping red
Cindy Lou – strong creeping red
Eureka II – hard
Spartan II – hard
SeaLink – slender creeping red
Shoreline – slender creeping red
Quatro – sheep

INTERMEDIATE TURF-TYPE RYEGRASS
Transit 2600
TransAm

ANNUAL TURF-TYPE RYEGRASS
TXR
Candidame
Quickston
Quickdraw

CREEPING BENTGRASS
Focus
MacKenzie
Ninety-six-Two
Cobra 2

COLONIAL BENTGRASS
Puritan

VELVET BENTGRASS
Vitagreen

BERMUDAGRASS
Yukon
Mirage 2
Pyramid 2

POA REPTANS
Two Putt

MICROCLOVER
Microclover

DOGUET VENTURES

For more information:
www.doguetventures.com

BUFFALOGRASS
Density
ECO

ST. AUGUSTINE
FJ's Select Turf

ZOYSIAGRASS
Cutlass
JaMur
Trinity (formerly L1F)
Y2
Zeon
Primo

GO SEED

For more information:
www.GrasslandOregon.com

KENTUCKY BLUEGRASS
Milagro
Prosperity
Skye

TALL FESCUE
Birmingham
Escalante
Memphis
Olympus
Patagonia
Wichita

PERENNIAL RYEGRASS
Barbados (GO-DHS)
Belize
Fiji II (GO-G37)
Oahu (GO-PR60)

JACKLIN SEED BY SIMPLOT

For more information:
www.jacklin.com

KENTUCKY BLUEGRASS
Action
Award

TURFGRASS SEED AND VEGETATIVE STOCK LISTING

Beyond
BlueChip
BlueChip Plus
BlueMoon
Camas
Everest
Glacier
Impact
Jackpot
Liberator
Midnight
My Holiday Lawn
Navy
NuBlue Plus
NuGlade
Rugby II

PERENNIAL RYEGRASS
Accent
Accent II
Caddieshack II
CSI-Rye
GLY-Rye
GoalKeeper II
Infusion
Revenge GLX
Spyglass
Sunrise
Top Gun
Top Gun II

ZOYSIAGRASS
Cathay
Sunrise

CREEPING BENTGRASS
Alpha
Armor
Kingdom
L-93
L-93 XD
Nightlife
T-1
V-8

FINE FESCUE
Audubon– creeping red
EcoStar Plus – hard
J-5 – chewings
Lighthouse – slender creeping red
Marco Polo – sheep

TURF TYPE TALL FESCUE
Arid 3
Dallas
Flame
Golden Gate
Inferno
Jaquar 4G
NoNet Spreading
Quest
Siesta
Summer
SunDial

BERMUDAGRASS
Jackpot
Southern Star
Sun Devil II
Hollywood

SPECIALTY GRASSES
Fults Alkaligrass
Havana Poa Trivialis
Reubens Canada Bluegrass
Troy Kentucky Bluegrass
Ginger Kentucky Bluegrass

JOHNSTON SEED COMPANY

For more information:
www.johnstonseed.com

BERMUDAGRASS
Riviera

BUFFALOGRASS
Sundancer

JONATHAN GREEN, INC./ CASCADE INTERNATIONAL SEED COMPANY

For more information:
www.jonathangreen.com

KENTUCKY BLUEGRASS
Deepblue
Krypton
Madison
Pivot

FINE FESCUE
Carson – chewings
Custer – creeping red
Eugene – creeping red
Harpoon – hard
Hood – chewings

TALL FESCUE
Dakota
Dorado
Future
Golconda
Montana
Taos
Tara
Tombstone
Tonto

PERENNIAL RYEGRASS
Dark Link
Frontier
Pasco
Pershing
Singular
Spirit

LANDMARK TURF AND NATIVE SEED

For a complete Landmark turfgrass listing and more information, please visit:
www.turfandnativeseed.com

BLUEGRASS
BlueBank
BlueStar
Fullback
Gaelic
Hampton
Jump Start
Lunar
Midnight
Noble
Shannon
SPF30

TURF TYPE TALL FESCUE
Maestro
Meridian
Reflection IRT
Regenerate IRT
Xtender IRT

PERENNIAL RYEGRASS
Benchmark
Expedite
Intense
Sox Fan
Spark
Xcelerator

FINE FESCUE
Marvel – creeping red
Minimus – hard
Sword – hard

TURFGRASS SEED AND VEGETATIVE STOCK LISTING

LEBANON TURF

For more information:
www.lebanonturf.com

KENTUCKY BLUEGRASS
Bordeaux
Champagne
Zinfandel

TALL FESCUE
Rembrandt
Masterpiece
DaVinci
Monet
Van Gogh
Cezanne Rz
Leonardo
Michelangelo
Rockwell
Matisse
Rodin

PERENNIAL RYEGRASS
Charismatic II GLSR
Exacta II GLSR
Secretariat II GLSR
Seabiscuit
Man 0'War
Pharaoh
Furlong
Pimlico

FINE FESCUE
Ambassador – chewings
Pathfinder – creeping red
Conductor – chewings
Clarinet – hard
Chorus – creeping red

BENTGRASS
Declaration– creeping
Proclamation – creeping
Independence – creeping
Legendary – velvet

MOUNTAIN VIEW SEEDS

For more information:
www.mtviewseeds.com

KENTUCKY BLUEGRASS
Arrowhead
Blue Note
Legend
Volt
Fahrenheit 90 – Texas hybrid
Merit
Kelly

PERENNIAL RYEGRASS
Apple SGL
Big League
Blackstone
Fastball RGL
Grandslam GLD
Stellar 3GL
Black Pearl

INTERMEDIATE RYEGRASS
Breakout

TALL FESCUE
Ares
Avenger II
Dynamite LS
Firecracker SLS
Raptor III
SuperSonic
Titanium 2LS
Valkyrie LS

POA TRIVIALIS
Starlite II

FINE FESCUE
Beacon – hard
Jetty – hard
Blueray American – sheeps
Navigator II – creeping red
Cardinal II – creping red
Orbit – creeping red

BENTGRASS
Barracuda – creeping
Piranha (DC-1) – creeping
Muskat – colonial
Shark – creeping

BERMUDAGRASS
Jubilee
Riviera

PENNINGTON SEED INC.

For more information:
www.penningtonseed.com

TALL FESCUE
Rebel Advance
Rebel IV
Rebel V
Rebel XLR
Rebel Xtreme
Virtue II
Justice
Pennington RK4
Pennington ATF 1258
Pennington ATF 1376

KENTUCKY BLUEGRASS
Mallard
Ridgeline
Aries

PERENNIAL RYEGRASS
Trek
Legato
Pennington APR 2237

BERMUDAGRASS
Arden 15

PURE SEED

For more information:
www.pureseed.com

PERENNIAL RYEGRASS
Gray Wolf
Silver Sport
New Sealand
Silver Sun
Gray Hawk
Gray Fox
Brightstar SLT
Silver Dollar
Estelle
Citation Fore
Carly

FINE FESCUE
Xeric – creeping red
Bighorn GT – hard
Soil Guard – hard
Enchantment – chewings
Shademaster III – creeping red
Seabreeze GT – slender creeping

KENTUCKY BLUEGRASS
Endurance
Tirem
Full Moon
Jumpstart
Right
Moonlight SLT

TURFGRASS SEED AND VEGETATIVE STOCK LISTING

SEED RESEARCH OF OREGON

For more information:
www.sroseed.com

TALL FESCUE
Grand 3
Rebounder
Rowdy
SR 8650
Guardian 41
Speedway
Blackwatch 2

KENTUCKY BLUEGRASS
SR 2150
Arcadia
Fielder
Granite
SR 2284
SR 2100
Mercury
Heidi
Quantum Leap

TEXAS X KENTUCKY
Spitfire
Bandera

PERENNIAL RYEGRASS – DIPLOID
Sideways
SR 4650
SR 4660ST
SR 4600
Mighty
Harrier
Zoom

PERENNIAL RYEGRASS – TETRAPLOID
Tetradark

FINE FESCUE
SR 5130 – chewings
Ruddy – strong creeping red
SR 5250 – strong creeping red
SR 3150 – hard
Shoreline – slender creeping red
Quatro – sheep

INTERMEDIATE TURF-TYPE RYEGRASS
TransFix
TransAction

CREEPING BENTGRASS
777
007
Flagstick
Tyee
MacKenzie
SR 1150

COLONIAL BENTGRASS
Puritan

VELVET BENTGRASS
Vitagreen

BERMUDAGRASS
Yukon
Royal Bengal

POA REPTANS
Two Putt

MICROCLOVER
Microclover

SITEONE LANDSCAPE SUPPLY

(List of LESCO seed varieties as offered by SiteOne Landscape Supply)
For more information:
www.SiteOne.com

TALL FESCUE
Bravo 2
Copious
Catalyst
Compete
Kingdom
Padre
Padre 2
Reunion
Renovate
Stetson II
Technique

PERENNIAL RYEGRASS
Align
Allsport 5
Commander ST
Evolution
Evolve
Notable II
Peridot
Proline ST
Virte

KENTUCKY BLUEGRASS
Shamrock
Gladstone

SOD PRODUCTION SERVICES

For more information:
http://sodproductionservices.com

BERMUDAGRASS
Tahoma 31
PremierPRO

SOD SOLUTIONS

For more information:
www.sodsolutions.com

ST. AUGUSTINE
Palmetto
Sapphire
Captiva

ZOYSIAGRASS
Innovation
Empire
Geo

BERMUDAGRASS
Celebration
Discovery
Latitude 36
NorthBridge

ULTRADWARF BERMUDAGRASS
Sunday

BLUEGRASS
HGT

PERENNIAL RYEGRASS
RPR

CENTIPEDE
Santee

TURFGRASS SEED AND VEGETATIVE STOCK LISTING

THE TURFGRASS GROUP

For more information:
www.TheTurfgrassGroup.com

BERMUDAGRASS
TifTuf
TifGrand

CENTIPEDEGRASS
TifBlair

ZOYSIAGRASS
Zeon
L1F

TURF MERCHANTS INC. (TMI)

For more information:
www.turfmerchants.com

KENTUCKY BLUEGRASS
Bedazzled
Bewitched
Blueberry
Bonaire
Brooklawn
Midnight
Waterworks

TALL FESCUE
Aquaduct
Aquavita
Aztec II
Bonsai 3000
Bonsai 2X
2nd Millennium
3rd Millennium
4th Millennium
Rhambler
Rhambler II SRP
Traverse 2 SRP

PERENNIAL RYEGRASSES
Aquarius 4
Allaire 3
Evening Shade
Laredo II
Manhattan 6 GLR
Manhattan 5
Pangea GLR
Paragon GLR
Pizzazz 2
Patriot 4
Rainwater
Rodeo 3

FINE FESCUE
Intrigue
Heathland
Celestial
Nanook

TURF TYPE ANNUAL RYEGRASS
Gamechanger
Palmetto

INTERMEDIATE RYEGRASS
Froghair
Intercross

RECLAMATION GRASSES
Saltonsea Alkaligrass

VISTA SEED PARTNERS

For more information:
www.vistaseedpartners.com

CREEPING BENTGRASS
Chinook
Coho

KENTUCKY BLUEGRASS
Ashland
Quartz
Mazama
Tumalo

FINE FESCUE
Ambrose – chewings
Viking H2O – hard

ANNUAL RYEGRASS
Madrone Turf Type

INTERMEDIATE RYEGRASS
Rogue

PERENNIAL RYEGRASS
Deschutes
Metolius
Molalla
Santiam
Umpqua

TALL FESCUE
Amity
Corbett
Renegade DT
Dallas
Tribute II
Zigzag

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CROP AND MARKET PREDICTIONS

Compiled by Suz Trusty

*Each year, **Turf News** invites suppliers to provide their input on the turfgrass seed and/or vegetative stock crop outlook based on: Their assessment of the impact of weather conditions on crops to-date and on the anticipated impact of weather conditions predicted in their area; Trends they are seeing in their market; The production they are anticipating in terms of quality and quantity; And their assessment of anticipated pricing for those crops as: stable, higher or lower.*

Industry comments for the seed and vegetative stock crop outlook were provided from mid-May to the end of May. Please note that weather conditions can impact final yields, and that seed harvests in July and August may differ from the forecasts shared here. In addition, there are multiple factors, other than weather conditions, that impact the crop and the overall market within the sod industry. Turf News welcomed input from your seed and vegetative stock sources on these factors as well. Though no one can accurately predict the future, these industry perspectives provide insights into the outlook for these valuable crops.

__Turf News__ thanks all those who provided the information for this article. That input is arranged in alphabetical order, by the respondent's company name.

Barenbrug USA

Provided by Bo Lacy, CGCS, Production Manager

The crop outlook for 2018 looks to be a normal crop year. Pre-emergent pesticides have been applied to keep weed pressure low. Fertilizers were applied to keep plants healthy. Weather dependent, we should have a good crop coming off soon.

This year, 18 percent more tall fescue was planted in the Valley than last year and 20 percent more annual ryegrass. We'll have to see where prices end up.

Bethel Farms

Provided by Mike Pope, Harmony Outdoor Brands

We do see very short inventories of St. Augustine in Texas, Florida and the gulf. Zoysiagrass is tight in Florida.

The biggest issue we have seen this year is transporting our turf to market—not demand or inventory. This is a national issue for all growers. Our network members have expressed grave concerns.

Editor's Note: __Turf News__ is looking for input from all industry members on the transportation issue; especially those related to finding and/or developing solutions. If you have information to contribute, please contact your editors.

GO Seed

Provided by Duane Klundt, Vice President of Turfgrass Sales

After three years of above average rainfall in the Pacific Northwest (PNW), we are finally experiencing a more normal year (What is normal anymore?). With that being said; the crops are looking their best. All the fall plantings have established well, and the fertilizer and chemical applications were applied in a timely manner. The warmer than normal temperatures potentially could deliver a good crop of seed this year.

GO Seed's Birmingham tall fescue is growing in this production field in Salem, OR. Photo courtesy of GO Seed

With seed prices already at some of the highest levels ever seen, it is more than likely that they will stabilize for this coming season. Competition for grass seed production acres is still very fierce and we have not seen a substantial acreage increase in some time.

My opinion on the crops are as follows:

Kentucky Bluegrass continues to be in tight supply, with the elite types limited in availability. High prices on common bluegrass and the higher land costs will keep prices stable to higher yet this fall. Inventories of the high-end Kentucky bluegrass varieties are almost exhausted, and it should make for an interesting fall as companies jockey for position for cleaning. The increased demand for seed, especially sod quality, will present a very tough challenge, and all I can say is please be patient with your supplier.

This field of turfgrass seed is ready to combine. **Photo by Steve Trusty**

The production and development of new varieties is more difficult in Kentucky bluegrass, so you see a longer life span for these products. For example, Skye has been in three National Turfgrass Evaluation Program cycles and I am glad to say it was accepted as a standard entry in its fourth trial. Skye, along with grasses like Midnight, Shamrock, and Baron, have set the bar for future bluegrass varieties.

Coming up with new products that perform and yield well is really a challenge. Each year breeders are making progress on new traits and we should see some of these in the next NTEP data report (preliminary results are scheduled for publication in the spring of 2019).

In summary on Kentucky bluegrass: prices should remain strong and inventories tight throughout 2018.

Tall Fescue inventories remain tight going into the new crop, especially in high quality seed, so getting product shipped this fall might be a real challenge. Higher wages and the scarcity of farm laborers continue to frustrate farmers, increasing the challenge of cleaning up (hoeing) fields to meet the high standards required of this crop.

It is challenging to bring a variety to market and fit the National Turfgrass Evaluation Program cycle when it takes seven to ten years to develop one that has merits that the end users need. We are just starting to see newer, stronger plants.

At Grassland Oregon, we develop varieties that make a difference to help with the trying situations that face both the farmer and the user. Birmingham tall fescue, for example, is a cross of germplasm from the deep south where plants must survive harsh elements, and germplasm from the northwest which is well suited to the growing conditions needed for the production of seed. The result is a plant that establishes rapidly, crowding out competition, and waking up sooner in the spring. The dark genetic color desired these days allows it to stay greener longer without added inputs.

Another example is Memphis tall fescue. This product was selected for two very specific reasons: aggressive tillering (sometimes confused with rhizomes) and a lower-growing profile. These two traits allow the plant to spread out and fill in the holes, while lengthening the time between mowings. Another important attribute is drought tolerance, which improves the persistence on non-irrigated ground, including the fields where most of the tall fescue is grown. It also improves seed yield. In addition, the improved drought tolerance gives the end user the ability to use less water.

Tall fescue acres did increase this year, but any softening in price will likely not be felt until the spring, if at all.

In summary on tall fescue: prices will remain strong and could rise in the fall of 2018 due to demand, especially for high quality seed. Pricing could stabilize the spring of 2019.

Fine Fescue is the same story, different species. Most fine fescues—Hard, Sheep, Chewing, and Creeping Red—are in very tight supply and every year it is getting harder and harder to produce clean product, without rattail fescue. This weed seems to be getting much more difficult to control in fine fescue production.

Due to the limited market size of these products, we do not see the effort from grass seed breeders to develop new varieties at the same pace that we see in tall fescue and perennial ryegrass. Inventories are down and, while seed will be getting cleaned right away this fall, the lack of cleaning capacity may hinder availability until winter.

In summary on fine fescue: prices and inventory should remain stable for the fall of 2018. Quality will be an issue come spring of 2019, but prices should remain stable.

Perennial Ryegrass has a different story for the 2018 crop harvest. Inventories are higher than anticipated, but some of the higher quality products will still be in short supply this fall. The perennial ryegrass fields look as good as they have in a long time and with acreage numbers similar to last year it is hard to tell where this market will wind up.

Consumption for this product has decreased as other species seem to be eroding its market share and consumers seem to be experiencing less need for perennial ryegrass and when using it, doing so more efficiently.

Hopefully, markets will be stable. But with the competition out there, I would suggest a wait and see attitude. I believe we will see a wider spread of prices due to variations in quality, as *Poa annua* continues to be a problem with production in the PNW. New products being developed by turfgrass breeders feature advantages in color and drought and disease resistance, but the biggest hurdle for the production farmer is *Poa annua*, which continues to become a bigger and bigger concern.

My words of caution are to know your supplier and ask to see the tests of the seed you are buying, even if it is in a blend. Many new varieties have hit the market, but haven't had the testing, or the improvements over the previous generation products. Improvements like those found in Barbados perennial ryegrass: grey-leaf spot resistance, rust and pythium resistance.

Another problem that has been occurring is the proliferation of Variety Not Stated or VNS. This is a product that may be claimed to be a tried and true variety, but there is no assurance that it is what the seller says it is. No farmer would plant something in his field without knowing it will bring him some return, so I think it is safe to say NO VNS is planted with the intention of harvesting.

In summary on perennial ryegrass: production acreage has not increased, and inventories are higher than expected. Prices should remain stable, with a chance of softening if movement isn't strong in the early fall of 2018.

In conclusion, remember seed isn't harvested until July and a lot can happen between mid-May and that harvest. These assumptions are made based on everything remaining optimal. I encourage you to stay in touch with your supplier. Give them the information on your needs in terms of quantity, quality, and time frame as early as you can, so they can cover those needs. Your supplier should be your partner because when you succeed, they succeed.

Jacklin Seed by Simplot

Provided by Glenn C. Jacklin, Simplot – Jacklin Seed Production Manager

In the Bluegrass production areas of the irrigated Mid-Columbia Basin in Washington State, and the dryland production areas of the North Idaho growing region, we are expecting average to good yields at this time. The fields went into fall with good re-growth and good moisture levels, setting themselves up for a good spring. Winter in the production area was fairly normal, with adequate cold temperatures for the bluegrass varieties to vernalize with the cold induction.

Our spring was cooler with above average rainfall in all locations, and the fields came out of dormancy in good shape. Due to the cool and wet conditions, growers were challenged to get fields sprayed and weeds under control, so fields were sprayed a bit on the late side, but overall looked good and clean by May 24. Weather has warmed up, most fields are now heading up, with some in the earlier production areas already pollinating at the time of this writing. Head numbers look good, and we expect a good crop to come our way.

Acres are moderately up in both production areas, but with the processing warehouses empty, and the distribution pipeline virtually empty, we look for pricing of this species to remain firm and inventories tight well into the fall and winter as processing plants push to get seed cleaned.

Jonathan Green, Inc.

Provided by Greg Hagan, Cascade International Seed Company

Our grass seed market and supply prediction for individual crops is as follows.

Perennial ryegrass acres may be down a little from the 2017 crop and it is looking like a normal crop as far as yield is concerned. The major problem will be quality, as Poa has infested many acres even in fields that were very clean last year. The industry has a carryover of seed; however, the quality may not be the best.

The 2017 crop of tall fescue was a little tight and there is very little carry over. However, there was an increase in acres in the spring of 2017 and that will help. I expect an average yield. Weed problems are a concern, with annual ryegrass and Poa present in most fields. The price will be a little higher; the supply should be okay.

This closeup view shows the seed heads. **Photo by Steve Trusty**

Greg Hagen checks out Jonathan Green's Madison Kentucky bluegrass in this eastern Washington production field. **Photo courtesy of Jonathan Green, Inc.**

The supply of Kentucky bluegrass has been tight for the 2017 crop with no carry over this spring. So this year will be a lot like last year; it will be difficult to get the crop cleaned in a timely matter for fall sales. The crop looks normal for this time of the year. Expect a less than normal yield, with prices firm for 2018. Acres in the irrigated areas are flat, but there is an increase in dryland production.

The fine fescues are in relatively good shape with a good normal yield expected. Creeping red fescue is somewhat short, but chewings is in fair supply. Hard fescue has been out of stock since early spring and I would think that it will be limited on supply for the 2018 crop.

Landmark Turf and Native Seed

Provided by Keith Laxton, Landmark Seed Co.

In western Oregon, we need about two inches of rain to finish the crop. If we get that, we have the potential of a big harvest, but without it we are looking at an early light crop. Light rains scattered over the 30 days of June do not do the trick as we need one-quarter-inch at a time to get the water through the plant canopy and down to the roots.

Nearly all the cool-season grass species we deal in have moderate to strong market outlooks. The one potential exception would be perennial ryegrass. That market has been impacted by other grass species moving farther north into traditional perennial ryegrass areas. The golf overseeding market is stronger than it has been over the last few years but is not, and probably never will, get back to where it was during the height of the golf boon of the 1980s through early 2000s. We as an industry have not yet completely adjusted to that lesser demand. The good news is that with other species strong we may see more perennial ryegrass used in packaging blends.

A trend we are seeing is reduced land availability due to competition from other crops. In Oregon, hazelnut orchards are consuming 10,000 acres annually of prime turfgrass seed production ground.

Crop quantity at this point is weather driven and depends on the amount and timing of rain between mid-May and July 1. We expect quality to be average--though today's average would have been considered exceptional ten years ago. The market is demanding very high quality.

We anticipate that pricing on tall fescue will be higher. Fine fescue, Kentucky bluegrass and creeping bentgrass will be stable. Perennial ryegrass may be a bit lower.

SiteOne Landscape Supply

Provided by Debra Barnes

Weather in the Pacific Northwest has been ideal for a quality and healthy crop. That being said, the 2018 crop is looking to be on track for average yields. We have had sun and rain in good supply that allowed for timely crop protectant applications. As of mid-May, the crop is expected to be harvested on time, starting in early July.

Acres of tall fescue and annual ryegrass continue to increase, while perennial ryegrass acres continue to slowly decline. We expect this trend to continue into 2019 with the increase of pressure from hazelnut production and other competing low maintenance crops.

Prices will continue to remain strong on almost all species. The past three years of lower grass seed yields have led to less carryover inventories for all species except perennial ryegrass and bentgrass. Despite the strong dollar, international sales have continued to increase causing further reductions of already low domestic inventories.

Shipping for the fall 2018 markets will have challenges! The booming US economy has created slowdowns and congestion in major hubs like Chicago. Transit times on rail from the west coast to the east will likely take three to four weeks instead of the normal two to three weeks. Best advice—plan ahead!

Sod Production Services

Provided by Chad Adcock,
Director of Business Development

The Mid-Atlantic States experienced record cold this past winter that caused tremendous loss of bermudagrass. Virginia, Maryland, the Carolinas and Tennessee experienced one of the coldest winters on record. There was record loss of bermudagrass, especially on sports turf and golf courses in those states. Bermudagrass turf loss occurred all across the northern transition zone. That was followed in most of those regions by an exceptionally cold spring. We're seeing that reflected in a high demand for cold tolerant bermudagrass right now, especially for high use sports fields and for golf courses.

It's interesting that experiencing the harsh winters and related turfgrass loss is something that sticks with you. Turf managers felt the pain of losing their bermudagrass, so we anticipate cold-hardiness to be a trait both turfgrass producers and end users will be seeking for many years into the future.

Over the winter, Sod Production Services licensed Tahoma 31 (OKC 1131) Bermudagrass, the new cold-tolerant variety from Oklahoma State University, to sod producers in the Mid-Atlantic and Midwest. Those fields began planting as soon as the weather would allow. In Virginia, for example, planting has been a little delayed due to a cold wet spring. They would have liked to have had the fields planted by late April, but that was delayed into May. We do have a few turfgrass producers who were able to get their fields in sooner and are better set up for the early supply, one in Tulsa and one in South Carolina. We anticipate most of the production fields will be doing well and ready to ship by late summer, and that quality will be very good to excellent.

We anticipate that prices will be on the high side, based on the strong demand for all cold tolerant bermudagrasses. Sod producers and their customers are clamoring for a cold-tolerant bermudagrass. We will have a limited supply of Tahoma 31 by late summer, which will drive up the price. Higher inventories by next spring will help stabilize the pricing.

Sod Solutions, Inc.

Provided by Tobey Wagner

Weather has a significant impact on agriculture. 2018 has already been record-setting weather-wise in the United States with extreme cold snaps in the northern, central and eastern regions during the early part of the year. The cold winter and cool spring, combined with strong demand, have resulted in grass shortages in many markets.

This Innovation Zoysia vegetative stock is starting out in a Sod Solutions' greenhouse. Photo courtesy of Sod Solutions

Combining is underway in this field of turfgrass seed. **Photo by Steve Trusty**

It snowed in just about every state this winter including northern Florida! After a warm February in the eastern part of the country, winter returned with a vengeance in March with unseasonably cool temperatures well into late April. A pattern has developed in the last several years in the eastern and central regions of the US with fall extending longer into November and December while spring is delayed until late April and May. The western US has been cooler as well, with some needed rain.

More rain is needed to overcome years of drought in many areas. Water use and management in turf production remains a concern across the world, including in areas that receive considerable rainfall.

Overall, inventories of grass are low while demand is high. Prices are up and trending higher. The cost of production is also increasing because of the rising costs of labor, equipment, production inputs, and trucking. Growers must continue to analyze the cost of production and pricing to ensure business sustainability.

Turf inventory is very limited while sales are at a peak across much of the cool- and warm-season market. As a general rule, production has not caught up with demand in the growing economy. Proprietary grasses such as these from Sod Solutions—Palmetto® St. Augustine, EMPIRE® Zoysia, Celebration® Bermuda, Latitude 36™

Turfgrass seed packaging is underway. Photo by Steve Trusty

Bermuda, and NorthBridge™ Bermuda—are experiencing high demand resulting in waiting lists, limitations on loads per customer, and rising prices.

Growers are expanding production to meet demand, but shortages are expected to continue through 2018 into 2019. International market reports are scattered, with most countries seeing upticks in sales in sports and golf venues after a long recession.

Sod Solutions is currently seeking licensees across the southern two-thirds of the United States for the newly-released, Innovation™ Zoysia. Planting stock is limited, and growers are being selected based on the following criteria: proximity to market targets, quality of production, and professionalism in marketing.

New technologies are making an exciting impact on the way grass is grown and sold. While sales are peaking with a strong economy, manufacturers of harvesters and mowers are introducing significant advances. Many of these manufacturers provided exciting demonstrations of their new equipment technology at the TPI 2018 International Education Conference & Field Day held in Tucson, AZ, last February. Advancement in equipment technology means sod can be produced with greater efficiency and quality resulting in better grass to the end user.

For growers, dealing with a perishable green product subject to weather-related impacts in harvesting and shipping make turf sales uniquely time sensitive and complex. Farms often manage stressed employees during the busy season because of the uncertainty related to weather, trucking, and labor.

These issues will always be factors in sod sales, but software solutions, such as our Turf Logistics, have been developed to assist in managing these challenges. These systems can provide cloud-based order management and truck routing solutions. This

Turfgrass suppliers always consider performance for the end user. Photo by Steve Trusty

technology improves farm efficiency, reduces stress and errors, develops high tech/high touch communication with customers, and increases profitability.

Increased efficiency and communication provided by software solutions opens the door for growers to sell directly to consumers in an online platform through e-commerce. The trend towards online sales has already impacted many other industries and points to a new opportunity for turf producers. Growers recognize that the average volume of the individual sod sale is decreasing because home lawns and commercial landscapes are getting smaller. Online sales platforms provide an opportunity for growers to sell directly to consumers, keeping more of the margin because they control the sale. The complexities of small order fulfillment, real-time pricing, and dynamic delivery are managed by software solutions to allow the turf industry to benefit from online sales platforms just as the travel and ride-share industries have benefitted. The trend for 2018 and beyond is an increase in online and direct sales from farms to the end user.

The Future starts today and now is the time to prepare for it. The current economic boom is exciting! Growers must accurately assess the need for more production while recognizing the threat of increased competition as more farmers are getting into turf. Row crop pricing is down, and reports are growing of part-time businesses and hobby farmers getting into grass production.

Memories of the crash of 2007 are on many growers' minds as expansion plans are conceived. The good news is that production is being more responsibly increased than before the last downturn. Turf producers have wised up and are not overplanting on pure speculation and irrational projections. The risk for downward price pressure from uncontrolled expansion of common turf varieties is greater than from expansion of proprietary turf brands, where the developer manages production expansion and monitors average pricing. Information is essential when making decisions, and growers have more tools now than ever before to forecast demand patterns. Industry associations, as well as software technologies, help farms to track trends and make projections better than ever before.

Overall, the turf industry is strong in the context of a growing economy and expansion is happening across the US and around the world in practically every business sector. How long will it last? Sod Solutions is bullish on the turf industry and is focused on increasing the profitability of farms by the development of superior turf varieties and associated software sales technology. Successful farms of the future will grow more efficiently, sell smarter, organize better, and provide value-added products. Where is your business today and where will you be in the future?

Turf Merchants, Inc. (TMI)

Provided by Nancy Aerni

TMI is constantly reviewing turfgrass advancements. We look for attribute differentiation over what is currently on the market and wait until there are true benefits inherit in a new varietal release for our clients. Currently, we have several species and varieties under review, but will not place them into production until we are certain they will have proven benefits for the end user. I believe everyone can be in agreement that there are enough varieties in the marketplace without producing another "me too" variety.

At the time of this writing in mid-May, the weather pattern in Oregon appears to be cooperating with our production farmers. We have sunny and warm weather for about a week, and then we have moisture. Truly perfect conditions at the moment have allowed for good fertilization and eradication of many pesky undesirables—with the exception of *Poa annua* and rough bluegrass which have been developing resistance to herbicides over the years. While these undesirables can be taken out mechanically during the cleaning process, we anticipate cleaner crops originating out of the eastern Oregon and eastern Washington production areas.

Kentucky bluegrass is produced in Eastern Washington, Eastern Oregon, and Northern Idaho. Within these regions, it's further broken down to dryland and irrigated production areas. Bluegrass is very finicky, and in the dryland areas, won't produce seed the first year. We have been battling other crops like potatoes, dairy feed and other higher priced commodities for many years. It appears that the tables have finally begun to turn with new Kentucky bluegrass plantings.

Seed heads have begun to develop across all species, and with continued moderate temperatures, it is reasonable to anticipate average to good yields. With the reduction of grass producing acres in prior years, this year might just be the year that would bring us par with average consumption.

Turf type tall fescue production acreage has increased in Oregon to better accommodate growing demand. It's important to remember that baby fields typically only produce up to about half of what mature fields yield. With little to no carryover of sod quality seed, fall shipments will be totally reliant on new crop availability.

Acreage of Kentucky bluegrass has also been increased, and like tall fescue, those baby fields in dryland areas don't produce much seed that first year. We expect Kentucky bluegrass to remain a strong market—especially for early fall 2018 shipments.

Fine Fescue is also seeing an uptick in production acreage as inventories have all been depleted.

Perennial ryegrass acres in Oregon have been reduced due to remaining inventories of product. Perennial ryegrasses are also grown in other areas such as Canada and Minnesota, and New Zealand, which has led to carryover.

We Oregonians have been preaching about hazelnuts and blueberries—long term production investments in fields that had once been in grass and other crops. Here's a recap of where we are.

While Hazelnuts have been producing in the Willamette Valley for over 100 years, acreage has grown to about 65,000 acres currently. In 2009, there were an estimated

Hazelnut production competes for crop land. Photo by Steve Trusty

30,000 acres of trees. It's interesting to note that this acreage only represents about five percent of the world's production. In Oregon, there were 3,300 harvested acres of blueberries in 2003. Currently, Oregon has about 9,500 acres of blueberries.

We are gearing up for transportation woes this fall. It is already a known factor that the equipment shortage and the lack of drivers is going to be an issue with no resolution in sight. This, coupled with reliance on new crop seed, is going to create a need for best planning and flexibility.

Vista Seed Partners LLC

Provided by Doug King and Dr. Jerry Pepin

From his grower services perspective, King reported: As of mid-May, crop conditions are good. The weather outlook for May was for moderate temperatures and below normal precipitation. The extended weather forecast for early June was for a mix of showers and sun with moderate temperatures. These are generally good conditions for all grass seed crops: we just need some timely rains.

Pepin reported: For perennial ryegrass and Kentucky bluegrass, rust (Stem, Crown or Leaf Rust) appears to be becoming an increasing problem. I attribute this to changes in turf management where fertility and other inputs are being reduced. Ten years ago, it seems that higher maintenance diseases such as Pythium, Brown Patch, Gray leaf spot and various patch diseases were the most mentioned problems. Rust resistance was a secondary concern. The NTEP rust resistance ratings will become more important in the future with lower maintenance and less water inputs. The lower inputs favor development of rust diseases.

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COOL-SEASON AND WARM-SEASON GRASSES OVERVIEW

By Kevin Morris

Editor's Note: Each year, Kevin Morris provides an update on the data collected on commercial varieties and experimental turfgrasses entered into the National Turfgrass Evaluation Program (NTEP). This information helps turfgrass producers choose the varieties that will best perform in their particular growing area and management programs. TPI and ***Turf News*** *wish to thank Mr. Morris for the significant amount of time and effort in providing this valuable overview.*

At any one time, the National Turfgrass Evaluation Program (NTEP) is evaluating over 600 cultivars and experimental selections in nationwide tests. Data collected and summarized from these trials can be obtained directly from NTEP or from our website (*www.ntep.org*). Our data is also published on a CD, in exactly the same format as the NTEP website. The CD is read like any informational CD on your computer. The advantages of the CD include its portability, its search features and taking up less space on your bookshelf than hard copy reports. We still have however, printed copies of reports available on request.

NTEP Data Presentation

NTEP information includes data collected on many descriptive and performance characteristics. Descriptive characteristics describe the entries tested, i.e. genetic color, leaf texture and density characterize a grass' appearance. Performance characteristics document the response to various stresses, such as disease, cold and drought. For instance, the percent ground cover rating, although not necessarily affected by a single stress, reflects the grass' ability to withstand and/or recover from a particular stress or a series of stresses.

The most widely used data in NTEP reports are the turfgrass quality (TQ) ratings. Quality ratings are collected monthly during the growing season using a 1-9 scale with 9=ideal turf. Turfgrass quality ratings are collected by evaluators considering all the factors that make good turf, i.e. good green color, density, adequate ground cover, freedom from disease and other stresses, etc. Quality ratings show a lot about the grasses, that is why they are so important.

NTEP turfgrass quality tables focus on grouping by region or management level. In addition, we have the data from each state available on our website and CD.

Cool-season drought shelter at College Park, MD, before initiating drought on USGA/NTEP Cool-Season Water Use Trial.

Hopefully, this makes the data more useful to growers within their geographical region or under their specific management level. *NTEP recommends that growers first review data collected in their state or region and also under the management regime most suited to their needs.* To find data for a specific state, go to *www.ntep.org/states/states.htm*.

NTEP Unveils Improved Data Reporting Procedure

NTEP is committed to improving its data collection, analysis and reporting. To that end, NTEP spent ten years researching new statistical methods and is now implementing a new reporting procedure, the 'Location Performance Index' or 'LPI', on its newest trials. The LPI is based on 'AMMI', a more complete, accurate statistical analysis program for predicting cultivar performance across many locations.

The LPI is only used on turfgrass quality data but in reading the turfgrass quality tables, you will notice that locations may not be grouped by any apparent geographical orientation. For instance, in the 2012 data from our new Kentucky bluegrass trial, 'LPI Group 1' included Amherst, MA, W. Lafayette, IN, Urbana, IL, St. Paul, MN, Manhattan, KS and Pullman, WA. It seems that these locations have nothing in common, geographically or climatically. However, what they do have in common is a very important similar 'interaction pattern', i.e. the varieties performed in a similar manner, relative to each other, at each of these locations in that year. For that reason and most appropriately, the LPI groups them together for analysis. And that 'interaction pattern' can, and very often will vary from year to year. Therefore, investigate the LPI Group data containing locations that are closest to you, or your market.

The LPI is used on new trials as they are initiated. Go to *http://www.ntep.org/LPI%20reporting%20Q&A%205-9-13.pdf* to read more about the LPI and the reasons for utilizing this new procedure.

Focus On Specific Traits

NTEP is designing its trial programs so that more data on specific traits are collected. For instance, *standard* trial locations, conducted at university sites using prescribed management schemes, collect traditional data, such as turfgrass quality, color, density, any diseases present, etc. NTEP also sponsors *ancillary* trial locations that collect data on specific traits, such as shade tolerance, traffic tolerance and sod strength. These ancillary trials must often be conducted in unique locations (i.e. under shade trees) or using specialized equipment (i.e. a traffic simulator). Because ancillary trials are applying unique stress to the entries, the data from these locations are often summarized and reported in separate tables.

NTEP plans on conducting more of these *ancillary* trials in the future and is in fact, co-sponsoring with USGA, an entire trial just to evaluate cool-season and warm-season grasses for drought resistance and water use. The cool-season water use trial was established in fall 2016, with ten locations initiating drought evaluations in summer 2017 or 2018. The warm-season version of this trial is scheduled for establishment in summer 2018, so look for data from both versions of this trial within the next few years. In addition, NTEP sponsored a low input trial for cool-season grasses and mixtures in fall 2015, and is planning a warm-season low input trial for summer 2018. It is our hope that these types of data will provide much needed information to consumers on these important traits.

Rust disease on Kentucky bluegrass.

Update On Cultivars

The following is an overview of the latest information on commercially available and experimental cultivars.

COOL-SEASON

Kentucky Bluegrass

2016 was the fifth and final year of data collected from our latest Kentucky bluegrass trial, established in fall 2011. A final report of data collected from 2012-2016 was completed and released by NTEP in fall 2017. A new trial of Kentuckly bluegrass was established in 2017, therefore, this report focuses on the recently completed 2011 trial and its final report.

Turfgrass quality ratings provide a view of overall entry performance, showing why they are so important to consider. With this five year summary, we look at locations in the different regions and identify top performers. In the North Central region, several entries finished in the top statistical group, including **Blue Note**, **Bluebank**, **J-1770**, **A05-360** and **A06-46**. These grasses plus **Barserati**, **Midnight**, **J-1853** and **SR 2150** (among others) were top entries as well at two Northeast locations (Adelphia, NJ, and North Brunswick, NJ).

Transition Zone locations often provide the most environmental stress on Kentucky bluegrass entries. Over the testing period, the five trial locations certainly delivered on this promise. **SRX 466**, **Skye**, **Barvette HGT**, **Barserati**, **A06-46**, and **Keeneland** had the highest quality ratings, followed by **Blue Note**, **Pick 033** and **Bluebank**.

Top performers at the Guelph, Ontario, Canada site (managed using 'organic' methods) from 2012-2016 included some older cultivars such as **Midnight** and **Award**, new experimentals like **SRX 466** and **J-1770**, and some new commercial cultivars (**Barvette HGT** and **Barserati**). Data from our two western U.S. locations (Puyallup, WA, and Logan, UT) showed excellent performance from **Pick 4340, Keeneland** and **A00-2882** at both sites, with **J-1136**, **A01-1106**, **Mazama** and **A06-46** also performing well over the five years.

Data analyzed by management schedule revelaed some interesting differences among top performers under each schedule. Schedule "A" replicated a good quality home lawn in most regions (1.5-2.5" mowing height, 3-4 lbs./N/1000 sq. ft., irrigation to prevent stress or dormancy) while Schedule "B" approximated a lower input turf area (3+" mowing height, 0-2 lbs./N/1000 sq. ft., no irrigation after establishment). Entries that performed very well in both Schedule "A" and "B" include **Blue Note**, **A06-46**, **Bluebank**, **J-1770** and **Keeneland**.

The 2011 Kentucky bluegrass trial consists of several ancillary locations testing for tolerance to various stresses. For example, since 2012, shade tolerance has been evaluated at Carbondale, IL, with five years of data showing **Keeneland**, **Mazama**, **BAR 8PP 504**, B**arvette HGT**, **PST-K9-99**, **Barsahara**, **Burl 3-51** and **Kenblue** with the best shade tolerance.

Traffic tolerance was evaluated at Amherst, MA, E. Lansing, MI, North Brunswick, NJ, Madison, WI, and Knoxville, TN, for at least three years. At Amherst, **Rubix**, **Blue Note**, **A06-47** and **SRX 4338** top the quality ratings, while **Rubix** had the highest wear tolerance over three ratings. In Knoxville, **Barvette HGT**, **BAR VV 118352** and **Bluebank** had the highest quality ratings over the four year test period. **Barvette HGT**, **Rubix** and **Aramintha** were the most consistent entries over the four years of data collection at North Brunswick, NJ. The results from Madison revealed **Barvette HGT**, **A05-360** and **Zinger** in the top spots, followed by nine entries. And in East Lansing, no statistical differences were noted among entries.

Data on various diseases such as summer patch (*Magnaporthe poae*), dollar spot (*Sclerotinia homeocarpa*) and stem rust (*Puccinia graminis*) were reported over the five years of this trial. Data on summer patch, one of the most devastating diseases on Kentucky bluegrass, was collected at several locations and reported during several years of the trial. Summer patch damage at Raleigh, NC, seemed to be the most consistent with **Barvette HGT**, **Barserati**, **J-1770**, **Pick 033** and **SRX 466** showing the least disease. Summer patch ratings collected at seven additional locations showed less consistency, however, **Barvette HGT**, **SRX 466** and **Pick 033** had some of the best tolerance ratings, along with **Blue Note** and **Bluebank**. The differences in tolerance among these locations may indicate variation in the disease-causing organisms.

Dollar spot ratings were collected at five locations but only the entries in the bottom 10 percent showed significant susceptibility to the disease. Stem rust ratings collected at several locations showed **Barvette HGT**, **Bolt**, **Pick TD8**, **PST-T10-18**, **A06-46**, **Burl 06-11** and **RAD-849** with the most consistently high tolerance ratings.

Other ratings of interest during the test period include data such as thatch measurements and drought tolerance. Thatch accumulation was measured at Madison, WI, with **Barvette HGT**, **J-1770**, **Nu Chicago**, **Bolt** and **Barserati** finishing with the least thatch. And drought tolerance ratings collected in W. Lafayette, IN, had **A05-TB-382**, **RAD-849**, **A06-26**, among nine other entries, with the best tolerance of drought dormancy.

Tall Fescue

This report utilizes the fifth and final of this trial, planted in 2012. The trial contains 116 entries, of which many are still experimental. Year one data typically reflects establishment rate, year two data usually reflects broader cultivar performance, while years three through five allow us to determine if trends seen in year two are still viable. A final summary brings all the years together and is the best measure of long-term performance.

Turfgrass quality ratings in 2017 again varied by region and even by management regime. Schedule "A" maintenance, which approximates a high quality home lawn in many regions (1.5-3" mowing height, 3-4 lbs./N/1000 sq. ft., irrigation to prevent stress), showed the most entry separation with only nine entries in the top statistical grouping, led by 4th **Millennium SRP** and **Regenerate**. **MET 1** had the highest turf quality rating under Schedule "B" (2.5-3.5" mowing height, 1-2 lbs./N/1000 sq. ft., irrigation to prevent dormancy). Entries that finished in the top statistical group under both management regimes include **4th Millennium SRP**, **Regenerate**, **Raptor II**, **MET 1**, **F711**, **Amity** and **Thor**.

When comparing regional data analyses, the largest separation in performance was noted in the six transition zone locations, such as College Park, MD, Columbia, MO, Lexington, KY, and Raleigh, NC. **Traverse 2 SRP**, **Raptor III**, **MET 1**, and **4th Millennium SRP** among others performed very well at this regional analysis in 2017, often besting the top performers from the previous trial, **Faith** and **Catalyst**.

Data from the Northeast was collected at Storrs, CT, and two New Jersey locations. Entries like **Regenerate**, **Reflection**, **4th Millennium SRP** and **MET 1** again generally performed well in the Northeast where

brown patch (*Rhizoctonia solani)* was active.

Similar to 2015 and 2016, locations in the South and Southeast generally did not note large entry differences with anywhere from 50-75% of all entries performing statistically similar to the top turfgrass quality scorer in 2017. Data from our Southwest site (Riverside, CA) showed good entry separation, like in 2016. **4th Millennium SRP**, **Screamer LS**, **Maestro**, **PSG-P01** and **Technique**, top performers in 2016, along with **IS-TF 311** and **Regenerate** were some of the highest rated entries in 2017 at the Riverside location.

In the Midwest, some significance was noted at four locations: Ames, IA, West Lafayette, IN, Urbana, IL, and Mead, NE. A few entries that performed well at all four locations include **Regenerate**, **Raptor III**, **W41** and **Reflection**.

Tolerance to stresses such as traffic, shade, drought and brown patch are being evaluated throughout the testing period. Grey leaf spot (*Magnaporthe oryzae*) is also being noticed more on tall fescue, and for the first time, it was evaluated on this trial. Data collected at our Raleigh, NC, location, although interesting and with good separation among the scores, was not statistically significant in 2017.

Intensive traffic was applied on the tall fescue trials at North Brunswick, NJ, and Knoxville, TN, in 2017. As with the previous years and trial locations, year five data showed very little statistical differences among entries. Data from evaluations conducted in shade at Carbondale, IL, demonstrated the greatest differences among entries than in any year of the trial. **Rowdy**, **Titanium 2LS**, **Annihilator**, **ATF 1612**, **GTO** and **Michelango** were the only entries in the top turf quality statistical group under the shade stress in Carbondale.

Data from Logan, UT, on a trial where irrigation is reduced, showed moderate statistical significances with separation of the top 50 percent of entries. **Fayette**, **IS-TF 272**, **Firewall** and **IS-TF 311** earned the highest overall quality scores at the Logan, UT, reduced irrigation trial site.

Brown patch is typically the most prevalent disease on tall fescue, but in 2017, only a few locations noted and rated the disease. At Wichita, KS, **Paramount**, **Leonardo** and **PPG-TF-169** had the highest tolerance ratings (5.7) but very little statistical significance was noted. The Adelphi, NJ, location rated brown patch also in 2017 with data ranging from 7.7 to 1.0 (scale is 1-9, 9=no disease). Entries with the highest brown patch rating at Adelphia include **Thor** (7.7), **Maestro** (7.3), and **Screamer LS** (7.3).

Perennial Ryegrass

Perennial ryegrasses are occasionally used in sod mixtures because of positive attributes such as fast germination, better establishment under low and high temperatures and traffic tolerance. A new trial of perennial ryegrass, established in 2016, consists of 114 entries, of which most are new experimentals. The first data from this trial (2017) is now available on our website.

Data from 2017 did not show large entry differences when averaged over LPI groups. Entries such as **PPG-PR 424**, **PPG-PR 331**, **PPG-PR 420**, **PPG-PR 421**, **Furlong**, **NP-2**, and **Silver Sport** finished in the top statistical group for turf quality in both LPI groups. When analyzed by geographic region, several entries, including **Furlong**, **PPG-PR 420**, **PL2** and **PPG-PR 419** had turf quality ratings in the top statistical groupings for all regions.

Data was also analyzed by three management regimes. High, medium and low maintenance schedules (A, B and C) approximate a golf course fairway, athletic field and home lawn, respectively. Several of the same entries that performed well in the different geographic regions also performed well under all three maintenance regimes, including **NP-2**, **Furlong**, **PPG-PR 423**, **PPG-PR 424**, **PPG-PR 371**, **PPG-PR 420** and **PPG-PR 331**. Other entries that finished in the top turf quality statistical group under all three regimes include **DLFPS-236/3554**, **Xcelerator** and **PL2**.

Drought tolerance was tested at Logan, UT, in 2017, alongside a standard irrigation trial regime. Statistical differences were not large among entries, but **DLFPS-236/3554**, **DLFPS-236/3542** and **Savant** scored particularly well in both normal and drought irrigation trials. Other entries that performed well under the drought scenario include **PST-2CRP**, **BAR LP 6164**, **DLFPS-236/3547**, **LPB-SD-104** and **Mensa**.

Winter injury was noted at the St. Paul, MN, location in 2017 with tolerance ratings ranging from 7.7 – 2.3 (scale is 1-9, 9=no damage; LSD=2.7). Considering this is data from only one winter and one location, the range of ratings indicate potential separation among entries, with **LPB-SD-102**, **BAR LP 6164**, **DLFPS-236/3554**, and **Overdrive 5G** with the highest ratings.

Traffic tolerance was tested at three locations in 2017, with each site using different methodology and that led to varying results. An abrasive brushing technique used at Amherst, MA, showed good entry separation with P**PG-PR 424**, **DLFPS-236/3547** and **PPG-PR 331** topping the turf quality ratings. However, **ASP0118GL** and **DLFPS-236/3552** had the highest rating (7.0) for wear tolerance. Less entry separation was noted at Corvallis, OR, (using a cleated traffic simulator) but **DLFPS-236/3552**, along with **DLFPS-236/3541**, **LPB-SD-102** and **PPG-PR 343** finished in the top statistical group, among many other entries. The Blacksburg, VA, location showed great differences in turf quality and ground cover over time, however statistical differences among entries were small.

Salt tolerance evaluations were conducted in the greenhouse at Fort Collins, CO, in 2017. First year data did not reveal large statistical differences, but performance varied greatly among entries. Entries were tested at salt levels from 8 dS/m (decisiemens per meter) to 24 dS/m. Entries started to separate at 20 dS/m, but large differences were finally noted at 24 dS/m (sea water is approximately 55 dS/m), with only **Savant** and **DLFPS-236/354** maintaining 50 percent or greater quality of the control pots (no salt treatment).

Fine fescue entries under drought stress at College Park, MD.

A few diseases were rated during year one of the new perennial ryegrass trial and grey leaf spot is one of the most significant. Grey leaf spot can attack and kill perennial ryegrass in a relatively short period of time, making it one the most destructive pathogens to attack this species. Adelphia, NJ, noted grey leaf spot infection and collected data that ranged from 1.0 – 9.0 (where 9=no disease). Entries scoring very high in this one grey leaf spot rating include **Karma**, **02BS1**, **DLFPS-236/3553**, **JR-197** and **NP-3**. More data must be collected to see if this 2017 information is consistent across locations and years.

Fineleaf Fescues

The term "fineleaf fescue" includes several species. Strong creeping red fescue (*Festuca rubra* spp. *rubra*) and slender creeping red fescue (*Festuca rubra* var. *littoralis*) possess rhizomes and therefore add knitting ability to a sod mixture. Chewings fescue (*Festuca rubra* ssp. *fallax*) has a bunch-type growth habit and traditionally better disease resistance than the creeping red-types. Hard fescues (*Festuca brevipila*) are also bunch-type grasses but have generally better drought tolerance than Chewings or creeping types. Sheep fescue (*Festuca ovina* L. ssp. *hirtula*) is best suited for low maintenance sites because of its unique, swirly, growth habit from within the crown of the plant.

A new fineleaf fescue trial was established in 2014, with third year data from that trial now available. This new trial consists of 42 total entries, broken down into hard fescue (10), strong creeping red fescue (16), slender creeping red fescue (3), chewings fescue (12) and sheep fescue (1). The trial is planted at ten standard trial locations and eleven ancillary trial locations.

As in previous years, a good separation among entries was noted at most locations in 2017. Entry, and species performance overall, varied by location and management level. For instance at Storrs, CT, the Chewings fescues and slender creeping red fescues filled the top turf quality statistical group, with strong creeping red fescue **C14-OS3** at the top. College Park, MD, which typically experiences exceptional summer stress, had hard fescues as exclusively the top performers. But that trend did not hold true for the most southern location, Raleigh, NC, where the top performers were a mix of Chewings, strong creeping red fescue and slender creeping red fescue entries And interestingly, management level differences play a very important role as lawn height vs. fairway mowing height trials at St. Paul, MN, resulted in vastly different species performance.

Traffic tolerance of entries in this trial is conducted under both fairway mowing height and lawn mowing height. In 2017, traffic was evaluated at six sites: St. Paul, MN, (fairway), East Lansing, MI, (fairway), Storrs, CT, (fairway), Corvallis, OR, (lawn), North Brunswick, NJ, (lawn) and Amherst, MA, (lawn). The fairway sites utilize an apparatus that simulates golf cart traffic and damage. The locations used a similar protocol: two passes per day with the traffic simulator, three times per week from May through September. In 2016, the fairway sites had a surprising level of agreement among the top entries. That changed somewhat in 2017 with several entries performing well at one site, but not another. The entries performing well at both sites include **Sea Mist**, **Compass II**, **DLFPS-FL/3060** and **Resolute**, finishing in the top turf quality statistical group at both locations.

At the Amherst, MA, (lawn height) location the best entries for both wear tolerance and turf quality included the hard fescues **Beacon** and **Jetty**. **Castle** and **Sea Mist** were not as strong for wear tolerance at Amherst but they still finished with high turf quality ratings. At North Brunswick, NJ, the best entries were mainly hard fescue led by **Jetty**, **Resolute**, **Gladiator**, **Minimus** and **Sword**. Contrast these results to the results from the Storrs, CT, site as **Castle** and **Sea Mist** were top turf quality performers in Storrs, but **Beacon**, **Jetty** and other hard fescues were not.

Fairway maintenance levels, particularly in regions where fine fescues may suffer heat and drought stress, is being evaluated in this trial. Sites as diverse as West Lafayette, IN, E. Lansing, MI, St. Paul, MN, and the California Golf Club of San Francisco showed varying results across locations, however with some agreement. **Compass II**, **Sea Mist**, **RAD-FC44** were the only consistently good entries at all sites.

Several diseases were rated on this trial in 2017. Red thread (*Laetisaria fuciformis*) was rated at three locations in 2017, with entries such as **Jetty**, **Gladiator**, **Beacon**, **PST-4BND** and **MDHD-14** performing consistently well across all three locations. Pink snow mold (*Microdochium nivale*) was rated at the California Golf Club with **BAR FRT 5002**, **Beudin**, **C14-OS3**, **DLFPS-FL/3060** and **Resolute** showing the best tolerance.

Dollar spot and brown patch can be persistent and troublesome diseases on fineleaf fescues and both of these diseases were noted and rated in 2017. Dollar spot was noted at five locations, with entries such as **Quatro**, **Compass II**, **Castle**, **C14-OS3**, **RAD-FC44** and **DLF-FRC 3338** showing consistently good results across locations. Brown patch was rated twice at Raleigh, NC, with the hard fescues **Gladiator**, **Beacon**, **Beudin** and **Minimus** demonstrating the best tolerance.

Bentgrass

New trials of bentgrass were established in fall 2014, and the first data was released in spring 2016. Two species are included in the latest trials: creeping (*Agrostis stolonifera*) and colonial (*Agrostis tenius*). Third year data (from 2017) is presented here, although it should be considered with caution since results may change with further testing.

Putting Green Trial

This trial, containing twenty creeping bentgrasses, was established at nineteen locations. Turfgrass quality ratings collected in 2017 again revealed several experimental cultivars that can meet, or exceed the quality delivered by previous top performers **Declaration**, **V-8**, **Penn A-1** and **Luminary**. Entries such as **PST-ROPS**, **DLFPS-AP/3058**, **Piranha**, **DLFPS-AP/3018** and **L93-XD** delivered top turf quality at several sites, but fell off at other sites. For instance, **L93-XD** was excellent in Lexington, KY, East Lansing, MI, North Brunswick, NJ, and St. Paul, MN, but finished near the bottom of entries at Athens, GA. In some cases, entries were superior to a standard entry such as **Declaration** at a particular location, but not another location. These results emphasize the need to check local results carefully.

This trial was also evaluated at three golf course sites: Los Angeles Country Club in California, the California Golf Club of San Francisco and North Shore Country Club in Glenview, IL. **777**, **PST-ROPS** and **DLFPS-AP/3054** finished with high turf quality at all three locations. Again in 2017, as with 2016, **L-93XD** showed excellent performance at both of the California sites, but finished at the bottom of all entries at the Chicago site. Additionally, **Tour Pro** was a top performing entry at the North Shore site, but finished in the middle of the pack at both California sites.

As with the previous trial, wear tolerance evaluations were conducted at the Amherst, MA, location, starting in 2015. This location imposes wear by dragging a stiff brush across the plots. This action causes bruising and abrasions that mimic different types of damage. In 2017, **DLFPS-AP/3018**, **L93-XD** and **PST-ROPS** showed the best overall quality, finishing in the top statistical group. **Kingdom**, **Piranha** and **Tour Pro** exhibited excellent wear tolerance in three ratings.

An additional ancillary trial was established at Logan, UT, where entries were managed both under traditional irrigation and a reduced irrigation regime. Consistent with 2016 data, in 2017, most of the top entries under normal irrigation levels were also good under the reduced irrigation level. The entries ending in the top statistical turf quality group under both regimes in 2017 include **Kingdom**, **Pure Select**, **Nightlife**, **777**, **DLFPS-AP/3018**, **DLFPS-AP/3058**, **Armor** and **PST-ROPS**.

Bentgrasses are susceptible to many diseases, therefore, disease resistance has always been an important feature of any new bentgrass cultivar. Dollar spot is one of the most damaging diseases on bentgrass and in 2017, dollar spot was noted and rated at multiple locations. **L-93XD**, **Declaration**, **DLFPS-AP/3018**, **DLFPS-AP/3058**, **Luminary**, **GDE** and **Barracuda** had consistently high dollar spot tolerance ratings across

Differences in bentgrass color and texture at Logan, UT.

locations. **Anthracnose** was rated at North Brunswick, NJ, with **Nightlife**, **Kingdom** and **777** showing the highest tolerance ratings. Pink snow mold ratings were again collected at the California Club in San Francisco. 2017 data was consistent with previous results with **777** finishing atop the pink snow mold tolerance ratings.

Fairway/Tee Trial

The 2014 trial consists of fourteen creeping and three colonial bentgrass entries and is planted at nineteen locations. Third year data (from 2017) is normally a reflection of thatch development as well as a response to various diseases.

As with 2016 data, entry differences in 2017 were less than expected at several locations, with very little to no statistical differences in turf quality averages noted at four locations. However, good entry separation was noted at six locations with creeping bentgrasses **Nightlife**, **Chinook** and **Kingdom** as some of the highest rated entries. Past top creeping bents **007** and **Crystal Blue Links** are the entries that any new experimental needs to outperform, and these new entries, as well as **Piranha**, **Armor** and **L93-XD** looked impressive at several locations in 2017.

In 2017, creeping bentgrasses generally outperformed their colonial bentgrass cousins. However, colonial bentgrass entries showed excellent performance at selected sites. For example, colonial bentgrass previous top performer **Greentime** was outperformed by **Musket** and **DLFPS-AT/3026** at College Park, MD, in 2017, where dollar spot resistance seemed to help these entries compete with creeping bent entries. It seems that where the colonial bentgrasses are well adapted, they perform very well. Where colonial bentgrass does not seem to be well adapted, like the mountain west or southwestern states, those entries fall into the bottom 25 percent of all entries.

The Riverside, CA, location utilized a reduced irrigation level but no significant differences were again noted among the entries. However, the Logan, UT, and Fargo, ND, locations managed under reduced irrigation showed very good entry separation with **Kingdom**, **Shark**, **Piranha** and **Crystal Blue Links** performing well at both sites.

At two ancillary traffic locations, Amherst, MA, and Blacksburg, VA, significant entry separation was noted. Colonial bentgrasses **DLFPS-AT/3026** and **Musket** were excellent under the traffic stress at both sites, finishing in the top statistical group for turf quality. Traffic tolerance ratings, evaluated three times at the Amherst, MA, site, however, showed **Kingdom**, **Piranha** and **Nightlife** with some of the highest scores.

Disease resistance is a very important trait for bentgrasses used on fairways or tees. Brown patch, anthracnose and dollar spot were rated in 2017. Brown patch data collected at Ames, IA, showed only **Musket** with any significant disease development. Anthracnose was noted at North Brunswick, NJ, and data showed **DLFPS-AT/3026, Musket**, **Greentime** and **PST-0CV6** with the least disease.

Dollar spot data again showed the colonial bentgrasses **DLFPS-AT/3026** and **Musket** with some of the best ratings at three locations. Creeping bentgrass entries **Chinook** and **Piranha** also showed excellent dollar spot tolerance across the three locations.

Low Input Cool-Season

In 2015, NTEP established its first management based trial, with seventeen locations that manage under 'low input.' The first trial of this type includes cool-season grass cultivars, experimentals, blends and mixtures of grasses and other species. Thirty-two entries were submitted by sponsors, including single cultivars and blends of Kentucky bluegrass, fine fescue, tall fescue and perennial ryegrass; mixtures of several grass species, with some including strawberry, white or Microclover® (*Trifolium* spp.); and even a western yarrow entry (*Achillea millefolium* L.).

Management is minimal for the five-year trial, with no fertilizer applications or irrigation after establishment, no pest control at any time during the trial, and mowing at 3 – 3.5" on the thirteen standard trial sites. Three ancillary trial sites evaluate the effect of one annual grass pre-emergence application (spring 2016) only, then following standard trial protocols for the remaining four years of the trial. One additional trial location (West Lafayette, IN) made an additional fertilizer application on one half of each plot for 2016 and 2017 only, to evaluate the effect of the small increase of fertilizer on performance and survival. Overall, these locations are maintained very minimally, which is of interest to an increasing number of our customers.

As first year data typically reflects establishment, second year data from any NTEP trial is the first year to evaluate more long-term performance. The entries in this low input trial, with no annual grass or broadleaf weed control, need excellent establishment, and then good ground cover to resist weed invasion and deliver good quality.

With many different species, mixtures with clovers and even non-grasses (western yarrow), turfgrass quality ratings are more difficult to assess, sometimes leading to less significance among entries. However, turfgrass quality ratings collected in year two resulted in larger differences among the entries.

Data was reported from fifteen locations in 2017. The following entries were the most consistent, finishing in the top statistical group at ten locations: **Yaak**, the western yarrow entry, **DLFPS TFAM**, a tall fescue mixture with Microclover®, **DLFPS TFAStC**, a tall fescue mixture with strawberry clover, **Vitality Double Coverage Mixture**, a 90/10 Tall fescue/ Kentucky bluegrass mixture, **CRS Mix #2**, a hard

fescue/Kentucky bluegrass mixture, and **Bullseye** tall fescue. However, quality scores across locations were generally low as expected, with no entries at the Raleigh, NC, Lincoln, NE, and Kennett Square, PA, locations finishing with a turf quality average score of at least 5.0, the NTEP threshold for minimum acceptable quality under low maintenance. Therefore, we theorize that the performance of these entries will change a lot, and may continue to decline over the remaining three years of this trial.

Cool-Season Water Use

With the need to reduce turfgrass water use, USGA is partnering with NTEP to evaluate both cool- and warm-season grasses for water efficiency and performance under lower water use. The USGA has paid to install rain exclusion shelters at ten sites, five in the northern or transition zones (to evaluate cool-season grasses) and five shelters in the southern U.S. to evaluate warm-season grass water use and drought tolerance. Within these shelters, cooperators restrict irrigation for a period of 100 days for cool-season grasses, or 120-150 days for warm-season grasses. These 'drought seasons' under the shelters are part of *Approach 1*, which is a measurement of the amount of water needed to maintain a prescribed level of green during that period.

Ten trial locations in the drier western U.S. states (five each for cool-season and warm-season grasses) manage under *Approach 2*, which utilizes three evapotranspiration replacement rates (ET_o). In *Approach 2* locations, researchers replace either 40, 60 or 80 percent of ET_o (as determined by local weather station data) for cool-season grasses, or 30, 45, or 60 percent ET_o for warm-season grasses. This scenario is more typical of irrigation patterns in the western U.S. with 25 inches or less of annual rainfall. *Approach 2* data indicates the reduced irrigation level each entry will survive, and at what level each will deliver acceptable turf quality.

Therefore, the two approaches address the needs across the U.S., from the humid, eastern U.S. with 30 plus inches of annual rainfall but with occasional prolonged drought periods, to the arid western U.S. where annual summer drought periods are expected.

The warm-season version of this trial is being established at ten locations in summer 2018. The cool-season version of this trial was established in fall 2016 or spring 2017 at ten total sites, five under rain exclusion shelters in the eastern U.S (*Approach 1*) and five in western U.S. field sites (*Approach 2*). The cool-season version includes fifteen Kentucky bluegrasses, nineteen tall fescues and one perennial ryegrass.

The first data from the cool-season trial was collected in 2017 at six of the ten locations. Four *Approach 1* (shelter) locations collected data during a 100-day induced drought period, and in some cases, large differences were noted in amount of water used by entries. In some locations, the difference between the least water using entries and the most water using entries was two-fold (for instance, 46.7 mm of water to 97.7 mm of water), but very few statistically significant differences were noted, either within Kentucky bluegrass or tall fescue entries. Griffin, GA, was the only *Approach 1* site where significant differences were noted in water used, but only with tall fescue. **PST-R511** and **RS4** tall fescue used the least water at Griffin, along with nine other entries that were statistically similar. The range of tall fescue water use at Griffin was 76.3 – 211.7 mm (LSD=76.3) in 2017. Hopefully, in 2018 we can obtain great statistical significance among *Approach 1* entries.

Only *Approach 2* sites at Riverside, CA, and Las Cruces, NM, collected data in 2017. Both locations ran irrigation at 40, 60 and 80 percent ET_o replacement, while adjusting for any rainfall received during the 120 day drought period. Very little rainfall was noted at the Riverside, CA, location during the 'drought season' while Las Cruces experienced some precipitation from summer storms. Consequently, summer stress was more pronounced at Riverside than Las Cruces.

At Riverside, the 40 percent ET_o irrigation regime was very harsh on all entries, with only **Babe** Kentucky bluegrass delivering acceptable turf quality ratings (>6.0) 45 days into the drought period. Not unexpectedly, no entry showed acceptable turf quality throughout the entire 40 percent ET_o replacement season

at Riverside. The 60 percent ET_o replacement regime was kinder on the grasses but still, not a single entry delivered an acceptable turf quality ratings throughout the season. Even the 80 percent ET_o regime, which is considered adequate replacement of ET lost for cool-season grasses, reduced turf quality ratings of many entries to below acceptable, at least for rating dates toward the end of the season.

As noted above, the Las Cruces, NM, site did receive some summer rains in 2017, which resulted in acceptable turf quality for more entries and rating dates than at Riverside. Even under the 40 percent ET_o regime, although very little statistical significance was noted, several entries of both Kentucky bluegrass and tall fescue showed percent green cover ratings >50 percent and acceptable turf quality on most rating dates. Data from the 80 percent ET_o regime did show some Kentucky bluegrass entries with statistically better quality ratings, including **NAI-13-14**, **Blue Devil** and **PST-K11-118**. With five *Approach 2* locations collecting data in 2018, hopefully weather patterns can allow for more consistent ratings and greater statistical significance.

Other Species

Other cool-season species, such as prairie junegrass (*Koeleria* spp.), tufted hairgrass (*Deschampsia cespitosa*), rough bluegrass (*Poa trivialis*), supina bluegrass (*Poa supina*) and annual bluegrass (P*oa annua*) are potential sod products, although limited in their utility and geographical area of adaptation.

Native species, such as junegrass and tufted hairgrass, under low maintenance can form a dense sward with an appearance somewhat like perennial ryegrass or Kentucky bluegrass. One tufted hairgrass cultivar has been tested by NTEP (1998 NTEP Fineleaf Fescue trial). The other bluegrass species, rough, annual and supina are still very much under development without a lot known about their performance characteristics and production needs. Other native species, such as inland saltgrass (*Distichlis spicata*) and poverty grass (*Danthonia spicata*), have special traits such as salt tolerance (inland saltgrass) or tolerance to infertile soils (poverty grass), but are probably several years away from commercialization.

007 creeping bentgrass field in Oregon.

WARM-SEASON

In spring/summer 2013, new trials of bermudagrass and zoysiagrass were established, with 35 entries in each trial. In addition, a unique new trial was established in conjunction with USGA. The trial evaluates bermudagrass (15 entries), zoysiagrass (11 entries) and seashore paspalum (2 entries) at eleven locations under putting green conditions.

The final year of data from each of these three warm-season trials is now available from NTEP. Even though each trial features a different set of data, a common theme of all these trials is data on initial establishment from 2013. However, due to the unusually harsh winter that many locations experienced in 2013/2014, several entries were never able to establish at some locations. Data on winter injury was collected and the cooperators were consulted on the condition of their trials. Since 2013-14 was the worst winter in more than thirty years, the decision was made by NTEP to replant several or all entries at the worst winter injury sites. NTEP has never replanted so many entries and locations in our history, but we felt it was necessary to give all entries an equal opportunity to establish and perform. No more replanting will take place for these three trials. The information on the entries replanted at each location is noted on the data tables.

Bermudagrass

The current bermuda NTEP trial contains eighteen (18) seeded entries and seventeen (17) vegetative entries. Many of these entries are experimental cultivars or new commercial cultivars. NTEP evaluates warm-season grasses by comparing seeded and vegetative entries, and also by separately comparing seeded vs. seeded and vegetative vs. vegetative.

The final year of this trial was 2017. Therefore, we now have several years of data that show the potential of new experimental entries. In 2017, **Latitude 36**, one of the top performers in the last trial, was the most consistent entry finishing in the top statistical group at more locations than any other entry. **Patriot**, a cold-hardiness standard that has been tested by NTEP for over twenty years, also performed very well at several locations. Other entries also performing well at many sites include **TifTuf, Tahoma 31**, **11-T-510**, **OKC 1302**, and **JSC-2-21-18-v,** all vegetative entries. **Tifway**, arguably the most widely utilized turf bermudagrass in history also performed well overall in 2017, which could mean that the importance of **Tifway** in the marketplace may continue for many years.

Several ancillary trial locations again conducted unique tests in 2017. Traffic tolerance differences were

NTEP 2013 Zoysia trial under artificial shade at Riverside, CA.

noted at Lexington, KY, with **Patriot**, **Tahoma 31** and **Tifway** topping the traffic ratings. And in spring dead spot (*Ophiosphaerella* spp.) ratings collected at Columbia, MO, **OKC 1163**, **OKC 1302**, **BAR C291**, **Astro**, **MBG-002** and **Yukon** showed the highest tolerance ratings.

This is the final year of data from our water use reduction ancillary trial conducted at College Station, TX. Performance differences evaluating drought tolerance have been significant in each prior year. **TifTuf**, **FAES 1325** and **JSC 2-21-18-v** were the top performing entries in 2017, with turf quality ratings of 7.3, 6.9 and 6.9, respectively, where scores ranged all the way down to 4.8.

Zoysiagrass

Meyer zoysiagrass was released in the early 1950's and has been a standard in the industry ever since. **Meyer** is known for its medium leaf texture (for a *Zoysia japonica* type) and excellent winter hardiness. **Zeon** is a *Zoysia matrella* type that is finer textured than **Meyer**. **Zeon** is a standard for use on golf course fairways and tees because it can develop a dense turf at mowing heights of 0.5" or lower. Both grasses are included in this new trial as standard entries.

One of the weaknesses of zoysiagrass is its rate of establishment, especially compared to other warm-season species. Therefore, plant breeders are working to improve spread and recovery rate in zoysiagrass. For both of these traits, it appears that breeders are making considerable gains. In addition, **Meyer** historically has not performed particularly well in the warmer southeast and southwest locations, therefore zoysia cultivars that perform well in those regions are much needed.

As with the bermuda trial, injury in the winters of 2013-14 and 2014-15 significantly affected some locations. Winter injury was evident at Manhattan, KS, West Lafayette, IN, and Columbia, MO, with turfgrass quality and percent cover ratings being affected by that injury. **Meyer** and **KSUZ 1201** suffered only a small amount of winter kill at those locations (only 1.3 and 9.7%, respectively at Manhattan, KS). The two winters damaged **DALZ 1301** and **FAES 1305** more, however, they recovered enough to provide quality almost equal to **Meyer** and **KSUZ 1201** at the three northern locations. Since then, entries such as **FAES 1312**, **DALZ 1301**, **FAES 1305** and **11-TZ-4321** have continued to recover and are now providing good to excellent quality at the northern locations, along with **KSUZ 1201**. For so long, **Meyer** was the standard for winter tolerance, and therefore, the primary cultivar in use in the northern and transition zone states. However, with these new experimentals, **Meyer** may finally be replaced in this region.

With 2017 as the final year of this trial, zoysia entries that have survived two rough winters, plus two more normal winters have risen to the top at the northern sites. **DALZ 1301** and **FAES 1305** finished

in the top statistical group at College Park, MD, Columbia, MO, and Manhattan, KS. Also finishing well at the three sites were **KSUZ 1201**, **FAES 1312** and **Zeon**. **Meyer** did not perform well at College Park, MD, finished in the middle of the pack at Manhattan, KS, and was very good at Columbia, MO.

As has been consistent throughout each year of the trial, results from the southern locations show other experimental zoysiagrasses provide higher quality turf than **Meyer** and **Zeon**. **FAES 1313** is the only entry to finish in the top statistical group at each southern location in 2017. Entries including **FAES 1312**, **DALZ 1303**, and **FAES 1319** performed very well at several locations as well. **Meyer** did perform well at a few locations, such as Fayetteville, AR, but finished outside the top statistical group, and in the bottom third of all entries at most southern locations in 2017, like 2016. **Zeon** performed well at Fayetteville, AR, and Dallas, TX, consistently holding its own against the new experimentals at this and a few other locations. But like **Meyer**, **Zeon** also fell out of the top statistical group at most locations.

2013 NTEP Zoysiagrass Test at Tucson, AZ, showing winter color differences in February, 2018.

Ancillary trials of traffic, drought and shade tolerance yielded good data over the last few years of this trial. The College Station, TX, site imposed significant drought stress on the entries over a three year period, rating turf quality and percent ground cover to measure drought tolerance. **FAES 1305**, **Zeon**, **FAES 1329**, **A-1**, **FAES 1319** and **DALZ 1301** rated the highest for turf quality in 2017 under drought conditions.

Traffic was again imposed on the zoysia entries at the Raleigh, NC, location. **09-TZ-54-9**, **FAES 1304**, **FAES 1312**, **DALZ 1302** and **FAES 1315** (and five other entries) had the highest percentage cover ratings at the end of the traffic season. Shade tolerance was tested at Riverside, CA, with excellent separation among entries. Entries like **09-TZ-54-9**, **09-TZ-53-20**, **DALZ 1303**, **FAES 1329**, **FAES 1309** and **FAES 1322** finishing in the top statistical group.

Diseases on zoysia are not as big a concern as with some other species, however certain diseases can cause significant damage. Dollar spot and large patch are two of the diseases that can infect zoysia, with data in 2017 from Raleigh, NC, and Citra, FL. **10-TX-12-54**, **FAES 1319**, **FAES 1312** and **11-TZ-4321** had high dollar spot tolerance ratings at both locations in 2017.

Large patch or zoysia patch (Rhizoctonia solani) was noted at Fayetteville, AR, in 2017. The entries with the least large patch damage in 2017 include **FAES 1319**, **09-TZ-54-9**, **FAES 1328**, **FAES 1315** and **FAES 1317**.

Warm-Season Putting Green

In the late 1990s, NTEP and USGA collaborated on a trial to evaluate creeping bentgrass and bermudagrass on putting greens situated at golf courses. The purpose of that trial was to evaluate putting green cultivars under actual golf course putting green conditions. For bermudagrass, eight golf courses were chosen in locations as varied as Florida, California, Missouri and other sites. Data collected from that trial (*http://www.ntep.org/reports/bg98o/bg98o_02-10f/bg98o_02-10f.htm*) showed that bermudagrass could work well as a replacement for creeping bentgrass in the lower transition zone and southern U.S. That trial contained seven bermudagrasses, several of which have become well established in the golf turf industry.

More recently, the USGA is interested in identifying warm-season grasses that can provide acceptable putting surfaces where course owners want to save water, pesticide and fertilizer inputs. In addition, the USGA is interested in evaluating potential new putting green grasses that can be mowed higher, do not require as much cultivation and vertical mowing, but still provide a good quality playing surface. Hence, the idea for a new

collaborative trial that we established in 2013.

A new twist on this trial is that we have included not only bermudagrass, but also zoysiagrass and seashore paspalum. Seashore paspalum has been utilized on putting greens for the last decade or so, but zoysiagrass has almost no history as a putting green surface in the U.S. (zoysia has been a mainstay of 'summer' putting greens in Japan for decades). Including three different species in one trial offered challenges, particularly in management specifics that may differ from one species to another. However, eleven trial cooperators (seven at university sites, four on golf courses) felt up to the challenge and the trial was born.

One of the goals of the trial is to maintain consistent putting green speeds of at least 9 feet on the stimpmeter. This speed is adequate for most mid-level public and private courses where reduced maintenance inputs and costs are necessary for the course to be profitable. How to maintain that speed is up to the site manager (or golf course superintendent), but a set of guidelines were developed to help manage the trial. In addition, it was determined that since some locations could suffer winter kill each year, turf covers would be provided to those locations and would be used as standard maintenance practice (adopting what a mid-level golf course may do to protect their investment). The use of covers came into focus the first winter, with the severe cold temperatures.

As explained over the last few updates, despite the covers that were used at several locations, winter injury from 2013-14 was significant at some locations. This winter injury caused NTEP to replant some or all entries at four locations in summer 2014. Therefore, establishment data collected during the trials' first year (2013), was collected again at several locations in 2014. And several trial locations did not establish properly, or were set back by the winter of 2013, therefore, only a small amount of quality, density, disease and ball roll data could be collected during the first two years. The winter of 2014-15 was also colder than normal in some locations, which delayed some entry development and hence, collection of some of the more advanced data parameters. Also, various issues led to the unfortunate abandonment of the trial at Tequesta, FL.

In this final year of the trial, **MSB-264** continued its top performance by finishing in the top statistical group for turf quality at all eight locations submitting data. **08-T-18** and **MSB-265** finished in the top statistical group at seven locations. **OKC-13-78-5** also demonstrated good turf quality at several locations, with top statistical group performance at five sites. Significant differences in appearance ratings such as genetic color, density and leaf texture were noted among entries, which largely led to the quality ratings separation. Interestingly, fall color retention ratings showed significant differences, but they varied by location. In other words, an entry may exhibit good late fall, or even winter growth at one location, but not at another location.

Generally, less separation was noted among zoysia entries, than their bermuda counterparts. For zoysia in 2016, several experimental entries, particularly from the Texas A&M-Dallas (DALZ) University research program, produced turf quality that rivaled many of the bermudagrasses. **DALZ 1308**, one of the best zoysia entries the first four years, showed consistent performance in 2017 with top statistical group finishes at several locations. **DALZ 1306** and **DALZ 1307** also performed well overall. Many of these entries performed as well or better than **Diamond**, the original zoysia putting green cultivar.

The two seashore paspalum entries showed reasonable quality throughout the trial period. Both **UGA 143** and the standard entry **SeaDwarf** performed very similarly at most locations in 2017 with no statistical difference for turf quality among the entries. Also, as expected, both seashore paspalum entries died at the northern locations of Lexington, KY, and Bloomington, IN, and did not perform well at the Richmond, VA, location.

Ball roll measurements were collected at six locations in 2017. As in past years, most locations did not record ball roll distances that met our minimum threshold of about 100 inches of roll (250 cm) using the stimpmeter (on at least one rating date). Tucson, AZ, and Mississippi State, MS, were the only locations to achieve ball roll distances on bermuda of at least 100 inches on any rating date. The bermuda entries **FAES 1302** and **CTF-B10** delivered 100-inch ball rolls on five of six rating dates.

In the first few years, none of the zoysia or seashore paspalum entries rolled at least 100 inches, however, that changed in 2016. In 2017, a few zoysia entries had 100+ inch ball roll ratings on one date at Tucson, AZ, while **DALZ 1308** had showed ball roll distances of 100 inches on two rating dates in Tucson. No other zoysia or seashore paspalum entry had a 100 inch or greater ball roll at any location in 2017.

St. Augustinegrass and seashore paspalum cultivar development was fairly limited in the U.S. for a long while. The situation changed in the early to mid-2000s when new plant breeders were hired at southern universities like Texas A&M, University of Florida and North Carolina State University. Now, with those folks in place and with a major federal (USDA) grant from the Specialty Crop Research Initiative (SCRI), an increase in breeding of these two species, along with bermuda and zoysia, is occurring across the southern U.S. Within a few years, growers and consumers will see new cultivars of St. Augustinegrass and seashore paspalum in the marketplace. These new cultivars will have improved drought and salt tolerance, as well as

Harvesting TifTuf bermudagrass at Super Sod in Georgia.

other improvements. To evaluate some of those new experimental grasses that may make the marketplace, NTEP initiated new trials of St. Augustinegrass and seashore paspalum in summer 2016. The first data from those trials (2017) is now available and is discussed below.

St. Augustinegrass

St. Augustinegrass is a species where several older cultivars are still competitive in the marketplace. **Floratam**, developed by the University of Florida and Texas A&M and released in 1973, **Raleigh**, a cold tolerant cultivar and newer releases **Mercedes** and **Palmetto** still dominate the U.S. market. In some areas, sod producers grow and market their own local selections while there are still common-type cultivars, like **Texas Common** sold extensively in some markets.

Our newest St. Augustinegrass trial includes three standard entries (**Floratam**, **Raleigh**, and **Palmetto**) and twenty-four experimental entries, planted at ten locations. Turf quality data from the first full year of evaluations (2017) showed several entries often outperforming the standard entries. However, none of the entries were in the top turf quality statistical group at all six reporting locations. **XSA 10403** was the top entry at Citra, FL, and Raleigh, NC, while also finishing in the top statistical group at Starkville, MS. **DALSA 1502** was also an excellent entry in 2017 finishing in the top turf quality statistical group at four of the six locations. **FSA 1601** and **DALSA 1404** were top performing entries at two locations each. In general, it seems there are many new experimental St. Augustinegrasses that may rival, and eventually replace standard entries such as **Floratam** and **Raleigh**.

Seashore Paspalum

Seashore paspalum is known for its salt tolerance, however some cultivars are valued for their turf quality as well. NTEP started testing of seashore paspalum for the first time in 2007. Eight new entries plus two standards are included in the new seashore paspalum trial, planted at eight locations in 2016.

Summarized turf quality data from 2017 at six locations shows good performance by several new experimental entries. **UGP 73** was the top performing entry at Stillwater, OK, and College Station, TX, in 2017, while also finishing in the top statistical group at Fayetteville, AR, Riverside, CA, and Starkville,

MS. **UGP 94** also performed well with top statistical group finishes at four locations. Surprisingly, **Salam**, a standard entry, was the top performer at Riverside, CA, and Starkville, MS. Another standard entry, **Sea Isle I** was in the top statistical group at four locations. With the cold January temperatures of 2018, and the temperature swings of late winter through spring 2018 in much of the eastern U.S., the results for both the seashore paspalum trials could change significantly this year as data from winter survival and spring performance are collected.

Buffalograss

There has not been sufficient interest to start a new buffalograss trial, therefore, the data that we compiled from 2002-2006 is the most recent we have available. Considering the four years of data from the 2002 trial, cultivar performance depended mainly on geographical location. The vegetative cultivar **Density** had high quality ratings in the southern locations of Tucson, AZ, Riverside, CA, and Dallas, TX, with lower turf quality ratings, relative to other entries, at more northern locations. **Legacy**, another vegetative entry, had the highest quality rating at Logan, UT, Manhattan, KS, and Lincoln, NE. Several seeded entries again performed well during the trial period, with **Tech Turf 1** and **Bowie** each performing well at more than one location. In addition, **Tech Turf 1**, **Density** and **SWI 2000** were consistently the fastest to establish.

A few buffalograss cultivars have been released since our last NTEP trial was initiated, two of those cultivars from the University of Nebraska. **Prestige** is a commercially available vegetative cultivar released in 2003. And most recently, the University of Nebraska released the seeded cultivar **Sundancer**.

Centipedegrass

Centipedegrass performs well in the more acidic, dense soils of the southeast U.S. and does so with probably the least maintenance required of any warm-season species. Curiously though, improved centipedegrass cultivars have been slow to become commercialized. In fact, NTEP has never tested centipedegrass due to the lack of a significant number of cultivars available. Seeded centipedegrass cultivars are dwarfed in the marketplace by common centipede, the major centipedegrass seed sold. A new cultivar, **TifBlair**, reportedly more cold-tolerant than other cultivars, has been commercialized within the last several years.

Kevin Morris is executive director of the National Turfgrass Evaluation Program (NTEP).

All photos by Kevin Morris.

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THE A-LIST PROMOTES SUSTAINABLE, LOW-INPUT TURF SOLUTIONS

By Jeremy Husen

Turfgrass breeders always have focused on developing varieties that were drought resistant and heat tolerant, but those traits often took a back seat to more aesthetic ones. Drought conditions across much of the country refocused their efforts and brought national recognition to the importance of these traits. As interest in sustainable, low-input turf solutions grew, a group of seed companies and university researchers focused on developing an entity for identifying and promoting such varieties. The group determined an independent resource was needed to help consumers and end users choose varieties and products that would maintain acceptable turf quality with less water and fewer inputs. The Alliance for Low Input Sustainable Turf (A-LIST) was born. The mission of the A-LIST was clear: through rigorous, ongoing, transparent testing, develop, maintain and communicate to the public a list of varieties that met the criteria for low-input success.

The A-LIST was established as a 501(c) non-profit organization that would act independently and provide transparency for the program. As the organization grew, an Executive Director and Director of Research were hired. The organization is funded through its membership and utilizes those funds for trials and outreach, along with supporting other associations in the turf industry who promote sustainability.

Independent university trials are critical for the approval of A-LIST varieties.

Research/Approved Varieties

The A-LIST founding members (Mountain View Seeds, DLF Pickseed/Seed Research of Oregon and Lebanon Seaboard) worked with Rutgers University, University of California at Riverside, North Carolina State University, and Purdue University to develop standard research protocols that would test varieties under low-input conditions and help determine which varieties would subsequently be approved. To ensure the integrity and independence of the program, testing is conducted by nationally recognized cooperators, selected on a regional basis to include environmental adaptability. These cooperators also participate on an Advisory Committee to further influence protocols.

Current university cooperators include the original four along with the University of Connecticut, Utah State, University of Wisconsin and Michigan State. Active participation and support of the cooperators is a cornerstone of the A-LIST.

A-LIST trials are intended to evaluate drought stress and response to low-input management. These results are then combined with turf quality ratings from NTEP trials to determine a variety's final score. A-LIST trials consist of 3-foot by 5-foot or 4-foot by 6-foot plots. Plots are replicated three or four times, depending on the area available, in a randomized complete block design.

No fungicides are used except for Pythium control if necessary at establishment to prevent seedling damping off. No herbicides are used except a single application of mesotrione at establishment if necessary to prevent weeds in the seed bed. Fertilization includes 1.5 pounds of Nitrogen (N) per 1,000 square foot to start and 1 pound of N per 1,000 square foot the following spring unless Best Management Practices (BMP) for low input turf in the state differ (as determined by the university cooperator). Mowing height used is appropriate for the species and region.

Evaluation of summer stress tolerance begins approximately July 1 (cooperator's discretion regarding local climatic conditions). This timing allows for evaluating the combined effects of both heat and drought.

Irrigation is withheld until the last plot(s) have reached 25 percent green cover; then the trials are re-watered. In the Western US, plots are maintained at 60 percent evapotranspiration (ET) during the summer months.

A-LIST evaluation of trials includes the following:

- ***Turf Quality:*** Monthly visual rating throughout the year on a scale of 1 to 9, where 9 represents the most desirable turf quality.
- ***Density:*** Recorded digitally every month after turf is established.
- ***Percent Green Cover:*** Recorded digitally every month after turf is established. During dry-down period, percentage of green cover will be recorded a minimum of once per week. Withhold irrigation until the last plot(s) have reached 25 percent green cover then re-water with an initial two-inches of water followed by one inch per week watering.
- ***Recovery Time:*** Time to 100 percent green-up recorded digitally a minimum of once per week.
- ***Additional Data Collection:*** Other data like disease ratings, etc. was collected at the discretion of the cooperator.

To become an "A-LIST Approved Variety," a variety must have demonstrated superior performance in A-LIST trials as defined by:

- The top LSD (Least Significant Difference) group for drought tolerance as measured by percent green cover for each of two years in at least two locations.
- Acceptable or better turf quality for each of the two years in at least two locations.
- Have been entered in an NTEP trial for the species. For new cultivars that have met the approval standards for performance in A-LIST trials, final approval will be withheld until the cultivar(s) have been entered in an NTEP trial.

Varieties denoted as 'promising' are grasses that did well for both drought tolerance and turf quality in the first year of the trial(s) by meeting all the standards for approval (except they lack two years of field data) in at least two locations as required for full approval. Status as a 'promising variety' does not guarantee final approval. Promising varieties are reevaluated after the second season of field data and must meet all the standards for approval.

Products that contain A-LIST approved varieties also must meet strict standards. All blends that carry the A-LIST approval must be comprised of a minimum of 65 percent approved varieties. The remainder must be bonafide turf varieties (no forage varieties, no 'variety not stated' material, no uncertified common varieties).

A side-by-side comparison of an approved A-LIST variety (right) and a standard entry at the UC Riverside trial location showing response to 40 percent deficit irrigation.

Outreach

As well as promoting the approved varieties, the A-LIST helps to help bring national attention to the need for the use of sustainable turf products, serving as ambassadors for turfgrass. Turfgrass is under attack. It seems to be an easy target for politicians attempting to show their support for better stewardship, with some municipalities paying home owners for the removal of their lawns. However, it's their lack of understanding the benefits of turfgrass that has them pursuing a bad solution.

TPI and The Lawn Institute (TLI) often are the best places to find information to combat the misconceptions about turfgrass. The A-List joins them in this battle. As I've talked to groups across the country, I've found they are surprised to hear of the numerous benefits of turfgrass beyond the aesthetic ones. The cooling, erosion control, and filtering effects of turfgrass and its ability to sequester carbon and store rain water are benefits seldom mentioned when talking about removing a lawn. Most importantly, I explain to these groups that planting the right species, choosing varieties that require less inputs, and managing them correctly, show better stewardship than replacing grass with rocks.

The sod industry has long been known as the "early-adopters" in the turf industry. At the outset, the A-LIST determined that a partnership with TPI and its members would lead to a coordinated effort to bring awareness to the program and its benefits. As the A-LIST has grown, so has its support for TPI. This year, the A-LIST was a major sponsor for TPI's International Education Conference & Field Day in Tucson, Arizona, and is committed to supporting TPI in the future. The A-LIST also supports other industry associations including the Sports Turf Mangers Association (STMA) and the Golf Course Superintendents Association of America (GCSAA). We know that our voice is small, but if we all work together we can promote turfgrass as a sustainable part of any landscape whether it be a football stadium, commercial facility or yes, even a home lawn.

Jeremy Husen is the executive director for the A-LIST. He concurrently serves as the director of marketing for MSH Associates, an agricultural-based marketing agency headquartered in Oregon's Willamette Valley.

All photos courtesy of A-LIST.

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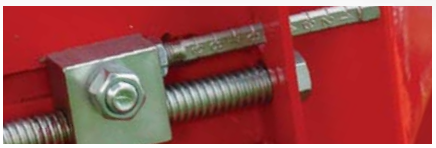

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ROOTED IN **RESEARCH**

DOES VARIABILITY WITHIN SPORTS FIELDS **INFLUENCE GROUND-DERIVED INJURIES?**

By Chase M. Straw, PhD; Christine O. Samson; Gerald M. Henry, PhD; and Cathleen N. Brown, PhD. Edited for "Rooted in Research" by Casey Reynolds, PhD.

Sports fields often exhibit within-field variations due to climatic conditions, field construction, field management, and foot traffic patterns from field usage. This is true on natural turfgrass sports fields where variation may derive from moisture, compaction, soil texture, turfgrass density, etc., while in plastic (synthetic) sports fields this variation may be due to fiber length or wear, crumb rubber distribution, poor grooming or maintenance practices, etc.

Variations within a field could influence the playing surface predictability and require athletes to make abrupt or frequent adjustments that lead to increased ground-derived injury occurrence. For example, changes in surface hardness can affect biomechanical loads and movement by athletes causing them to adjust leg stiffness when running. The ability to quickly change leg stiffness helps an athlete maintain dynamic stability once field conditions change; conversely, the inability to do so may make them susceptible to injury. Furthermore, changes in traction can influence sudden stops and pivoting. This study introduces a new methodology aimed at evaluating the potential relationship between within-field variations of turfgrass sports field properties and ground-derived athlete injuries.

To date, recent studies have compared objective field data to injury occurrence on turfgrass sports fields based on the use of penetrometers and Clegg impact testers to correlate surface hardness to injury occurrence at various locations within sports fields. While these tests are extremely helpful for testing variations among surface hardness within fields, they neglect the influence of playing surface predictability.

Global positioning system-equipped data acquisitions are becoming prevalent in the turfgrass industry to obtain geo-referenced field data for the creation of spatial maps and identification of within-field variability. More intensive sampling than the aforementioned studies is required to detect small-scale spatial variations. Maps of field properties can not only be used for precision turfgrass management, but they may also be useful to evaluate the influence of within-field variations on injury occurrence. Therefore, researchers at the University of Georgia (UGA) conducted a preliminary study to investigate whether a relationship between within-field variations and ground-derived injuries (i.e. any injury directly caused by the playing surface) exists.

A Clegg impact tester (Clegg hammer) used for measuring surface hardness.

The gauge for a Clegg impact tester.

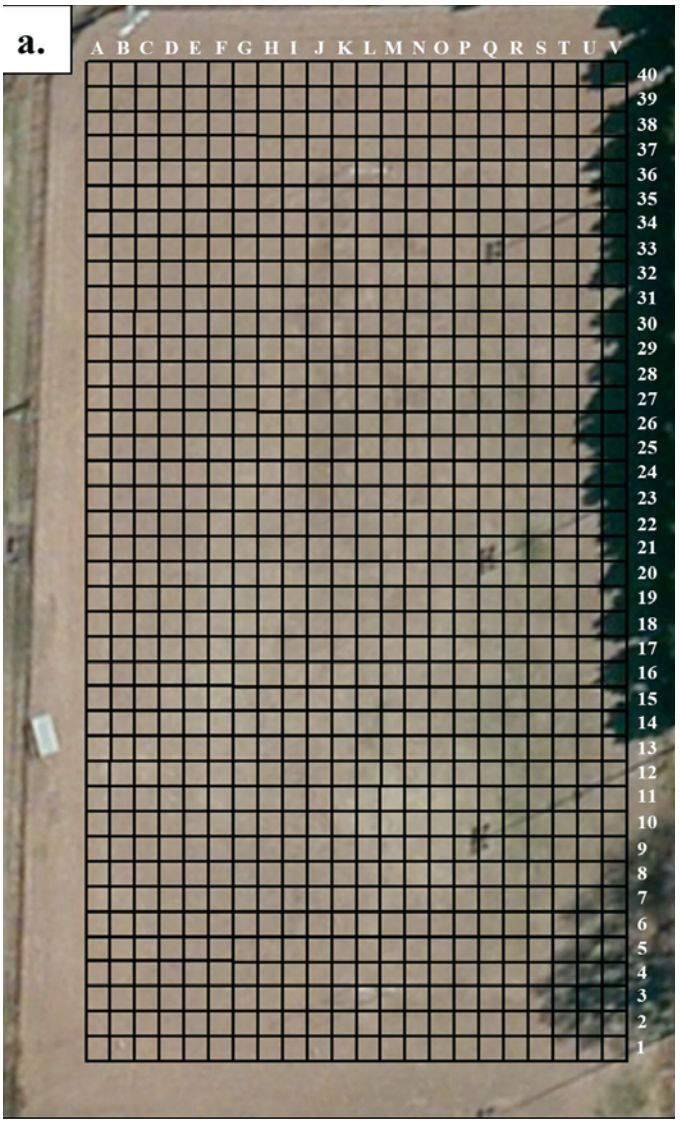
A two-year study (each comprised of a fall [August–November] and spring [January–May] period) was conducted at UGA, a university in the southeast United States, on Club and Recreational fields. Two fields were selected for use, one of which was constructed on a 25 cm (9.8 inch) sand cap with clay beneath and the other on a sandy loam native soil. The fields each had hybrid bermudagrass (*Cynodon dactylon* L. (Pers.) × *Cynodon transvaalensis* Burtt-Davy] mowed at 2.5 cm (0.984 in.). Participants were Club Sports athletes from the

university's men's and women's rugby and ultimate frisbee teams, as well as the women's lacrosse team. Athlete experience ranged from novice to experienced and their average age was approximately 20 years old.

Injury surveillance was conducted by weekly online questionnaires that were emailed to athletes to identify if an injury occurred during the previous week and to determine the participation level. Injury was defined for the athletes as "a physical complaint (pain, discomfort, etc.) that resulted from a team's practice or competition, whether or not medical treatment was sought". Questions were developed based on previous studies to gather information on injury mechanism, classification, types, and treatment. A geo-referenced alphanumeric grid (3 square meter [32.3 sq. ft,] cells) was created over each field using ArcMap and provided in the questionnaires to report where in the field an injury occurred. Corresponding letter and number signs were placed along a fence in the fields to aid the athletes in identifying each grid. Upon the study's completion, triangular consensus validation was conducted between three investigators to discuss the validity of the self-reported injuries and to decide which injuries to keep for analysis. Only ground-derived injuries were considered, excluding such injuries caused by contact with another athlete or other objects. We included acute and overuse injuries since contact with the ground was either acute or repetitive over time.

Soil moisture (volumetric water content) and turfgrass quality (normalized difference vegetation index; NDVI) were measured either weekly or bi-weekly with the Toro Precision Sense 6000. The PS6000 is a mobile, multi-sensor data acquisition unit that is towed behind a utility vehicle. It simultaneously measured both field properties while traversing the fields. Surface hardness and turfgrass shear strength (i.e. rotational traction) of the fields were measured bi-weekly during the study with handheld data acquisitions.

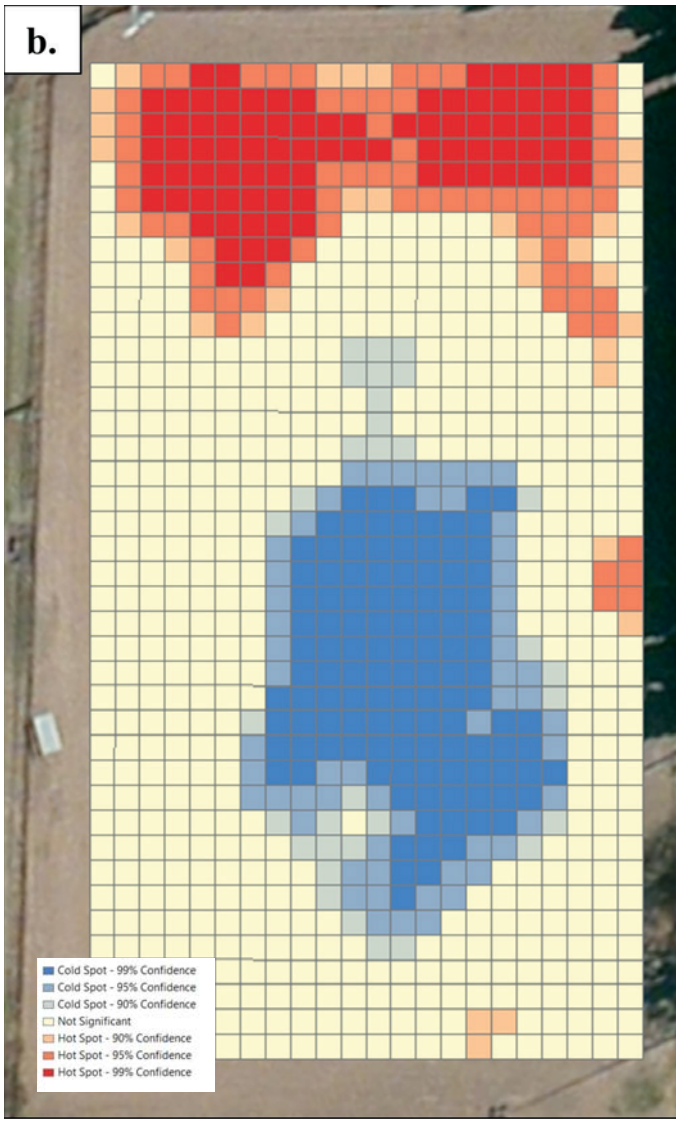
Hot Spot maps were created for all field properties each month using ArcMap to identify within-field variability of each field property by first interpolating the geo-referenced data points. This analysis takes the local sum of a cell and all its neighbors and compares it proportionally to the sum of all cells on the field. The result is a Gi* statistic for each individual cell that can be used to assess significance. A positive and significant Gi* indicates a "hot" spot (i.e. a cell with a high value relative to all cells) and a negative and significant Gi* indicates a "cold" spot (i.e. a cell with a low value relative to all cells). The monthly hot and/or cold proportions from both fields were averaged in order to have an overall expected proportion for each field property. Only months when an injury occurred were considered



The illustration of the geo-referenced alphanumeric grid (3 square meter cells) that was provided to athletes in questionnaires to report where injuries occurred on the field (corresponding letter and number signs hung along a fence in the fields).

The Toro Precision Sense 6000 is used for measuring soil moisture (volumetric water content) and turfgrass quality (normalized difference vegetation index), as well as geo-referencing all data.

Twenty-three ground-derived injuries were reported during this two-year study. Several occurred in practice (16/23; 70 percent), rather than games (6/23; 26 percent), and one was reported as "other." They were mainly to the



...And (b) a hot spot map (red and blue cells represent significantly high and low values within the field, respectively, and yellow cells are considered "average" values).

lower extremities (17/23; 74 percent), but some were to the upper extremities (4/23; 17 percent) and the head or face (2/23; 9 percent). Athletes returned to play the same day 65 percent (15/23) of the time and only 17 percent (4/23) sought medical attention after being injured. The majority of athletes that reported an injury had experienced the same injury at some point prior to the study (14/23; 61 percent), and three of them suffered multiple injuries during the study.

There were no significant differences between observed and expected proportions with respect to surface hardness and turfgrass shear strength hot and/or cold spots. Other ground-related studies have primarily considered the causation of injury related to surface hardness and traction but did not consider within-field variations of individual fields. Those studies provide minimal evidence of a significant relationship between surface hardness and injury occurrence.

A non-significant trend was observed towards an increased risk of ACL injury on harder grounds in Australian Football, as well as an increased risk for injury in low/normal hardness (30-69 g) and unacceptably high hardness (> 120 g) in community-level Australian football. Our within-field hardness levels varied from 39 to 123 g during months when injuries occurred. However, the observed proportion of ground-derived injuries that occurred in hot and cold spots was not different than the expected proportion, indicating there was not a higher or lower injury occurrence in areas of significantly high or low hardness values within the fields.

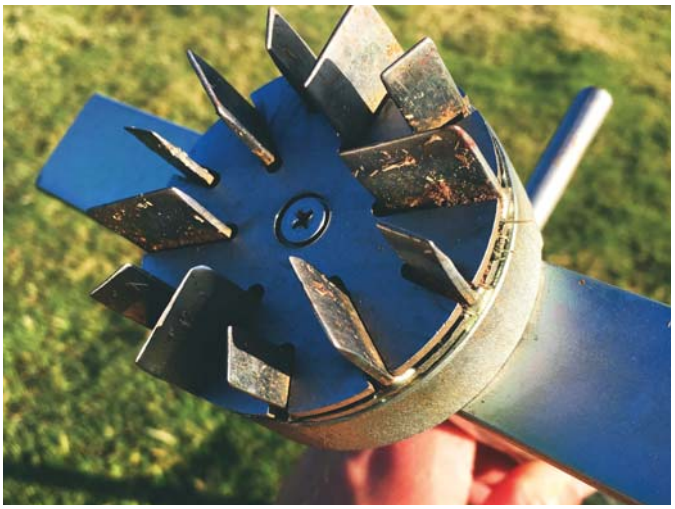
In this study, soil moisture hot spots and turfgrass quality cold spots suggests that further exploration is necessary to determine the impact of these field properties on ground-derived injuries. Our observed proportion of ground-derived injuries was significantly higher than the expected proportion in soil moisture hot spots and turfgrass quality cold spots, indicating there was a higher injury occurrence in these areas. The observed and expected proportions for turfgrass shear strength were not different, indicating there was not a higher or lower injury occurrence within hot or cold spots of this field property. The highest proportion of injuries occurred within a hot or cold spot of turfgrass quality (15/19; 79 percent), followed by soil

The Turf-Tec Shear Strength Tester is used for measuring turfgrass shear strength.

moisture (16/21; 76 percent), and then surface hardness and turfgrass shear strength (13/ 23; 57 percent).

A trend of injuries occurring along edges of hot and cold spots was observed with respect to turfgrass quality (11/15 injuries), soil moisture (14/16 injuries), and surface hardness (9/13 injuries). Approximately half of the injuries occurring in turfgrass shear strength hot or cold spots were either along an edge (6/13 injuries) or fully within (7/13 injuries).

We hypothesized changes within a field may lead to increased injury occurrence due to uncertainty of the playing surface. The majority of injuries that occurred in significantly high and low areas of soil moisture, turfgrass quality, and surface hardness were along the edges of hot and cold spots. This may imply an increased injury occurrence in transition zones when an athlete moves from an "average" area (i.e. non-significant area) to a hot or cold spot of these field properties, as opposed to an injury occurring fully within one of these areas. Additional research is needed with a larger injury sample size and more fields to further test the hypothesis.



The underside of the Turf-Tec Shear Strength Tester.

This preliminary study investigated if there was an association between within-field variability and ground-derived injuries on recreational-level sports fields. We introduced a methodology to more accurately match injury locations with objective site-specific field data. Ground conditions in injury studies have typically been subjective and placed into broad categories (e.g. "good," "muddy," or "slippery") with minimal details provided on where or how they were obtained. Future studies must use objective measurements, so methodologies are repeatable and results between studies can be compared.

Injury numbers were low, but a higher occurrence of ground-derived injury was evident in areas of significantly high soil moisture and low turfgrass quality within the study fields. Notably, most injuries that happened in significantly high or low areas of turfgrass quality, soil moisture, and surface hardness occurred along edges of hot and cold spots.

A game of Ultimate Frisbee is in action on one of the two University of Georgia-Athens Club and Recreational fields used for this research.

These results demonstrate that future studies should consider within-field variations of natural turfgrass sports field properties when researching the etiology of ground-derived injuries, because there could be a potential relationship.

All field properties that were measured correlated with one another to some degree, so the increased injury occurrence in areas of high soil moisture and low turfgrass quality may be more related to their combined interactions with other field properties, rather than themselves individually. This stresses the importance of evaluating more than one field property, because the occurrence associated with different types of injuries may vary between field properties or combinations of field properties.

Management strategies should also focus on improving field uniformity, perhaps with Precision Turfgrass Management or by better monitoring and modifying field use (e.g. set time limits or rotate field use). As with any playing surface, natural or plastic (synthetic), management techniques to improve field uniformity and consistency are important in improving safety and playability.

This research was performed by the University of Georgia Turfgrass Research Program and was published in the *European Journal of Sport Science*, DOI: 10.1080/17461391.2018.1457083

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All photos courtesy of the researchers.

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A DAY ON THE HILL

By Casey Reynolds, PhD

Representatives from the National Turfgrass Federation (NTF) made a trip to Washington, D.C. in early May to discuss the impacts and importance of the natural turfgrass industry on the United States economy, environmental health, and urban well-being. The timing of this trip came during the U.S. House of Representatives and Senate negotiations for the 2019 U.S. Farm Bill, which is the primary legislative tool that affects U.S. agriculture and food policy.

The objectives of this visit were to introduce the natural turfgrass industry to policy-makers and express the importance of federal support, in the form of the Farm Bill language and appropriations, for facing current and future challenges including water use, drought, pests, public perception, etc.

TPI Executive Director Dr. Casey Reynolds makes a key point during the NTF meeting with USDA Secretary Sonny Perdue.

Estimates place turfgrass as potentially the fourth largest crop in the U.S. at over 60 million acres and, unlike many agricultural crops, it is present in every city, county, district and state in America. Turfgrass maintenance alone is estimated to be a $60 billion industry nationwide, yet federal funding for turfgrass science and research lags far behind other major agricultural crops. Currently, with less than $750,000 of dedicated annual federal support through the United States Department of Agriculture-Agricultural Research Service (USDA-ARS), turfgrass scientists receive approximately 0.00125 percent of the industry's economic impact in maintenance alone.

Unlike many agricultural crops, turfgrass is present in every city, county, district and state in America.

Over the course of the visit, NTF visited with congressional republicans and democrats from Georgia, Utah, Arizona, Kansas and Maryland, and with representatives from the USDA. The message delivered was that university scientists have great success in returning value on each dollar of privately- or publicly-funded grants. However, there are currently few grant opportunities at the federal level large enough to support large-scale projects in turfgrass genomics; developing hardier varieties that tolerate heat, drought, salt, etc.; and understanding the ecosystem services of the natural turfgrass industry on a national scale. In order to explore these areas, it's important for policy-makers to understand that turfgrass science is an integral part of the agricultural industry and should be recognized as such. It collaborates with other sectors of science and is one of the most dynamic crops in agriculture.

Dr. Brian Schwartz, assistant professor of turfgrass breeding and management at the University of Georgia, the home state of the U.S. Department of Agriculture Secretary Sonny Perdue, highlighted the value that new varieties bring to turfgrass producers and the industry as a whole. Dr. Reynolds pointed out that even though many people think of natural turfgrass as present in urban and suburban communities, the turfgrass producers who grow and harvest this crop are farmers that face many of the same challenges as the farmers of any other agricultural crop.

Federal recognition in the Farm Bill and support of turfgrass research to produce new varieties that meet the needs of homeowners, landscapers, athletic field managers, and golf course superintendents will not only bring added value to turfgrass producers, but also to all end users who have a demand for newer, lower input turfgrasses. As Secretary Perdue convincingly stated in response to NTF, "You don't have to convince me of the value that farmers bring to society."

Language in Title VII of the current House of Representatives Farm Bill states the case for the National Turfgrass Research Initiative, and NTF will continue to pursue these efforts. The current Farm Bill, the Agricultural Act of 2014, is set to expire at the end of 2018.

On-hand for this National Turfgrass Federation outreach, along with Dr. Reynolds and Dr. Schwartz, were Kevin Morris, president of NTF, who also serves as the executive director of the National Turfgrass Evaluation Program (NTEP); Dr. Mike Kenna, director of green section research for the United States Golf Association (USGA); Dr. Joe DiPaola, principal of Agronomic Intelligence, LLC; and Mark Johnson, associate director of environmental programs for the Golf Course Superintendents Association of America (GCSAA). Jonathan Moore, a public affairs consultant, and Robert Helland, director of congressional and federal affairs for the GCSAA, also were present and were vital to the success of the visit. Special thanks go to Kevin Morris for taking a lead role in this endeavor.

USDA Secretary Sonny Perdue (facing camera) and NTF President Kevin Morris shake hands.

During the NTF meeting with USDA Secretary Sonny Perdue industry representatives emphasized that turfgrass science is an integral part of the agricultural industry and should be recognized as such.

Casey Reynolds, PhD, is executive director of Turfgrass Producers International.

All photos courtesy of the United States Department of Agriculture.

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TRIBUTE TO DR. JAMES B BEARD

Compiled by Suz Trusty

Dr. James B Beard passed away on May 14, 2018, in Bryan, Texas, at the age of 82.

Nearly everyone in the turfgrass industry has heard of Dr. James B Beard. A renowned consultant and lecturer and prolific author of books, scientific research papers and technical articles, he has typically been deemed the world's leading authority on turfgrasses and turfgrass science.

Dr. Beard was born on September 24, 1935, in Piqua, Ohio, and grew up on the family farm near Bradford, Ohio. He graduated from The Ohio State University in 1957 with a Bachelor of Science in Agronomy. He earned an MS in Crop Ecology in 1959 and PhD in Turfgrass Physiology in 1961, both from Purdue University.

Emerald Valley Turf Nurseries President Robert Daymon and Farm Manager Dick Garrell welcome county agents and MSU professors who led the Emerald Valley Field Day tour on July 12.1967. Left to Right: Donald D. Juchartz, Wayne County agriculture extension agent, Wayne, MI; Dick Garrell; Robert Daymon; Dr. James B Beard; Duane Girbach, Livingston County agriculture extension agent, Howell, MI; Dr. K. T. Payne; Dr. Bob Lucas; and Dr. Paul Ricke. Photos from the TPI Archives

He held a research-teaching position at Michigan State University (MSU) from 1961 to 1975. He held a research-teaching position at Texas A&M University from 1975 to 1992. Dr. Beard was the president and chief scientist of the International Sports Turf Institute, which he founded in 1992, and, starting in 1993, served as professor emeritus of Turfgrass Science at Texas A&M.

Many who knew Dr. Beard also know his wife and behind-the-scenes business partner, Harriet. She assisted in multiple non-paid roles in many University and turfgrass organization outreach efforts, accompanied him on his international travels—and typed every word he ever wrote.

Michigan State University and ASPA

Dr. Beard's position at MSU began just prior to the sod production industry "exploding" in Michigan. Most growers had been producing onions and carrots on the organic soils referred to as "muck farms." When sales fell off, many switched over to turfgrass sod and needed technical assistance on how to grow it.

As Dr. Beard had reported, "Dr. Joe Vargas, Dr. Paul Rieke and I had the first and only sod production research farms at the Rose Lake Experiment Station. Our research on the muck soils there matched the growing conditions of most of the Michigan turfgrass producers. We included a visit there in some of the summer field days and started a sod section at the MSU Turf Conference that drew attendees from across the U.S. and Canada."

Dr. Beard was instrumental in establishing the American Sod Producers Association (ASPA) which was renamed Turfgrass Producers International (TPI) in 1994 in response to its growing International membership and visibility. He had attended three or four different meetings with organizational attempts orchestrated by Ben Warren.

The official establishment of ASPA took place on July 11, 1967, in conjunction with an MSU Turfgrass Field Day. Following their visit to the MSU sod farm, a group gathered in the evening in the MSU animal science building and worked out the key organizational details. As Dr. Beard had reported, "Ben Warren, who had been the driving force in all this, sat in the background and I was there beside him. I felt very strongly that if their organization was going to succeed, it had to be established by the sod producers themselves. The academic arm needed to provide research data, technical support and the meeting facilities and opportunities to help them grow."

The second year's summer field day was held at Rutgers University. It returned to MSU the following year. Dr. Bill Daniels, from Purdue; Dr. Henry Indyk from Rutgers; and Dr. Jim Watson of the Toro Company also were deeply involved during those early days. Dr. Indyk served as the first executive director.

Dr. Beard's "Evolution of Turfgrass Sod" is included in the *History of Turfgrass Producers International*, which was

developed for the 40th Anniversary of TPI. Reviewing the decades covered in that publication reveals the depth of assistance Dr. Beard provided. He became TPI's second Honorary Member in 1975. Dr. Indyk was the first in 1973.

Part of the "academic assistance" Dr. Beard orchestrated included sod production research at the original MSU sod farm. Sod strength and transplant rooting were new concepts. Dr. Beard's MSU team established the criteria for both and developed the measurement techniques for them. They were the first to research the heating of sod during shipping.

Tributes Capture His Passion

Following Dr. Beard's death, tributes to him were issued throughout the turfgrass industry. Those included in this tributes section are excerpts from an article by John Reitman in Turfnet.com and an article by Howard Richman in GCMOnline.com. To read these articles as they originally appeared, go to: *https://www.turfnet.com/news.html/_/beard-brought-the-science-to-turfgrass-science-r1052* and *http://www.gcmonline.com/turf/2018/05/15/james-beard*

Joe Vargas, PhD, launched his career 50 years ago as a researcher at MSU. Vargas says, "Before him, we were spray-and-pray guys. Dr. Beard was the first real scientist to understand why things were happening, such as why there is stress in the plant. He did the research. The main thing he taught me was how to be a critical researcher and not just jump into something. I would go talk to somebody, which usually was him."

Dr. Beard demanded excellence and attention to detail, and that was reflected in how he ran field days and the Michigan Turfgrass Foundation annual conference. Al Turgeon, PhD, professor emeritus at Penn State University, remembers that, during his days as a graduate student at MSU, field days included a practice session in advance of the live event. "Everyone had a job and we practiced it," Turgeon said. "It was very professional."

"He was focused, congenial, respectful. He was a visionary when it came to building a strong research program across the board," says Paul Rieke, PhD, an authority on turfgrass soil and nutrition in his own right and a colleague of Beard's at MSU. "He was a very precise scientist. He clearly challenged the status quo."

"Dr. Beard influenced generations of students and young scientists with his many books, papers and presentations, as well as his encyclopedic knowledge of Turfgrass Science," said Bruce Clarke, PhD, of Rutgers University. "He was a good friend, mentor, and role model who set the bar exceptionally high. He will be sorely missed."

The James B Beard Turfgrass Library Collection

A press release from MSU's Turfgrass Information Center (TIC) and the MSU Libraries announced the donation of Harriet and Dr. James B Beard's collection of turfgrass research materials, valued at $2.2 million. Dedicated in July 2003, The James B Beard Turfgrass Library Collection "is generally acknowledged to be the finest personal compilation of turf-related material in existence. It includes international coverage of the turfgrass research and management literature, including books, periodicals, and technical reports."

Dr. Beard authored nine books, including *Turfgrass: Science and Culture*, which many call "the Bible for turfgrass managers." According to MSU, it was published in 1973 and, still in print, continues as the only true treatise ever written regarding turfgrass science. It remains the best-selling reference work in the field.

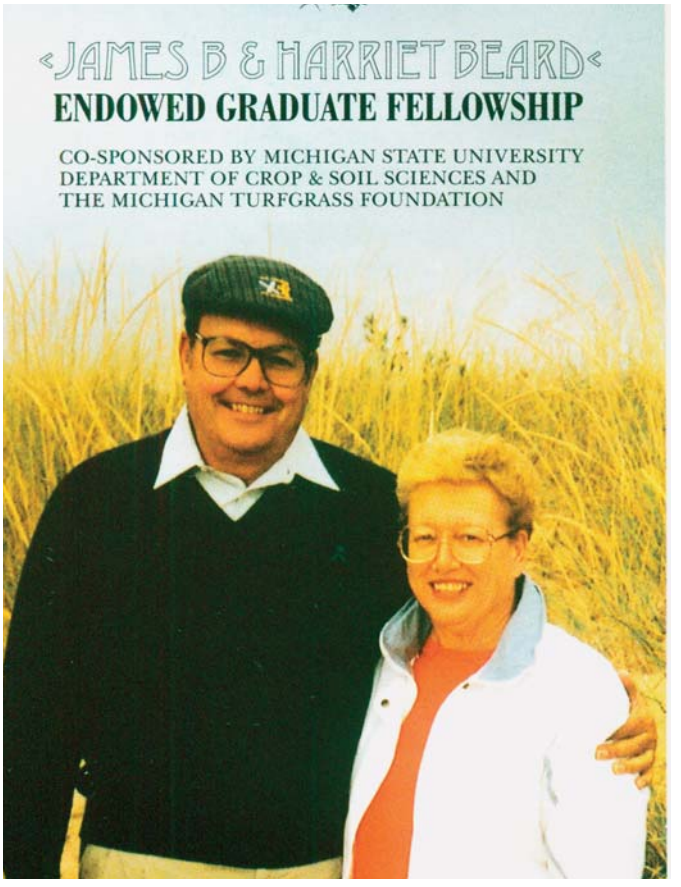
And later in the MSU release, "It was under the direction of Dr. Beard, and then-Library Director, Dr. Richard Chapin, that the MSU Libraries began to systematically collect printed turfgrass materials in the 1960s. In 1968, the personal collection of the late O. J. Noer, a pioneer turf agronomist, was added to the holdings through the O. J. Noer Foundation. The arrival of the Beard Collection makes MSU the strongest public repository of turfgrass literature in the world. Eventually, the Turfgrass Information File (TGIF) database will provide article-level access to all items within the Collections."

This photo of Dr. Beard, now in the TPI archives, shows him behind the podium at the ITRC in July of 2017, talking turfgrass.
Photo by Steve Trusty

Looking Back

Looking back, Dr. Beard and Harriet had expressed gratitude "… to have been blessed with a wonderful family and the opportunity to work and travel together." And Dr. Beard had reported, "The most fulfilling moments are the successes of my students, both undergrad and grad, American and foreign."

Many TPI members had an opportunity to see and visit with Dr. Beard when TPI's 2017 Summer Program was held in conjunction with the International Turfgrass Research Conference (ITRC) centered in New



The photo of Dr. James B and Harriet Beard on this brochure about the MSU endowed graduate fellowship named for them was one of their favorites.
Photo courtesy of the Dr. James B and Harriet Beard Collection

Brunswick, New Jersey, July 16-21, 2017. Dr. Beard's presentation on the "History of the International Turfgrass Society and the Legacy of James Watson," took place during the tribute to the late Dr. Watson on the evening of July 17. There is a fitting last photo of Dr. Beard, now in the TPI archives, showing him behind the podium at the ITRC, talking turfgrass.

For most of the 40 years that *Turf News* has been published, Dr. Beard served as its Science Advisor, with his name listed on the second page of the magazine, along with the TPI Board of Trustees and TPI's Legal Counsel. It was yet another role he fulfilled for TPI and another representation of his passion for upholding the 'science' in turfgrass science. It is with a heavy heart, yet with heart-felt appreciation, that TPI says goodbye to Dr. James B Beard.

Suz Trusty is co-editor of *Turf News*.

Editor's Note: Much of this information came from the Turf News article, "Dr. James B and Harriet Beard—Partners in an Amazing Journey," which appeared in the March/April 2017 issue. It provides more details on Dr. Beard and his over 50 years of support to TPI, its initiatives and its members. That article is available online, as an exclusive TPI member benefit, through the Turfgrass Information Center, or contact suztrusty@TurfGrassSod.org to have a PDF of the article emailed to you.

COLUMBIA RIVER seed

2018 NEW VARIETY RELEASE

Columbia River Seed will release an exciting new Kentucky bluegrass line following 2017 NTEP trials. Columbia River Seed has been submitting new varieties to the NTEP trials for 15 years and this year we are very excited to have 13 varieties being evaluated. Of the 13 varieties developed, two will be commercially released for the 2018 season and the rest will be available for 2019. We are confident that for turf managers who are looking for new, durable Kentucky bluegrass varieties that our new NAI-13-14 available from Landmark Turf and Native Seed and NAI-13-9 available from Jonathan Green Inc. in North America, Global Seed in China, and Columbia River Seed in Europe, will deliver. Both of these varieties have fantastic seedling vigor and superior wear tolerance. Plus they feature improved summertime performance with excellent stress recover. Contact us for more information.

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HAPPENINGS

TPI Family Mourns Loss

The extended TPI family joins past president Bob Weerts' family as they mourn the loss of Bob & Jennifer's youngest son.

Daniel Donavon Weerts, age 37, of Blue Earth, MN, passed away April 23, at his home. Daniel was born August 21, 1980, in Blue Earth, to Robert (Bob) and Jenifer (Wendt) Weerts. Dan graduated from Blue Earth Area High School in 1999. After graduation, he went to Tulsa, OK, for aviation training for one year before transferring to the University of North Dakota where he finished in 2005. On July 5, 2005, he married Taylor Wagner of Blue Earth in Hawaii. They lived in Aitkin, MN, from 2005-2012, where he worked for Blue Valley Sod and sold and owned Central Boiler Wood Stoves.

On October 8, 2008, they had their son, William. On January 18, 2012, they had their daughter, Amelia. They then moved back to the Blue Earth area where he continued to work for Blue Valley Sod. For the past three years, he has been a pilot for Adam's Office out of St. Paul. Dan had many interests. He loved being outdoors and photography. His greatest joy was being with his family.

Daniel is survived by his spouse; Taylor Weerts of Blue Earth, children; William "Will" and Amelia Weerts of Blue Earth, parents; Robert "Bob" & Jenifer Weerts of Winnebago, sister; Elizabeth (John) Schavey and their children Luke, Joseph, Adam of Winnebago, brother; Jonathan (Carol) Weerts and their children Gabriela, Donavon, Rhionna of Winnebago, in-laws, Jim (Carla) Wagner of Blue Earth, sisters-in-law; Kelsie (Tim) Garry and their daughter Kaydence of Fairmont, and Rylee Wagner of Woodbury.

Daniel was preceded in death by his paternal grandparents Donavon and Nadene Weerts, and maternal grandparents Don and Lavon Wendt. Funeral services were held on April 28, at Trinity Lutheran Church in Blue Earth.

Bob and his family appreciate your thoughts and prayers. A memorial fund has been established in the care of the Weerts Family for Will and Amelia's future endeavors. Donations can be sent to Patton Funeral Home, 400 East 14th Street, Blue Earth, MN 56013.

Turf Connections Wins TOCA Award

An article written as part of the overall marketing campaign for TPI member Turf Connections, a sod farm based in Cheraw, South Carolina, was awarded First Place in the Writing for Company Website category at the 2018 Turf & Ornamental Communicators Association (TOCA) Awards event held in Cincinnati, Ohio. Stacie Zinn Roberts of What's Your Avocado? Marketing & Public Relations created the award-winning article and is the agency of record for Turf Connections.

The article, posted on TurfConnections.com, was titled "Secret Weapon: Notre Dame Golf Team Proves Practice on Live Grass Indoors Leads to Wins." It tells the story of how Marc Marsh, owner of Turf Connections, helped the prestigious Notre Dame University men's golf team by sending them live sod to practice golf swings on during the winter. In the article, Notre Dame Golf Coach and former PGA Tour player Scott Gump, sings Marsh's praises and reports the addition of real grass made a difference in the team's performance, even winning their first tournament after practicing on the live grass.

"Our goal at Turf Connections is to grow, harvest and install high-quality turf," Marsh said. "Who knew from our small corner in Cheraw that we'd have the opportunity to help the Notre Dame golf team win some tournaments? It means a lot to us to see our grass contribute to their success."

Detroit Mayor Named the 2018 TOCA Environmental Communicator of the Year

The Turf & Ornamental Communicators Association (TOCA) and Project EverGreen announced Detroit Mayor Mike Duggan as the recipient of the 2018 TOCA Environmental Communicator of the Year Award. Project EverGreen is the sponsor of this annual award. The award recognizes individuals for outstanding communications efforts regarding green space and environmental issues. It was presented during the TOCA Annual Conference in Cincinnati. Mayor Dugan is the 20th recipient of this award.

Mayor of Detroit since 2014, Duggan announced an investment of $11.7 million to improve 40 neighborhood parks across the city of Detroit in 2016-17. Project EverGreen worked with the city, local businesses and community groups to renovate Pingree Park starting last November.

The city's parks had been in decline due to budget constraints, but as downtown Detroit experienced a renaissance, Duggan wanted to make sure the neighborhoods didn't get left behind. The 40 parks were chosen based on key criteria including those with the highest concentration of children and senior citizens close by.

Accepting the award for the mayor, Bradley Dick, director, general services department, said, "Parks are the heart and soul of the city. The mayor's progressive initiative to renovate 40 parks across the city helps to reduce blight and restore community pride."

Promoting and communicating the substantial value of establishing a greener, cooler Earth through the creation, renovation and revitalization of managed recreational and athletic green spaces that result in healthier, happier people is at the core of Project EverGreen's mission.
Former TPI Executive Director Doug Fender was the fourth recipient of the award in 2002.

TURF INDUSTRY **NEWS**

STMA Awards Environmental Facility Certifications

Sports Turf Managers Association (STMA) has recognized 14 facilities with the organization's Environmental Facility Certification.

Ranging from Arizona to New Jersey, these STMA members and their facilities showcase ecologically-friendly and sustainable best practices. Since the first certification was awarded to the Red Bull Training Facility and Red Bull Arena in 2016, 30 other STMA facilities have achieved environmental certification.

"Our members recognize the tremendous benefits adopting environmentally-friendly practices can provide," says Victoria Wallace, Environmental Committee Chair. To achieve the prestigious certification, the site must attain an 80 percent score within each section. Facilities will remain certified for a three-year period, at which point a recertification process takes place. Complete list below:

Tom Barry, Greens Farms Academy, Westport, CT; Chris Bolender, CSFM, Pioneer Community Park, and Rio Vista Community Park, both in Peoria, AZ; Noel Brusius, CSFM, Waukegan SportsPark, Waukegan, IL; Ryan DeMay, Berliner Sports Park, Columbus, OH; Larry DiVito, Target Field, Minneapolis, MN; Jared Hertzel and Blake Nelson, University of Nebraska Hibner Soccer and Tennis Center, Lincoln, NE; Dean Pearson, Champion Field, Seattle University, Seattle, WA; Anthony Pell, CSFM, University of Michigan Soccer Complex, Ann Arbor, MI; Joel Rieker, Eastside Centre, East Peoria, IL; Al Siebert and Brandon Putman, Peoria Sports Complex, Peoria, AZ; Kim Spearman & Team, Celebration Park, City of Allen, Allen, TX; Ryan Storey, CSFM, Vanderbilt Athletic Complex, Nashville, TN; Colin Stuhr and Joe Wagner, Iowa City Soccer Complex, Iowa City, IA.

A facility's field manager must complete an initial online assessment followed by an on-site walk-through validation with an attester. The assessment covers 10 environmental practice areas – including recycling, composting, energy conservation and water quality testing.

SiteOne Landscape Supply Completes Several Acquisitions

SiteOne Landscape Supply announced in early March the acquisition of Atlantic Irrigation. Started in 1976, Atlantic is a leader in the distribution of irrigation, lighting, drainage and landscaping equipment with 33 locations across 13 states in the Eastern U.S. and two provinces in Eastern Canada.

"Atlantic significantly expands the scale of our irrigation and lighting business in the Eastern U.S. and Canada markets. This transaction represents the largest number of locations that we have acquired in a single acquisition in more than a decade. The addition of Atlantic complements our existing branch network and strengthens our full-line offering of nursery, hardscape, agronomic, irrigation and landscape lighting products. Atlantic has a very talented and seasoned team with a rich history of providing exceptional customer service that spans more than 40 years. Overall this is a terrific addition to the SiteOne family," said Doug Black, Chairman and CEO of SiteOne Landscape Supply.

Then SiteOne announced the acquisition of the distribution business of Loma Vista Nursery. Loma Vista, started in 1991, has two distribution locations in the Kansas City area and is a leader in the distribution of nursery and hardscape products to landscape professionals in the Midwest markets. The acquisition of Loma Vista's distribution business provides SiteOne with its first nursery locations in the Kansas City market and bolsters the existing hardscape offering.

Next, also in March, SiteOne announced the acquisition of the Village Nurseries Landscape Centers distribution locations in Orange, Huntington Beach and Sacramento, California. Village Nurseries is a leader in the distribution of nursery and related products to landscape professionals in these markets and this acquisition further expands SiteOne's footprint and nursery offering in California.

In April, Washington's Terrazzo & Stone Supply was acquired. Founded in 1956, Terrazzo is a leader in the distribution of natural stone and hardscapes products with locations in Bellevue and Marysville, Washington.

"Terrazzo has a talented team with a rich history of providing exceptional customer service that spans more than 60 years and we are excited to have them as part of our family," said Doug Black. "This marks our fourth acquisition to date in 2018 as we continue to expand the number of markets where we provide a full range of landscape supplies and services to our customers."

In May, the acquisition of Landscaper's Choice Wholesale Nursery and Supply was completed. Founded in 2000, Landscaper's Choice is a leader in the distribution of nursery and landscape supplies to landscape professionals in the Naples, FL, and Bonita Springs, FL, markets.

"Landscaper's Choice is a natural fit with SiteOne as they add nursery products to our existing irrigation, agronomic and landscape lighting product lines in Florida. This acquisition aligns with our mission to be the best full-line distributor to landscape professionals," said Doug Black.

Progressive Turf Equipment Introduces Pro-Roll

A New Concept in Wide-Area Rolling has just been introduced by Progressive Turf Equipment. The Pro-Roll 10 and Pro-Roll 15 are versatile wide-area turf rollers with 10'8" or 15' rolling widths. Ideal for smoothing flat or contoured turf, they have been shown to aid in reducing disease pressure and permit a reduction in mowing frequency and chemical usage, while still being gentle enough for use on new growth and delicate turf.

The Pro-Roll 10 and Pro-Roll 15 can produce consistent compaction, regardless of the terrain profile, as each roller is able to independently track changing contours. Solid ballast is easily added to or removed from each roller deck allowing even compaction across all rollers.

TURF INDUSTRY NEWS

Whether it is a tight corner of a sports field or negotiating a fairway hazard, the Pro-Roll has the ability to make sharp turns without scuffing, all thanks to the four individually-mounted transport tires, the short roller length and Progressive's unique Pro Lift-N-Turn™ system. The Pro-Roll 10 and Pro-Roll 15 can be used with either a compact tractor or a wide range of utility vehicles.

TurfBreed brings new expertise to its Board

TurfBreed Pty Ltd has announced the appointment of an external Chairman, Sandy Bauman, and a Non-Executive Director, John Keleher. Both are partners in the Queensland-based turf business, Australian Lawn Concepts.

Sandy Bauman, appointed as Chairman, brings to TurfBreed his turf industry experience and expertise in governance and business development. He also has a broad-spectrum background in Australian and global agribusiness. Sandy's roots stem from grain farming in central Queensland. He has since developed his business acumen through involvement with several significant and successful Australian agricultural businesses, including roles as Chairman of the commodity trading firm PentAg Nidera and Director of FarmInvest Australia as well as Haven Grain Pty Ltd.

Non-Executive Director John Keleher has worked extensively as an agricultural consultant for most of his career. He has a solid history of introducing innovative ideas that positively impact the bottom line. John's devotion to research has provided the opportunity for new and exciting practices in Australia's turf industry, such as precision farming for growers. John was recently elected to the Board of Trustees for Turfgrass Producers International and will join the Board at the start of the 2019 fiscal and calendar year in January.

TurfBreed's Managing Director Steve Burt said: "Both gentlemen bring a wealth of knowledge to the business and have worked in both the local and international sectors of agriculture. Sandy and John are highly respected turf growers who have a perspective on the industry that will be fresh and new to our board." He added. "Their industry connections and experience will be invaluable, as will their understanding of the existing frameworks and issues that impact our growers."

FireFly Automatix Launches New Self-Propelled, Hybrid Mower

FireFly Automatix, Inc. has launched the M220, a self-propelled, hybrid turf mower that enables the fastest precision cut possible, while decreasing the average cost per acre. The automated, high-performance mower was highlighted at the TPI Field Day in Tucson.

"The M220 represents a paradigm shift in turf farm mowing," said Steve Aposhian, the company's founder and CTO (Chief Technical Officer). "Like our ProSlab turf harvester, the mower has been designed and purpose-built from the ground up to be the most efficient mowing machine on the market. We're in the business of creating value for our customers, and by combining proven best-of-breed technologies with new innovations, we deliver on that promise."

According to FireFly CEO Andrew Limpert, increasing labor costs and labor shortages in areas previously flooded with available workers continue to threaten the future of farming in the United States and beyond, so automating manual repetitive tasks is critical to its survival. "While sod harvesting only happens once a year, it needs to be mowed weekly to keep it healthy, so we've expressly designed and built this mower from the engine to the decks for this specific and necessary task, with future versions offering even more autonomy," Limpert said.

Ag Data Company Updates Offerings to Agribusiness

Farm Market iD—a data company with four decades' experience working with ag companies—has released their 2018 Annual Update of their database. The update provides complete details on farmers, crops, livestock and land for the 2017 crop year. The database covers over 907 million acres of land, with over 316 million acres of commodity crops. The database covers 94 percent of major crop production in the United States going back more than a decade and is collected from a combination of public and private sources.

"Our database has proved to be the most comprehensive and reliable source of information for leading agribusinesses," says Chief Executive Officer Steve Rao. "Our clients demand the most current and accurate data to help them make better decisions in their strategy, marketing and sales efforts. Farm Market iD is dedicated to giving agribusinesses a competitive edge."

Several insights gathered from the 2017 crop year include: A 15.1 percent increase in total contacts, totaling 2.59 million growers and ranchers. The average farmer in America farms 455 acres. The average age of the farmer increased to 63 years old. 64 percent of growers have a phone number, 52 percent have an email address and 55 percent have a confirmed online profile. Farm Market iD covers 96.8 percent of wheat production, 94.3 of soy and 93.0 percent of corn. For companies who want to use this data to gain more industry insights, visit *http://farmmarketid.com/*.

Bayer/Monsanto deal closed

The long-awaited and highly debated deal is done—Bayer officially owns Monsanto. As of Thursday, June 7, 2018, Monsanto stocks are no longer available on the NYSE, Monsanto shareholders are getting fat checks. Bayer is among the largest global seed and ag chemical companies.

"Today's closing represents an important milestone toward the vision of creating a leading agricultural company, supporting growers in their efforts to be more productive and sustainable for the benefit of our planet and consumers," says Hugh Grant, outgoing chairman and CEO of Monsanto.

TURF MARKETPLACE

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SALES MIDWEST: Several good used little roll, slab, big roll, and auto-stacking harvesters for sale. New & Used Donkey, Brouwer, Kesmac, MasterCraft, First Products, Progressive. We also offer a full line of parts, Poly Tubes, Degradable Big Roll Netting, Degradable Field Net & a variety of harvester & mower blades.
New & Used Equipment Contact: Sales Midwest Inc. at 800-385-9408, 913-254-9560 or ***www.salesmidwest.com***.
Contact: Diversified Asset Solutions at 888-888-8133, 913-829-5622 or *twollesen@assetbids.com*.
Get Registered for Our On-line Turf Auctions – Held Online at: *www.assetbids.com*

FOR SALE: 2016 Brouwer Robomax sod harvester 24", 700 hours, like new. Asking $195,000 Meyers Turf Farm, Kansas
Contact: 913-681-2667 or ***jmeyers@meyersturf.com***

FOR SALE: Shattuck reel mowers 1- 50' 2008 and 1- 60' with 40' older and 20' new in 2008 mowers and frames, sharpened, end pull transport at less than 8', asking $12,000 each. 2007 Spin Reel grinder model 555 purchased new in 2007, asking $12,000, 2007 semi-auto bed knife sharper, asking $6,500. M&W 3000 Dyna Drive, 10=ft, 3 Point hitch, 2004, extra set of spoons, asking $6,500, low acres; 42' 1980 Dorsey Flatbed, very good deck, paint, brakes, sliders, forklift hookup, low miles, asking $3,500. Also 48' spread axle available. 1994 Moffit Mounty 4000-lb. runs good, new tires, asking $3,800, Portable 60,000-lb. CSW truck scale, 14'x2.5' deck, ramps, digital readout. Easy ship and setup, asking $3,950. 2006 Trebro Quad runner, JD diesel, carries 4 pallets at 21 mph, high floatation, can run over sod with no marks. No truck ruts/ compaction in fields, great for regrowth or easy field work. Outworks 2 forklifts. 5900 hours ready to run, asking $62,000.
Contact: Tim @ 815-378-8870

FOR SALE: North Dakota Turf Farm. This unique property in Western North Dakota is an established and respected premier Sod Farm for the past 23 years. Located in beautiful farm country, and in the Bakken Oil Field, this farm features excellent soils, irrigation wells, and all the equipment needed for a turn key business. Property is Laser Leveled for flood irrigation and has 72 acres of established sod, of which 50% is available for harvest in 2018. Strategically located where the Yellowstone River meets the Missouri River, this hidden property is near the progressive rural community of Fairview, MT and has all the amenities needed for a successful family operation. Directions: From Fairview MT, 1/2 mile NE on US Highway #200, then 1 mile north on ND Highway #58, then 1/4 mile east on 32nd St. NW.
Contact: John Stober at 701-426-8834 for more information, or Pifer's Auction and Realty at 877-700-4099 for a brochure on the property.

FOR SALE: 2002 Trebro AutoStack, 11,500 hours. Has been very reliable for us. Will come with new spare parts. All wheel drive motors and planetary hubs replaced two years ago. Machine located near Grand Rapids, MI. Asking $70,000.
Contact: Joe at 616-292-6055

FOR SALE: Donkey Forklift, 4,000-lb. lift, 3 Cylinder Kubota diesel, 2-wheel drive assist, 96" 2 stage mast, 44" scissor reach, 48" pallet forks, only weighs 1,857 lbs., too many options to list. Asking $45,000 US; Donkey Forklift, 4,000-lb. lift, 3-wheel drive, 70" single stage mast, 48" forks, only weighs 1,678 lbs. Asking $43,700 US.
Contact: Ben Wagner at 406-490-9114 for more information

Wherever you see this camera icon, visit ***www.TurfGrassSod.org*** to view pictures of the advertised items. When viewing the electronic version of this page, just click on any of the icons above that interest you to proceed directly to the advertiser's supplied picture.

TPI CLASSIFIED ADVERTISING—TARGETED TO TURFGRASS PRODUCERS WORLDWIDE

Buying or selling equipment, supplies, properties, or looking for employment opportunities?

TPI classified advertising is the answer! Reach your target market with a low cost classified ad in *Turf News* magazine and the TPI website at *www.TurfGrassSod.org*.

All classified ads are posted to the TPI website & featured in the matching *Turf News* issue for one low rate!

Premier Classified Advertising!

With the Premier Classified Advertising option you can add one photograph to your website ad! The electronic version of *Turf News* will link the reader directly to your ad on TPI's website. Readers of the print version will be able to view your ad with picture by going to *www.TurfGrassSod.org*.

Classified Ad Rates: TPI Member $200……..Non-member $275
Premier Classified Ad: TPI Member $225……..Non-member $300

Rates are determined in one-inch vertical increments. Please estimate approximately 65 words per inch.
Photos are limited to the website and one photograph per ad.

Deadline: 30-days prior to *Turf News* issue date (e.g., Sept/Oct *Turf News* issue, ad is due by August 1).
Payment: Classified ads are to be paid in advance—we accept check or Visa, MasterCard & AmEx.
Contact: Please send your classified ad to Geri Hannah via fax 847-649-5678; email *ghannah@TurfGrassSod.org* or regular mail to:

Turfgrass Producers International, 444 E. Roosevelt Road #346, Lombard, IL 60148 U.S.A.

All classified ads are subject to review; TPI does not endorse any ad and reserves the right to edit or decline any ad.

AD INDEX FOR JULY/AUGUST ***TURF NEWS*** MAGAZINE

TPI COMMUNICATORS **RECEIVE TOP HONORS FROM TOCA**

TPI Members know what a great magazine *Turf News* has been over the years and judges at the Turf and Ornamental Communicators Association (TOCA) agree. This year, Steve and Suz Trusty, co-editors of *Turf News*, and Jane Tomlinson of Ink Umbrella Design walked away with some more hardware for their trophy cases. Of the over 400 entries, they won awards for:

Merit Award in the Photography, Video, Multimedia category:

Best use of photography, judging three issues of a magazine.

First Place Award in the Special Projects category:

Best coverage in a magazine of an on-site event, "TPI's 2017 International Education Conference & Field Day Recap." This is the third year in a row that *Turf News* received the First Place Award in this category.

Congratulations and thanks to the *Turf News* team!

The Turf and Ornamental Communicators Association (TOCA) is composed of editors, writers, publishers, photographers, public relations/advertising practitioners, industry association leaders, manufacturers and others involved in green industry communications.

WELCOME
NEW & RETURNING MEMBERS

Thomas P. Douglass III
Jackson Sod Company
4217 Woodmart Park Lane
Louisville, KY 40245
502-640-1455
jacksonsodms@gmail.com

TURF INDUSTRY **CALENDAR**

JULY

July 10
Purdue Turf & Landscape Field Day
West Lafayette, IN
Contact: *https://turf.purdue.edu/*

July 10-12
Wisconsin Farm Technology Days
D&B Sternweis Farm & Weber's Farm Store, Marshfield, WI
Contact: *http://www.wifarmtechnologydays.com/*

July 12
University of Kentucky Turfgrass Field Day
Lexington, KY
Contact: *http://www.uky.edu/Ag/ukturf/pros.html*

July 14-17
American Hort Cultivate '18
Columbus, OH
Contact: *http://www.cultivate18.org/*

July 15-17
Legislative Days on the Hill
Washington, DC
Contact: *https://www.landscapeprofessionals.org/nalp/nalp/advocacy/legislative-day-on-the-hill.aspx*

July 15-17
Texas Turfgrass Summer Conference & Equipment Rodeo
Cedar Creek, TX
Contact: *http://texasturf.com/tta-conferences/*

July 17
University of Connecticut Turfgrass Field Day
Storrs, CT
Contact: *john.inguagiato@uconn.edu*

July 18
Nebraska Turfgrass Field Day
Lincoln, NE
Contact: *http://nebraskaturfgrass.com/events/turf-field-day/*

July 19
WSPA Summer Field Day
Jasperson Sod Farm, Union Grove, WI
Contact: *https://wspafieldday.weebly.com/; Ryan@JaspersonSod.com*; 262-498-1262

July 25
University of Arkansas Turfgrass Field Day
Fayetteville, AR
Contact: *https://horticulture.uark.edu/research-extension/turf/turf-education/index.php*

July 26
WALP 2018 Field Day
Redmond, WA
Contact: *http://www.walp.org/2018-field-day*

July 31
Rutgers Golf and Fine Turf Field Day
New Brunswick, NJ
Contact: *https://njta.wildapricot.org/*

AUGUST

August 1
Rutgers Lawn, Landscape & Sports Fields Field Day
Adelphia Farm, New Brunswick, NJ
Contact: *https://njta.wildapricot.org/*

August 1-2
TWCA Field Days
in partnership with Oregon State & Oregon Golf Course Superintendents Association
Contact: *https://www.flipcause.com/secure/cause_pdetails/MjM2MzY=*

August 2
Kansas State University-Turfgrass Field Day
Rocky Ford Turf Research Center, Manhattan, KS
Contact: *http://www.k-state.edu/turf/events/index.html*

August 6-7
PGMS Summer Conference
Grand Rapids, MI
Contact: *http://pgms.org/calendar-of-events/*

August 7
Ohio State Turfgrass Field Day
Columbus, OH
Contact: *https://www.ohioturfgrass.org/*

August 8
North Carolina State University Turfgrass Field Day
Raleigh, NC
Contact: *https://cals.ncsu.edu/research/research-events/*

August 12-16
StormCon 2018
Denver, CO
Contact: *https://www.stormcon.com/*

August 12-16
International Horticultural Congress
Istanbul, Turkey
Contact: *http://www.ihc2018.org/en/*

August 14
Virginia Turfgrass Council Lawn and Landscape Field Day
Blacksburg, VA
Contact: *http://www.vaturf.org/*

August 15
Michigan State Turfgrass Field Day
East Lansing, MI
Contact: *http://www.michiganturfgrass.org/event-2828051*

August 21
Mississippi State Turfgrass Field Day
Starkville, MS
Contact: *http://www.msturfassociation.org/*

August 30
Tennessee Turf & Ornamental Field Day
Knoxville, TN
Contact: http://www.tennesseeturfgrassweeds.org/Pages/FieldDay.aspx

FUTURE EVENTS (2019)

February 18-21, 2019
TPI 2019 International Education Conference
The Westin Charlotte
Charlotte, NC

July 23-25, 2019
TPI 2019 Summer Convention & Field Day
Hyatt Regency Bloomington - Minneapolis
Minneapolis, MN

For additional calendar items, visit ***www.TurfGrassSod.org***. If you are planning an industry event of interest to our readers please send the information to: ***ghannah@TurfGrassSod.org*** and put "Industry Calendar" in the subject line.

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UNIVERSAL AUTOSTACKER

DUTCH QUALITY DESIGN by VANVUUREN MACHINES

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Harmelerwaard 21
3481 LC Harmelen
The Netherlands

Turf Tick Products BV
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