

Modern Cool Season Sport Turf Management

Copenhagen 12-13 th July 2022

The International Turfgrass Society (ITS) brings together turf grass researchers from all over the world every four year to present and discuss their new results.

We have examined more than a hundred conference reports and chosen a few top scientists and some upcoming stars to bring highlights from their field of expertise directly to practical turf grass managers. This seminar will be the most important venue for golf course and stadium managers in 2022. The Conference Theme this year is Development and Sustainability and we have put up five main topics for this seminar:

- Low in input management
- Stress management
- New technological tool
- Turf grass ecosystem services
- Pesticide-free future

You are invited to join three parts of the ITRC-2022 program:

1. Seminar at University of Copenhagen with presentations and short discussions.
2. Dinner party at Furesø Golf Club where you will mingle with the seminar lecturers and colleagues from many countries. The menu is based on the concept: "Eat your golf course", showing some of the multifunctionality of Danish golf courses.
3. Bus excursions (Wednesday) to interesting sports turf facilities in the district, ending up at a barbeque party at DLF research facilities. Here you will meet all delegates at the scientific conference and get an impression of grass breeding and testing.

Here is a short presentation of the lecturers and their topics.



Stacy A. Bonos is a Professor of Turfgrass Breeding in the Department of Plant Biology at Rutgers University. Her research focuses on the development of improved,

pest resistant, and stress tolerant, turfgrasses including native grasses. She has dedicated much of her research to improving bentgrasses for golf courses. She has developed or co-developed over 240 cool season turfgrass cultivars and has been recognized for her research through several awards including Golf

Low Input Turfgrass Species for Sports Turf:

What are their quality attributes and challenges?

There is a need to identify turfgrass species and mixtures for golf course fairways and sports turf applications that can be managed sustainably by reducing fertility, mowing, irrigation and pesticides. Which species provide the best quality under low input? What other factors need to be considered for choosing the optimum turfgrass species for input sports turf? Can some mixtures between species provide better quality than monostands of single species?

Magazine's '40 under 40', Early Career Excellence in Plant Breeding – Plant Breeding Coordinating Committee; Young Crop Scientist Award – Crop Science Society of America (CSSA) and Fellow of CSSA.



Michael Bekken is a PhD candidate advised by Dr. Doug Soldat in the department of Soil Science at the University of Wisconsin-Madison.

His research focuses on quantifying golf course resource use (water, energy, fertilizer, and pesticide) and helping golf course superintendents benchmark and evaluate resource use efficiency.

Carbon balance on golf courses:

Golf course maintenance emits carbon dioxide to the atmosphere, but carbon is also sequestered from the atmosphere by the plant-soil system. Ideally, emissions from golf course maintenance can be reduced so that golf courses sequester more carbon than they emit (i.e., are carbon negative). This seminar will share tips to reduce carbon emissions at your facility.



Thomas A. Nikolai, Ph.D. discovered lightweight rolling decreases numerous turfgrass pests that led to the acceptance of the mechanical practice,

initiated alternative spike research which paved the way for the demise of the metal spike, and discovered mulching deciduous leaf's into turfgrass canopies results in fewer broad leaf weeds.

The impact of putting green management on visible wear caused by golf cleat designs

resulted as a request of Mike Kenna of the USGA. Data was collected over 2-years on several turfgrass species from research putting greens at Michigan State University and the University of Arkansas as well from several golf course putting greens.



Doug Soldat is a professor in the Department of Soil Science at the University of Wisconsin-Madison. Doug earned his Ph.D. in Plant Science from Cornell University. His research and outreach programs are focused on maintaining functional

turfgrass areas with minimal inputs of fertilizer, irrigation, and pesticides.

Soil tests are useful for predicting phosphorus and potassium fertilizer requirements, but soil tests cannot estimate nitrogen fertilizer requirements. This presentation will summarize the results of several studies that have helped us to develop a computer model that can accurately estimate the amount of nitrogen to apply to golf course putting greens to maximize performance and minimize nitrogen fertilization.



Adam Thoms is an Assistant Professor of Commercial Turfgrass in the Department of Horticulture at Iowa State University. He focuses on applied research studies for athletic field managers and golf course superintendents as well as

ways to lower turfgrass management inputs. He teaches two undergraduate classes and advises turfgrass students.

Hybrid turfgrass systems for football/soccer:

How can you get more use out of athletic fields in high wear areas? Does a hybrid (combination of synthetic and natural turfgrass) system perform like natural grass? What are the different types of hybrid systems that exist? A quick and practical presentation on hybrid turfgrass systems.



Etienne Abelard is an apprentice engineer. In other words, he is both a 5th year student in the engineering cycle by apprenticeship at the ESA (Higher School of

Agriculture) in ANGERS and at the same time assistant-breeder, for 3 years now, within the company DLF Recherche in France, alongside Christophe Galbrun.

Light therapy. Update on lamps and their effects on different grass species.

The use of luminotherapy in major stadia around the world is becoming more and more common and is now considered a necessity in the production of high-quality turf playing surfaces.

We can then ask ourselves:

What types of lamps to use? HPS or LED? Which species are most suitable under HPS lamps? Under LED lamps?



Atle Revheim Hansen is Golf Course Manager at Bærheim Golfpark in Norway. He has 38 years' experience as greenkeeper, Golf Course Manager, Designer and Constructor. Atle is passionate about

innovation in the Norwegian golf industry.

Robotic mowers. Experiences from 5 years full scale testing:

Atle was the first Golf Course Manager to implement robot mower technology on a full-scale golf course. But even more: He is virtually maintaining a lot of the golf course through his smartphone. Atle will talk about the process and share some experience.



Dr. Terri Billeisen is an Extension Associate in the Department of Entomology and Plant Pathology at NC State University. Her current research focuses on insect pollinator population

dynamics in turfgrass systems and evaluating options for biological control of red imported fire ants.

Strategies for Insect Pollinator Community Augmentation and Conservation in Managed Turfgrass:

Insect pollinator diversity and abundance in managed turfgrass systems are impacted by a number of environmental factors including landscape composition and complexity and pest management approaches. This presentation will specifically focus on the impact of wildflower establishment and pesticide input level on bee community dynamics.



Paige Boyle is a Presidential Doctoral Research Fellow at Utah State University. She earned a B.S. in Environmental, Soil, and Water Sciences and M.S. in horticulture from the University of Arkansas. Her research background includes stream restoration design, in-vessel compost processing, earthworm management on golf course turf, and clover lawns.

Earthworm castings:
In turfgrass systems, earthworm casts can cause issues with turf growth and management. Earthworm control is difficult because earthworms are still not well understood, and no pesticides are labeled for earthworm management. Turf managers usually rely on cultural practices to mitigate casting, with limited or varied efficacy. This presentation will walk you through earthworm biology, ecology, and various management options.



Emily Braithwaite is a faculty research assistant and graduate student at Oregon State University. She earned her B.S. in Plant Biology from Rutgers University. Her research background is management of turfgrass diseases, primarily Microdochium patch, yellow patch, and anthracnose. Her dissertation research focuses on plant pathogenic nematodes in the PNW.

Broadleaved weed control on golf course fairways without:
Restrictions on herbicide use on golf courses and athletic fields has increased over the last decade in the United States. In Europe, these restrictions have been in place for much longer, but challenges still arise in weed management on golf courses in the absence of herbicides. This presentation will present a review of alternative approaches to traditional broadleaf weed control.



Paul Koch, PhD, is an associate professor in the Department of Plant Pathology at the University of Wisconsin – Madison. Paul’s research focuses on developing precision disease management strategies for snow mold and dollar spot in turfgrass and investigating the fate and impact of turfgrass pesticides in the environment.

Alternative, non-chemical solutions for dollar spot control:
Dollar spot is one of the most common turfgrass diseases worldwide. Few fungicides are available for use on turfgrass in northern Europe and Scandinavia, and in this presentation, we will briefly talk about the latest research on non-fungicide alternatives for dollar spot control such as iron sulfate, poaic acid, and increased nitrogen fertility.



Wendell Hutchens is a PhD student at Virginia Tech University. His research is predominantly on the warm-season grass disease spring dead spot (*Ophiosphaerella* spp.), but he also studies non-fungicidal management techniques for cool-season grass diseases such as dollar spot (*Clarireedia*

Technology to fight dollar spot: a new way of disease management:
Dollar spot (*Clarireedia* spp.) is difficult to manage without fungicides. Furthermore, resistance to most of the traditional dollar spot fungicides has now been documented. This has led researchers and turfgrass professionals to explore new ways of managing and preventing the disease. Who would have thought drones, thermal cameras, GPS-guided sprayers, and wetting agents would be used for dollar spot management?

spp.) and brown patch (*Rhizoctonia* spp. and *Ceratobasidium cereale*).



John E. Kaminski, Ph.D., is a Professor of Turfgrass Science at The Pennsylvania State University. John earned his B.S. in turfgrass science from The Pennsylvania State University and his M.S. and Ph.D. from the University of Maryland. Dr.

Kaminski's research focuses on optimization of chemical and cultural management strategies for turfgrass diseases and weeds. John also serves as the Director of the Golf Course Turfgrass Management Program (2-Year Program) and runs Penn State's international turfgrass diagnostic lab at Penn State.

Controlling Clover and Dandelions with Iron:

What is chelated iron and how does it affect weeds and turfgrass? Chelated iron may be used as an organic herbicide targeted toward broadleaved weeds such as dandelion and clover. Unlike many other organic or natural products, use of iron herbicides results in minimal injury to turfgrass. Iron is a promising weed control tool in areas with restricted pesticide use.



Jason Henderson is an Associate Professor of Turfgrass and Soil Sciences in the Department of Plant Science and Landscape Architecture at the University of Connecticut. Dr. Henderson earned his Ph.D. degree from Michigan State University

in Crop and Soil Science specializing in the physical properties of turfgrass soils.

Let the Robot Pick the Weed:

Management strategies when pesticides are not an option.

Laws have removed conventional tools for managing pest populations in many areas of turfgrass management. Attendees will appreciate an unconventional perspective while realizing the themes of pesticide-free management; fundamentals are imperative, intensity of management will increase, and windows of opportunity will decrease. A new device for turfgrass management will be introduced for selective, mechanical weed control while mowing.