



# EUROPEAN TURFGRASS SOCIETY

## NEWSLETTER 01/2021

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## 2021 European Turfgrass Society Webinar Series

**March 25<sup>th</sup>, 2021 01:00 pm CET**

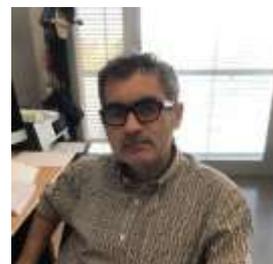
Understanding the role of bio-stimulants  
in turfgrass management under drought stress



Speakers:

**Diego Gómez de Barreda Ferraz - Polytechnic University of Valencia, Spain**

Dr. Diego Gómez de Barreda Ferraz, is an Associate Professor at the Plant Production Department of the Polytechnic University of Valencia (UPV), where he got the Agronomist Engineer Degree. He teaches Herbaceous crops and Turfgrass science at the UPV. His primary research interest includes Turfgrass science (cultivar adaptation, use of biostimulants, weed science) and general weed science within other crops. He has published scientific research articles in peer reviewed journals and has lectured presentations on conferences and meetings on turfgrass. He is actually in the board of the International Turfgrass Society (ITS).



**Marcela Munoz - Syngenta**

My name is Marcela Munoz. I'm a leading turfgrass specialist qualified as an Agronomist Engineer from The Pontifical Catholic University of Chile and have a Master of Science Degree from The Ohio State University in Turfgrass Management. I have been in the turf industry for more than 15 years and worked in different positions and countries around the world. Some highlights include working for the STRI as a turf agronomy consultant for the FIFA 2014 Brazil World Cup and



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providing technical support at the Ryder Cup at Le Golf National in Paris.

I'm also an active member of many turf associations around the world, since 2011 I have been a volunteer for the International Committee of the STMA and 2020 I joined the ETS board. Since 2015 I have been based in Cambridge, UK, working as Syngenta's Technical Services Manager for Europe, Africa and the Middle East. My role includes supporting the marketing team and commissioning pioneering research to maintain Syngenta at the leading edge of turf.

Links to recording of the seminar:

[https://zoom.us/rec/share/EV\\_HYDm2UIkdoRWiF3mCT5JE5dQdUoKxxcLZA\\_FJ0IO-3srcXjqCNyrDmhoViKm2.Mf-13qEECAO2I5TR?startTime=1616670507000](https://zoom.us/rec/share/EV_HYDm2UIkdoRWiF3mCT5JE5dQdUoKxxcLZA_FJ0IO-3srcXjqCNyrDmhoViKm2.Mf-13qEECAO2I5TR?startTime=1616670507000)

[https://zoom.us/rec/share/EV\\_HYDm2UIkdoRWiF3mCT5JE5dQdUoKxxcLZA\\_FJ0IO-3srcXjqCNyrDmhoViKm2.Mf-13qEECAO2I5TR?startTime=1616678232000](https://zoom.us/rec/share/EV_HYDm2UIkdoRWiF3mCT5JE5dQdUoKxxcLZA_FJ0IO-3srcXjqCNyrDmhoViKm2.Mf-13qEECAO2I5TR?startTime=1616678232000)

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**March 30<sup>th</sup>, 2021 01:00 pm CET**  
Nutrition, Biostimulants, and  
Biotic Stress Tolerance of Turf



Speakers:

**James Murphy - Rutgers Center for Turfgrass Science**

Dr. James Murphy is the Director of the Rutgers Center for Turfgrass Science and an Extension Specialist in Turfgrass Management at Rutgers University. He conducts research and teaches in the undergraduate and extension programs on the development of best management practices in turfgrass.



**Chas Schmid - Oregon State University**

Dr. Chas Schmid is a Faculty Research Associate at Oregon State University. He conducts research focused on cultural management practices for golf course turf and teaches in the undergraduate and continuing education programs at OSU.



Link to recording of the seminar:

[https://zoom.us/rec/share/PxZ5M8IU-54uZ7jWTJzc8BrXj\\_F6qVF\\_3HufBRS3K6xtDNYTXo3FGZeaoTJDhCCH.RsxdDVxMh4JCErM-?startTime=1617101709000](https://zoom.us/rec/share/PxZ5M8IU-54uZ7jWTJzc8BrXj_F6qVF_3HufBRS3K6xtDNYTXo3FGZeaoTJDhCCH.RsxdDVxMh4JCErM-?startTime=1617101709000)

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**April 13<sup>th</sup>, 2021 02:00 pm CEST ([REGISTER NOW!](#))**  
Precision Turfgrass Management: technical advances to improve turf aesthetics, performance and sustainability (golf, sports fields and gardens)



**Description:**

Recent years have spawned a great deal of hardware, software and optics solutions to help professionals monitor and manage high-quality turf surfaces.

Sometimes the variety of solutions and the data supplied can be overwhelming, or at best difficult to understand and turn into effective management decisions.

In this webinar we will describe the main PTE ("Precision Turfgrass Management") tools currently available for the groundsman/greenkeeper, and supply a basic set of interpretation rules to simplify their understanding and adoption. Data and info needn't be intimidating, but rather they should be the basis on which skilled turf professionals take well-informed and meaningful decisions.

**Speakers:**

**Filippo Lulli - CEO/CSO @Turf Europe Srl**

Filippo has a turfgrass agronomy MS from the University of Pisa and turfgrass science PhD from Sant'Anna School of Advanced Studies. He is a world renowned specialist in sports turf, working for top Serie A, Ligue 1 clubs and has been on the FIFA-appointed team to help manage turf on the recent 2019 WWC. His R&D work on precision turfgrass management has spawned several scientific articles and patents. Filippo served as Secretary and Board Member for the "European Turfgrass Society" and the "European Turf Growers Association".



**"Precision Turfgrass Management: tools and simple agroclimatic interpretation rules" - 40 min.**

**Alessio Forconi - CTO @GreenGO**

Alessio has a MS in Urban Landscape Management from the University of Pisa and spent time for his thesis at the University of California, Riverside. He joined Turf Europe / GreenGO in 2017 and has quickly risen to the post of CTO, thanks to his relentless R&D work on their ecosystem. Alessio was also on the FIFA-appointed team to help manage turf on the recent 2019 WWC.



**"The GreenGO ecosystem of sensors and software: Your Turfgrass Assistant" - 10 min.**

After the presentations: Q&A session with the participants

**You can register now at:** [https://zoom.us/webinar/register/WN\\_Q0RYz5U9ToK-zSgw3D7M7w](https://zoom.us/webinar/register/WN_Q0RYz5U9ToK-zSgw3D7M7w)



## ETS 2021 webinars

The **European Turfgrass Society** is happy to announce the **ETS 2021 webinars**, that will be held online on the following topics:



- Sustainable Disease, Pest and Weed Control - natural/organic products
- Fertilization & Biostimulants - Advanced Stress Management with Biostimulants
- Water scarcity and irrigation - Sustainable Water Management
- Turf Cultivars/Breeding
- Mechanical practices advantages
- Wear tolerance (species and cultivar selection, plant growth regulators, fertilization)
- Specific webinar to greenkeepers or groundsmen

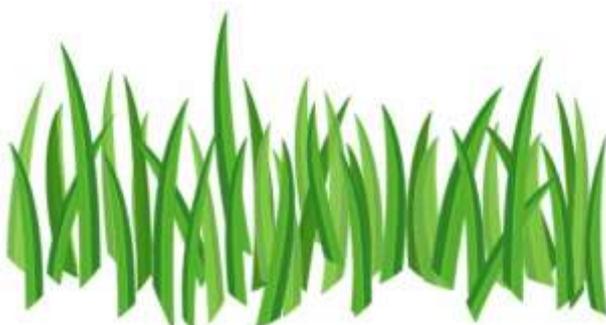
Given the long-term restrictions all over the world, it will probably be difficult to meet in person also for 2021, but we wish to keep on providing knowledge and connections, for the benefit of the turfgrass world.

The webinars will be organized by ETS and the event will bring together the industry and the academy, and will create a space for clients to ask questions and engage with speakers.

The program is as follow:

- 2 series of webinars (Spring and Autumn), "2021 European Turfgrass Society Webinar Series"
- The admission to webinars is NOT subject to a registration fee.
- Each webinar has a dedicated theme.
- Each webinar will have 2 academic/independent turf specialist/ speakers presentations. Total time of the webinar: 1h 30min.
- There will be a panel discussion after the presentations of 40 minutes with possibility of interactions with the speakers.

If you would like to participate to the organisation of the ETS Webinars, please contact the Organizing Committee via e-mail: [etsoffice@turfgrasssociety.eu](mailto:etsoffice@turfgrasssociety.eu)



# German Turfgrass Society (DRG) makes the complete archive of the magazine "RASEN" available digitally

By Dr. Klaus Mueller-Beck, DRG.



All issues of the journal "RASEN", (European Journal of Turfgrass Science), are now freely available to the user on the DRG website: [www.rasengesellschaft.de](http://www.rasengesellschaft.de)

Publications for science and practice on all turf topics have been the focus of DRG's activities from the very beginning. As the publication organ of the German Turfgrass Society (DRG), the association journal developed over the years in a number of steps into the trade magazine "RASEN-Turf- Gazon" and "Greenkeepers Journal", which is now published four times a year, with the scientific publications appearing increasingly in "RASEN" and the practical applications in "Greenkeepers Journal". The journal serves as the association organ for the members of the "Deutsche Rasengesellschaft e.V." and the members of the "Greenkeeper Verband Deutschland e.V."



**Fig.1: Overview of journals on the DRG homepage. A short history of the development of the publications from the beginning of the German Turfgrass Society to the present day is provided by the title pages of the journals in the respective years.**

<https://www.rasengesellschaft.de/pdf-archiv-rasen-turf-gazon.html>

## Digitization helps disseminate turfgrass expertise

Only when in the year 2000 the German Turfgrass Society furnished its own homepage [www.rasengesellschaft.de](http://www.rasengesellschaft.de), more and more current turfgrass topics were communicated over Internet. So that now the extensive knowledge offer from the innumerable publications does not fall into oblivion, the DRG board in co-operation with the publishing house "Koellen Druck +Verlag" had decided to digitize the complete magazine archive not only for the DRG members, but for the broad public of the interested lawn friends and to make on the DRG homepage freely available to all users.

This is a strong offer in the sense of knowledge transfer and underlines the statutory public relations mission of the German Turfgrass Society.

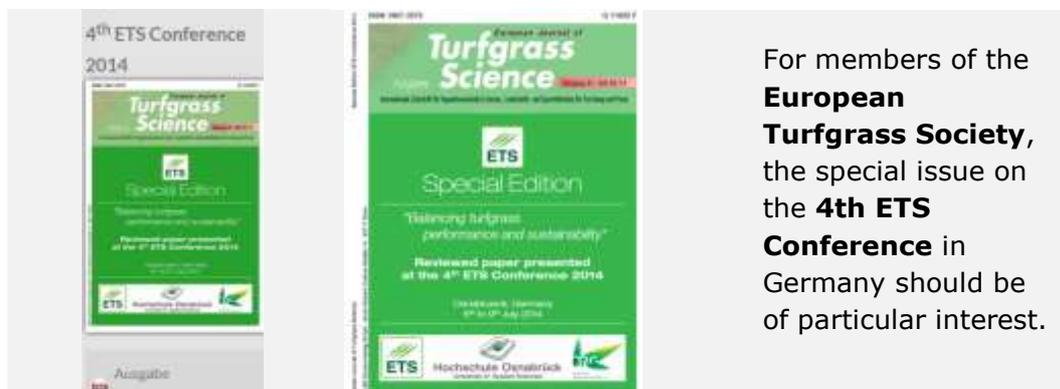


**Fig.2: Example from the journal archive for the presentation of the four annual issues for the 2014 volume.**

<https://www.rasengesellschaft.de/zeitschrift-archiv-2008-2016.html>

With the new digital journal archive, the user can now directly access all DRG publications since 1964 and download the respective issues of the years in pdf format free of charge.

This service includes not only the publications of the DRG but also the publications in the "Greenkeepers Journal" from 1989 onwards.



For members of the **European Turfgrass Society**, the special issue on the **4th ETS Conference** in Germany should be of particular interest.

**Download:**

[https://www.rasengesellschaft.de/files/downloads/zeitschrift/2014\\_4thETS\\_Conference.pdf](https://www.rasengesellschaft.de/files/downloads/zeitschrift/2014_4thETS_Conference.pdf)

**New address:**

**Deutsche Rasengesellschaft e.V.**

Haus der Landschaft  
Alexander-von-Humboldt-Str. 4  
53604 Bad Honnef - Germany

**Iris Puetzer**

**phone: +49 02224-7707 90**

[info@rasengesellschaft.de](mailto:info@rasengesellschaft.de)

[www.rasengesellschaft.de](http://www.rasengesellschaft.de)

# Open-air trade fair "demopark" 2021 postponed to autumn date September 26 to 28 in Eisenach Germany

By: Dr. Klaus Mueller-Beck, DRG



Demopark 2021 will take place from September 26 to 28 at the Eisenach-Kindel airfield site," says VDMA Managing Director and Exhibition Director Dr. Bernd Scherer. This makes an exhibition without significant pandemic-related restrictions much more likely than at the originally planned event date in June.



More information: <https://demopark.de/en/>

## Special turf show also interesting in September

Under the patronage of the German Turfgrass Society e.V. (DRG), current research focuses on turf at German universities as well as selected bachelor's and master's theses of young scientists will be presented as posters.



Fig.1: Grass species and numerous varieties for the different turf types are shown at the special turf show in Eisenach (Germany). (Photo. K.G. Müller-Beck)

A favourite attraction of this year's special turf show will once again be the varieties of the most important grass species approved and tested for turf use by the Federal Office of Plant Varieties (Bundessortenamt). Visitors can expect to see a diverse range of ryegrasses, meadow grasses and various fescue species, such as tall fescue.

## Source reference

VDMA-Pressemeldung and Deutsche Rasengesellschaft e.V. Bad Honnef  
[www.rasengesellschaft.de](http://www.rasengesellschaft.de)

# Postponement of the 14<sup>th</sup> International Turfgrass Research Conference, to July 10<sup>th</sup> - 15<sup>th</sup> 2022

By **Maria Strandberg**, ITS President, STERF director and **Trygve S. Aamlid**, ITRC Editor-in-Chief and leader of ITRC 2021 publishing and scientific program committees



The corona virus situation all over the world does not look very optimistic and we all have to face long-term restrictions regarding traveling, gathering and conferences. According to the Health Directorate of EU, the sanctions and restrictions related to the Corona/Covid-19 situation will last at least for the next 8 months; effects of general vaccination are not expected to be seen until the autumn 2021.

Due to this uncertainty created by the global Covid-19 pandemic, the ITS board made the final decision in December 2020, to postpone the 14<sup>th</sup> International Turfgrass Research Conference, to 2022. ITS board is currently considering the implications of postponing the conference to 2022 in terms of ITS membership etc and further communication will follow.

The ITRC2021 has been renamed to ITRC2022 and will be arranged in July 2022 as an on-site conference according to the existing plans. The venue at Copenhagen University and the hotel reservations are rebooked without any extra costs. The conference organizer CAP Partner has agreed to the postponement. Main sponsors for conference have been contacted and are all in favour of postponing the conference. Conference programme, technical tours, the one-day practitioners' seminar, and social events will be rearranged and set up in 2022 according to the existing plans. See [www.itrc2022.org](http://www.itrc2022.org)

## Second call for papers

Because of the postponement of the Conference from July 2021 to July 2022, the ITS board has decided on a second call for papers to be published in ITRC. In addition to the categories, 'Full papers' and 'Short communications', we do also open for submissions in a third category, 'Technical papers'. These are submissions that will not be subjected to rigorous scientific review, but only checked for English language and the absence of commercial aspects by ITRC's Assistant Editor, Doug Soldat, who will take a special responsibility for this category. Like the short communications, the length of technical papers shall normally not exceed three printed pages. They will be published in a digital annex to ITRC, volume 14. The acceptance of a full paper, short communications and technical paper will give the same right to presentation at the conference.

The 'Standards for International Turfgrass Society Research Journal' have been revised to make a clearer distinction between 'Short communications' and 'Technical papers'. The Standards are accessible at the conference website [www.itrc2022.org](http://www.itrc2022.org) and the Wiley ITRC subsite: <https://onlinelibrary.wiley.com/journal/25731513>.

## The deadlines for the second call have been set to:

- Full papers: 1 June 2021
- Short communications: 1 Sep. 2021
- Technical papers: 1 Jan. 2022

## Excellent Sponsorship Opportunities are still available

A number of important organizations including Syngenta, Bayer, Aquatrols, DLF, TORO, the R&A, Copenhagen University, and the Nordic Golf Federations have already become major supporters of the ITRC2022 and plenty of excellent sponsorship opportunities are still available. So, show your organization's support of turfgrass research and become an ITRC2022 Sponsor today! The ITRC2022 sponsor manual is available at [www.itrc2022.org](http://www.itrc2022.org)

This is one conference that you will not want to miss. The ITRC2022 will be packed with educational and social activities, so be sure to check out the ITRC2022 Website [www.ITRC2022.org](http://www.ITRC2022.org) for updates and additional details about the conference.

We very much hope to see you at the 14th International Turfgrass Research Conference, ITRC2022, to be held in Copenhagen 10 -15 July 2022 and arranged by the Scandinavian Turfgrass and Environment Research Foundation (STERF).





Dear Colleagues,

The international journal, *Horticulturae*, is soliciting quality manuscripts for a special edition dealing with contemporary weed management practices in turf. With the loss of many traditional herbicides, rapid increase in weed resistance, and public interest in alternative weed control options, this special edition is well timed on targeting manuscripts dealing with these and related issues affecting turfgrass managers. Topics could include weed biology, weed population shifts, new/emerging weeds, alternative weed control methods, new methods of weed management, and the future of weed science in turf. Manuscripts will be peer reviewed and is planned for fall, 2021 release. Plan on contributing your data and expertise in this special publication that will have world-wide exposure and impact.

1. Instructions for Authors:

<http://www.mdpi.com/journal/horticulturae/instructions>

2. Manuscripts are expected to be submitted through the online system at <https://susy.mdpi.com/user/manuscripts/upload/>, choosing journal "Horticulturae" and special issue "Turfgrass Weed Management".

Deadline: 30 September 2021 (It can be adjusted based on your schedule)

***Guest Editors***

Prof. L.B. (Bert) McCarty ([bmccrty@clemsun.edu](mailto:bmccrty@clemsun.edu))

Prof. James (Jay) McCurdy ([jdm269@msstate.edu](mailto:jdm269@msstate.edu))

Prof. Matthew (Matt) Elmore ([matthew.elmore@rutgers.edu](mailto:matthew.elmore@rutgers.edu))

Turf producers face greater challenges in the future. Environmental pressures and climate change are already having an effect in agriculture, amenity parkland and sports fields, turf production is no exception. The need for robust, drought-tolerant turf grasses has never been greater but choosing the right combination of grass species with strong root performance and high above ground drought coping mechanisms has not been easy. Making the right choice can mean improved turf quality and lower production costs.

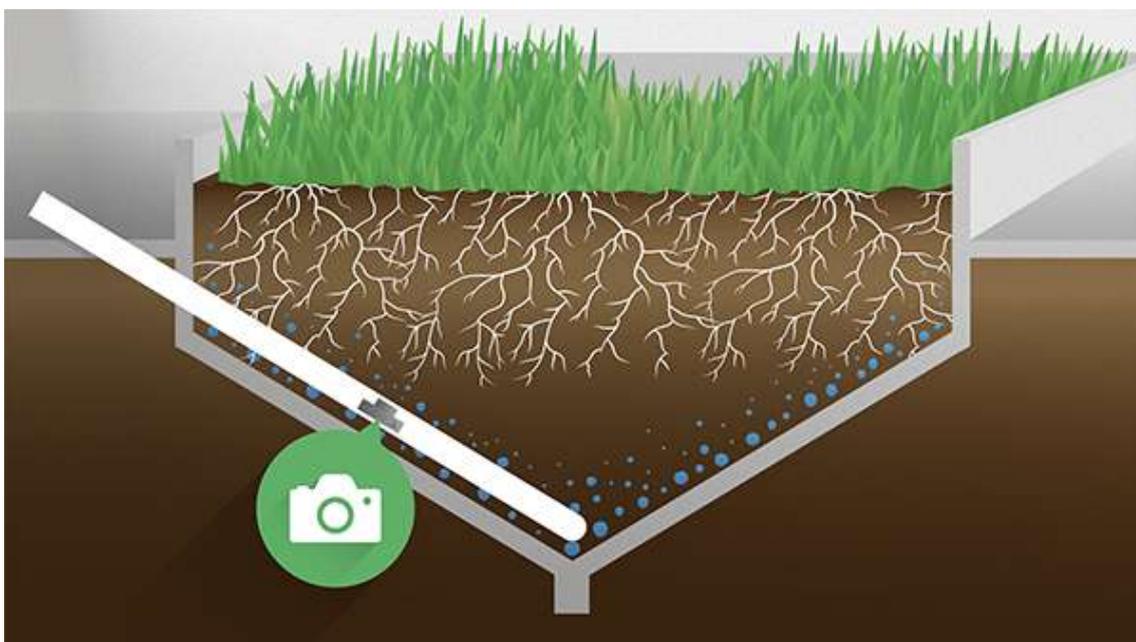
### Spring drought – a more common phenomenon

With changing climatic conditions, spring- and early summer drought occurs more frequently. With irrigation becoming more costly in many cases it may severely impact turf production. 2020 was no exception. For the sixth time in a row, northern- and central parts of Europe were, to various degrees, hit by spring- and early summer drought. In all those years drought had economic consequences for all turf managers. Spring sown turf crops were exposed in 2020 and had difficulties in germinating, and crops established in the previous years were set back in the middle of an exponential growth period. For professional turf managers the consequences were poor visual appearance, more repairs, and less playing hours, for turf producers the droughts meant increased production costs, and extended harvest periods. The phenomenon is not debatable anymore. We'd better get used to the likelihood that spring drought will be the rule rather than the exception!

### New research provides the answers

To mitigate the effects of climate change, Danish scientists and plant breeders have been working to develop new turf solutions with deeper roots that will perform better in a world that's likely to experience more frequent droughts. Plant breeding for improved root architecture is not an easy task. In fact it is quite difficult to get a good look at what's going on deep in the soil and to get this information for a high number of breeding lines, in order to gather the data needed something new was needed and [RadiMax](#) was born.

A one-of-a-kind root screening facility, named RadiMax, took off in 2016. RadiMax is a cooperation between DLF, three Danish Universities, and three other partners. RadiMax involves a screening facility at Copenhagen University and a high-performance computer cluster at Aarhus University. The RadiMax roots screening facility consists of four v-shaped pits, each of which is three metres deep. The plants that grow on the surface of the soil-filled pits receive irrigation from the bottom only. Mobile tents ensure that no rain falls on the crops during the drought tests. Each pit has a capacity for 150 × 10-metre rows of grass plants. Plants that grow in the middle of a pit will have to root down to three metres to reach water "By measuring the biomass above ground we get a very good indication on the root system below" says Christian s. Jensen.



The facility is also equipped with Plexiglas tubes that run at an angle beneath each plant row down to the bottom. Multispectral cameras in the tubes can then record root growth at various points during growth and during stress. "This information," says Christian, "tells us how fast each breeding line will establish itself after sowing, and how it will respond to drought"

All plant material going into the screening facility will be subject to DNA profiling. Screening results and DNA profiles will then be analysed at the computer cluster to generate genomic selection models, which our breeders will use to predict rooting depth of new breeding material.

The research has provided new knowledge about root architecture in grasses, and DLF is now able to provide customers with verified guidance, when they ask for the most drought tolerant species and varieties.

-“Our breeders are getting unique information about root architecture and are able to identify and select candidates with the fastest root growth, the deepest roots and the highest root mass. They have already identified a number of varieties to be the first choice when drought tolerance matters,” says Christian S. Jensen, Senior scientist and Head of Biotech in DLF.

-“ Combining the data from RadiMax with what we already know from our other R&D activities, we can develop new breeding lines to further improve drought tolerance in our new varieties. We have been able to verify the root mass for all key species and for our professional turf segment we have identified varieties with outstanding performance” says Christian S. Jensen.

### **DLF 4turf® tetraploid ryegrass offers turf growers proven drought tolerance**

One of the outstanding performers in the research project has been our new [4turf® tetraploid ryegrasses](#). 4turf® Tetraploids perform better against drought for several reasons. The plant establishes rapidly when sown utilising available moisture in the soil developing a large root mass. The plants also have greater above ground tolerance to drought due to a more efficient production of carbohydrates and larger but fewer stomata in the leaf. These factors when combined with the high natural disease resistance make them an ideal choice for turf producers looking to produce a high quality turf crop whilst protecting themselves from the worst effects of drought.

	PRG 4N		Tall Fescue			
	Fabian	Tetradry	Armani	Bullseye	Essential	Senciccia
Deep root mass “Verified by RadiMax”	✓	✓	✓	✓	✓	✓
Above ground tolerance	✓	✓	✓	✓	✓	✓

Currently, deep root mass and root architecture are not rewarded by any official value tests in the European evaluation system. DLF believe it is essential to pursue the target nonetheless to bring drought tolerant varieties to the market for the benefit of farmers and professional turf managers.

So - when turf managers ask for drought tolerant varieties in the seed bag – DLF are able to provide them - [verified by RadiMax](#).

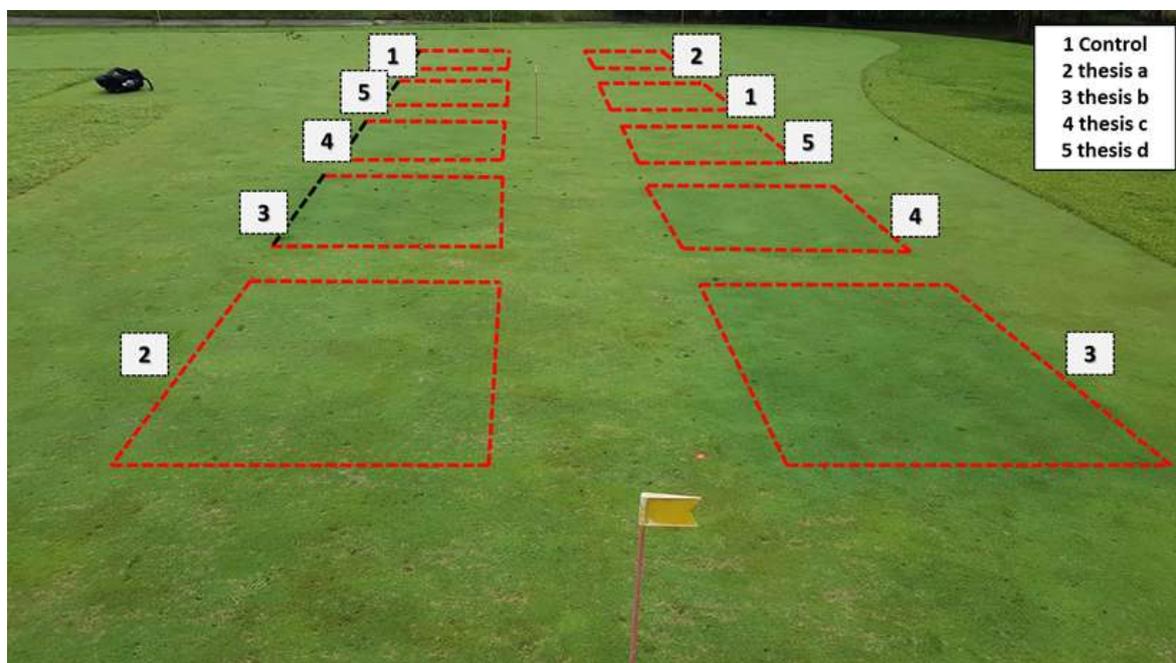
## Use of Rubisco osmo-protectant as foliar preventive of saline stress

3 years' lab and field trials demonstrate the extraordinary efficacy of this product to limit salt damages

By Mattia Accorsi, PhD

# Herbotech

THRIVING FORWARD



### What is saline stress

Saline stress is an abiotic stress, caused by environment and not biological agents. It can be traced back to various forms; probably the most serious one consists in having high concentrations of NaCl on the soil which involves physical imbalances of its structure that becomes more and more heterogeneous and incapable of retaining water via the capillary route. In addition, salinity causes chemical imbalances in the soil due to competition with Ca, P and K and reduces the absorption capacity of the plants due to osmotic imbalances within the leaf tissues (Bulgari et al., 2019). Saline stress is aggravated by global climatic changes; reduced precipitations and frequent use of irrigation causes in littoral areas the rise by capillarity of the saline ions from the deeper soil strata up to the root zone layer, with consequent deleterious effects on turf vegetation (Bulgari et al., 2019). The use of depurated affluent water for irrigation is another cause of saline pollution. Sports fields and golf courses suffer greatly of salt toxicity due to the recurrent mowing frequency that interferes with evapotranspiration.

### Rubisco and Rubisco Smart

Giuseppe Serenelli of Herbotech srl, in collaboration with Professor Mattia Accorsi and Marco Giuliani of the University of Bologna developed in 2015-2016 Rubisco and Rubisco Smart, two foliar osmo-protectants containing amino-acids (Rubisco Smart also contains a green pigment) that ensure best aesthetic-functional performances of turf during severe water-thermal stress periods. Lack of soil available water and localized dry spots are very severe water imbalances that affect turf. But grasses, above all, suffer from water transpiration stress; a cellular dehydration phenomenon of the fleshy part of the leaf (mesophyll) caused by excessive intra-cellular osmotic unbalances. Rubisco and Rubisco Smart successfully contribute to prevent this problem.

### Rubisco and salinity

In 2017 the research group conducted a series of physiological assessments on the possible preventing effects of Rubisco on damages of turf caused by salinity stress in the protected environment of University of Bologna greenhouses. Rubisco was sprayed at 5, 10 and 100 liters/ ha on Kentucky bluegrass sod and then was appropriately irrigated with salinized water up to 16 dS / m, well beyond the generally tolerated limit of lawn plants (2-6 dS / m). Measurements witnessed, as expected, a progressive increase in the electrical conductivity of the soil but also a higher leaf tissue temperature of the plants presumably caused by their worsened ability to thermo-regulate themselves through transpiration. This resulted in a reduction in leaf coverage per sq. m. of surface and a reduction of fresh and dry biomass of both the apical and radical part of the plant.

Treatment of Rubisco at 5 liters/ha showed significant lesser damages than Rubisco at higher dosages and of the salt treated control (Accorsi 2018)

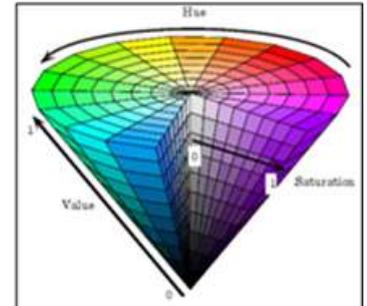
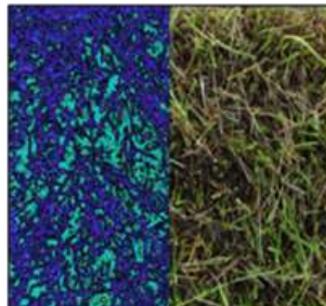


Figure 1 above: Hi-tech growth chamber with automated irrigation, nutrients' control and artificial light was utilized in the 2017 experiment at the University of Bologna. Figures 2,3,4,5, below (from left to right): professional scale for fresh and dry biomass measurements; digital thermometer for measuring leaf temperature; colour photodetector with mathematical analysis software to determine the degree of leaf coverage

From June to September of 2020 open field trials were conducted by Prof. Accorsi and Andrea Patussi of Herbatech at Floor Green sod nursery in Verona over a 1-year-old Barracuda bentgrass turf growing on a 95% silica sand + 5 % chabazitic zeolite substrate and irrigated with saline water. Rubisco was sprayed at 5 liters/ha to verify the efficacy already demonstrated in the 2017 laboratory tests. In addition, two other thesis were evaluated: one with Rubisco tank mixed with Jasmonic Acid (respectively 5 Liters + 3 Liters/ha in 800 L of water) and the other with Rubisco combined with Brassinosteroids (5 Liters + 1,5g/ha in 800 L of water).

The aim was to verify possible synergies in reducing saline stress damages using these two anti-oxidative molecules. Results demonstrated and confirmed the excellent efficacy of Rubisco in reducing saline stress during the summertime. No significant visual results were observed by adding Jasmonic Acid and Brassinosteroids to Rubisco. Indeed, Jasmonic Acid produced a slight phytotoxicity on treated plots.

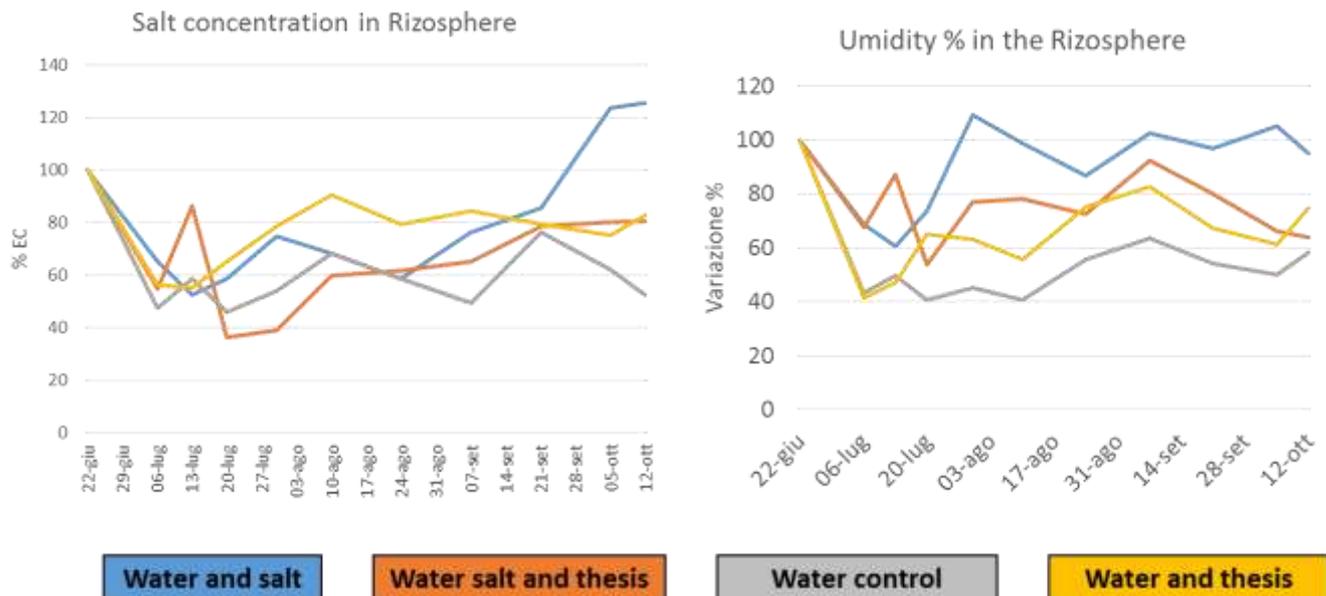


Figure 7: two of main analysis measured during the 2020 experimental field trials

The Verona trials wanted to test also the effect of saline water on soil microbiology and organic matter catabolism and possible effects on soil induced by Rubisco treatments. All treatments with Rubisco significantly increased microbial population compared with control. Treatments with Rubisco tank mixed with Brassinosteroids and Jasmonic Acid irrigated both with spring water and with saline water, determined a similar slight reduction in the content of organic matter. A different response was however noted on organic matter content when turf was sprayed with Rubisco alone. Rubisco irrigated with saline water resulted in an 8% increase of organic matter quantity but, surprisingly, when Rubisco was treated on the plot irrigated with regular spring water, there was a decrease of organic matter content by 21%. This last aspect, a classical fruit of serendipity, will be investigated in further studies because, the correlation of Rubisco with OM reduction and the significant increase of the microbial flora may be the basis for future applications and commercial developments of Rubisco utilization for organic matter management on turf.

**Rubisco and Rubisco Smart application on turf with salinity problems:**

As a consequence of the positive experimental results, the research group has developed an application program specific for turf suffering of salinity induced problems. On grass growing on salt polluted soils and on turf irrigated with recycled water Rubisco and Rubisco Smart must be foliar sprayed respectively at 5 liters and 7,5 liters/ha in 800 liters of water, starting in springtime, before the appearance of yellowing-wilting symptoms and repeated at monthly intervals from April till October. These products work in perfect combination with aeration programs and with the utilization of penetrant surfactants and chelated gypsum.



## Resilient Blue® grass technology copes with weather extremes



Resilient Blue® is Barenbrug's new powerhouse

**Extreme drought and heat have clearly taken their toll on sport pitches, golf fairways and sod farms in recent summers. With a new grass technology, Barenbrug now has a solution for conditions like these. Resilient Blue® is the most tolerant and resilient cool season grass solution to heat and drought stress, keeping the turf green and dense for a long time, even in extreme weather situations.**



Barenbrug launched Resilient Blue® in February during the first 'Barenbrug Online Event'. More than 500 viewers from all over Europe registered for the live stream of the introduction of this new grass technology. That was something new for Barenbrug as well. The company often introduces new products in the Netherlands first and then in other countries gradually. This time the introduction was in 32 countries simultaneously.

### **Sum of tolerance and recovery in extreme situations**

The name Resilient Blue® stands for "resilient bluegrass", referring to the American name of poa pratensis: *Kentucky bluegrass*. Olaf Bos, technical specialist turf at Barenbrug Holland and closely involved in the development of the newest innovation explains: "For us, resilience means the sum of tolerance and recovery from extreme situations. That is what makes the Resilient Blue® grass technology so unique: the adaptation to stress situations and the quick recovery afterwards. It's a unique combination of some very special poa pratensis varieties with a special seed enhancement to give it the best start possible". Barenbrug is initially targeting on the sod, golf and sport market. Mixtures with Resilient Blue® technology can be customised for turf growers. Besides that, there will be two standard grass seed mixtures for sport pitches and golf courses: Resilient Blue Sport and Resilient Blue Golf. Over the next year, specific mixtures with Resilient Blue® grass technology will also become available for public green space and private gardens.

### **Less stress and diseases with less water and fertiliser**

The development of Resilient Blue® was a response to the changing climate. Recent summers show that beside South and East Europe, also Central and West Europe suffer more and more from drought and heat. Mixtures with Resilient Blue® technology require less input in the form of water and fertiliser, which means better resistance to weather extremes. According to Barenbrug, the mixtures have four characteristic advantages. Tests on several locations have shown that Resilient Blue® maintains much denser grass cover in dry summers than ordinary poa pratensis and even better than tall fescue swards. This difference is clearly visible in Chart 1.

## Resilience during heat & drought

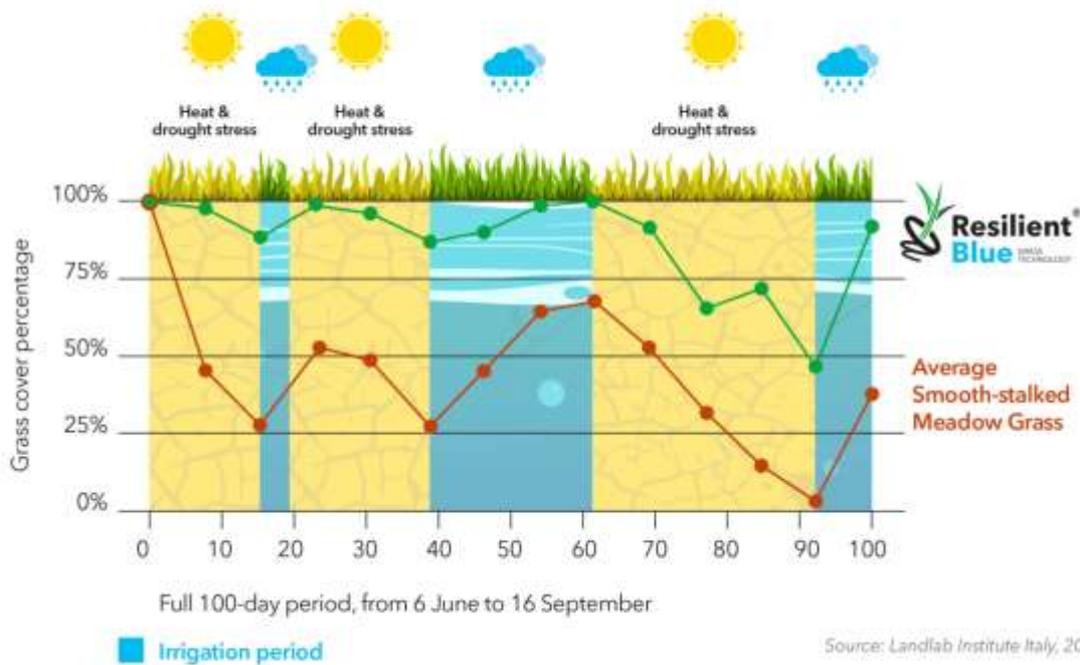


Chart 1: The difference in coverage between normal smooth meadow grass and Resilient Blue® during 3 stress periods in one season with no irrigation: better stress tolerance and quicker recovery after stress

Furthermore, the grass recovers visibly faster after a period of stress as can be seen in Chart 1 and 2. Besides that, Resilient Blue® can also withstand a high amount of traffic especially when there is also RPR® grass technology (regenerating perennial ryegrass) in the mixture, which is standard for golf and sport. The last unique characteristic of mixtures with Resilient Blue® grass technology is the greater tolerance to diseases associated with the changing climate, such as grey leaf spot and summer patch.

## Recovery during irrigation after a period of extreme stress

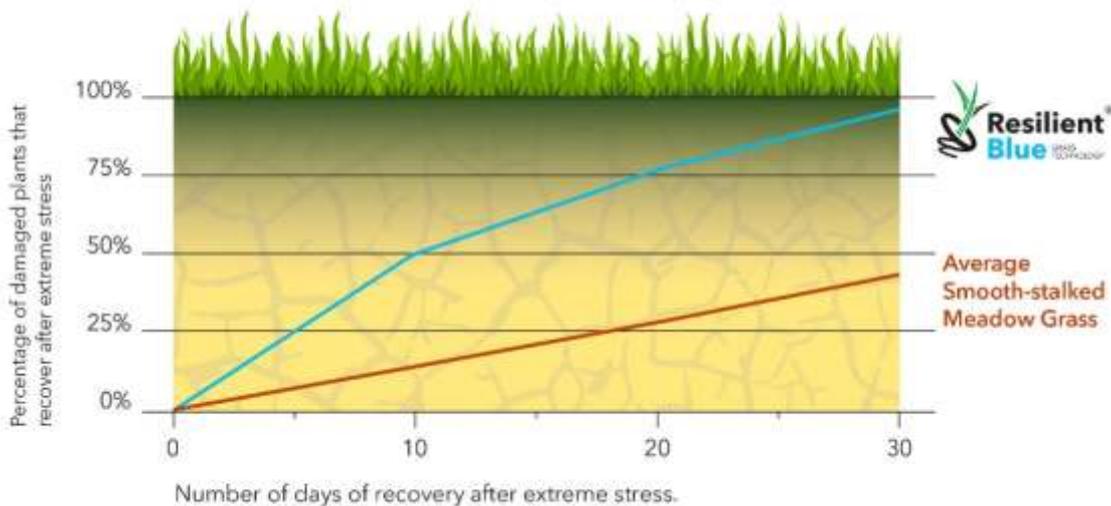


Chart 2: The recovery of the Resilient Blue® plants that are damaged by extreme situations, recover significantly faster compared to standard *Poa pratensis*.

### Like an airbag

“Resilient Blue<sup>®</sup> grass technology can be used as a fundament for a more stress tolerant grass sward”, says Olaf Bos who has a broad experience in construction and maintenance of sport accommodations and golf courses. “I see an advantage in it, especially on sod production, fairways and sport pitches that are on sandy soils and have irrigation limitation either by law or by capacity. Last year, many golf courses and sport pitches in The Netherland for example had their irrigation restricted by the water authorities. With the dry summers in the past few years even in central and western Europe, it’s a challenge to keep large areas all green at the same time. Resilient Blue<sup>®</sup> grass technology can certainly be a solution for that.” Bos adds: “On the locations where we tested Resilient Blue<sup>®</sup>, you can clearly see the power of the technology in hot dry summers.



*Picture 1. The technology has been subjected to many tests like in rain-out shelters with **6 weeks no irrigation** (left: before, right: after 6 weeks) at all at very hot conditions (peaks over 35dgC).*

The strength of the Resilient Blue grass mixture is that its composition adapts to the situation. On golf courses for example, you will see this more clearly on a sandy course with dry high mounds than on a clay course. I always compare it to an airbag in a car. You don’t always see the protection, but when you need it - in this case during extreme drought and heat - you can rely on it. It cushions the impact and fights back after that. You will really see the benefits.”

### No brainer for sod growers

The new poa pratensis grass technology is also specially developed for sod growers. Bos explains: “Poa pratensis is the most used fundament for good sods. With Resilient Blue, you don’t need to irrigate as much, which leaves you with more water or more time to plan a good distribution on your area. These water savings mean you have less pressure on your planning. Above all, Resilient Blue is also made of the top quality poa pratensis variety according to the NTEP listing. The average sod farm can benefit greatly from this.”

### Lot of interest

Barenbrug looks back on a successful launch of Resilient Blue<sup>®</sup> grass technology. Bos has noticed there is a lot of interest. “Especially from sod growers and greenkeepers, but also from municipalities for example. Heat and drought are topics that concern everyone. There is also the issue of cost savings. Now we have the perfect answer to this.” The grass technology is now available at Barenbrug and can be used to make tailor made solutions for all sod farms.

### More information

You can find all information about the new Resilient Blue grass technology at:

<https://www.barenbrug.biz/resilient-blue>

Barenbrug created a 30 second video that tells it all:

<https://www.youtube.com/watch?v=ON-2c1UEuxA>



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Deadline for submission of material for 02/2021 edition: **June 15<sup>th</sup>**

### ***The EUROPEAN TURFGRASS SOCIETY***

The objectives of the **ETS** include the spread of innovative applications and encouragement of a holistic view of turf, particularly with respect to its influence on urban and environmental quality. This approach is significant as the founding members are representatives of a large industry that has global importance. We aim to:

- a)** Provide a forum for scientists, consultants, companies and practitioners to discuss technical issues related to the provision of turf surfaces.
- b)** Spread innovative applications for the benefit of the turfgrass industry, national and local government, and the European public. Encourage a systems-based approach to the study of turfgrass through multi-disciplinary groups working at different levels.
- c)** ETS considers turfgrass knowledge in the broadest sense, including its use in sport and leisure, its role in improving urban quality and its importance in the mitigation of environmental effects such as soil erosion.
- d)** Develop a strong ethos to promote sustainable, low input systems and solutions based on the conscious use of non-renewable resources.



## Current ETS Board of Directors



**Stefano Macolino**  
University of Padova, (IT)

*ETS President*

Stefano Macolino is an Associate Professor at the Department of Agronomy, Food, Natural resources, Animals, and Environment of the University of Padova.

He graduated in Forestry Science in 1996, Faculty of Agriculture at Padova University.

He has carried out research on forage management and turfgrass at the Department of Environmental Agronomy and Crop Production as a Postgraduate Researcher. In 2003, he achieved the Ph.D. in Environmental Agronomy.

He has been teaching actively, including three courses: Turfgrass and Revegetation, Forage Crops, and Botany of Cultivated Plants. Dr. Macolino is currently the president of the Committee for the improvement of teaching at the School of Agriculture and Veterinary Medicine of Padova University.

He conducts researches on the following:

1. Impact of cultural practices on cool and warm-season turfgrasses in transition zones.
2. Forage crop production and management.
3. Production and plant biodiversity of mountain grasslands.

He supervised Ph.D. students and postdoctoral fellows on the made mentioned topics.

Dr. Macolino is the author and co-author of nearly 50 scientific publications in peer-reviewed journals, and numerous publications in conference proceedings, and technical magazines. He is also the author of two books in Italian for undergraduate students.



**Marcela Munoz**  
Syngenta (UK)

*ETS Board Member*

My name is Marcela Munoz, I'm a leading turfgrass specialist qualified as an Agronomist Engineer from The Pontifical Catholic University of Chile and have a Master of Science Degree from The Ohio State University in Turfgrass Management. Since 2015 I'm based in Cambridge, UK, working as Syngenta's Technical Services Manager for the EAME region.

I'm an amateur football player that joined this industry moved by my passion for sports, agronomy and science. I had been in the turf industry for more than 15 years and worked at different positions and countries around the world. Some of my latest exciting experiences include working for the STRI as a turf agronomy consultant for the FIFA 2014 Brazil World Cup and providing technical support at the Ryder Cup at Le Golf National in Paris. I'm also an active member of many turf associations around the world and volunteer since 2011 in the International Committee of the Sports Turf Managers Association of America (STMA)

In my current role I work closely with associations such as ITS, FEGGA, GMA, BIGGA, STERF, R&A and other local associations and Federations around the region. I also work very closely with the Syngenta Turf Research facility at Stein in Switzerland and the International Research Centre at Jealott's Hills in the UK, as well as independent researchers, agronomists, greenkeepers and sports turf managers across Europe, Africa and the Middle East. My role also includes supporting the marketing team and commissioning pioneering research to maintain Syngenta at the leading edge of turf science, as well as delivering the results back to the industry in the form of practical solutions to help create consistently better playing surfaces.



**Claudia de Bertoldi**  
Turf Europe Srl (ITA)  
*ETS Secretary and Treasurer*

I received my BA in 2003, after an internship at North Carolina State University (USA) and I have completed my M.Sc (*Progettazione e Pianificazione delle Aree Verdi e del Paesaggio*) at University of Pisa (Italy) in 2006. My PhD (*Allelopathic interferences of plants*) was from S. Anna School of Advanced Studies in 2007-2010. I have been working as consultant at Pacini Company (Pisa - IT) for warm season turfgrass production made in Tunisia during 2010-2012. Since 2013 I am employed by Turf Europe srl (Livorno - IT). I am actively engaged in landscaping and realization of gardens and turfgrasses for ornamental and sport use. Management of high-quality sport fields also through precision agriculture. Consultant for turf seeding in difficult zones (dumps and caves). Botanical censuses and visual tree assessment. Participation in R&D projects financed at European level. More than 15 publications, posters and presentations on conferences and meetings on turfgrass.

**Marco Schiavon**  
University of Florida (USA)  
*ETS Board Member*

Ph.D., is an Assistant Professor in the Environmental Horticulture Department, University of Florida at the Fort Lauderdale Research and Education Center. His primary research interests include potable water conservation for irrigating turfgrass areas, salinity management, physiology of turfgrass in response to drought stress. He received a B.S. in Agronomical Sciences in 2005 and a M.S in Agronomy in 2008 both from University of Padua, Italy, and a Ph.D. in Agronomy in 2013 from New Mexico State University. In 2013, he moved to University of California Riverside where he worked as a Postdoctoral Scholar until December 2016, and subsequently as an Assistant Researcher until November 2019. He has published more than 30 refereed journal articles.



**Karin Juul Hesselsø**  
Norwegian Institute of Bioeconomy Research (NOR)  
*ETS Board Member*

M.Sc in Agriculture 1996, Copenhagen University. From 2006-2019 employed at the Greenkeepers College Sandmoseskolen in Denmark as teacher in greenkeeping and landscape gardening.

From June 2019 employed at NIBIO, Landvik. Experience with writing/translation of popular articles and fact sheets on golf course management. In 2018 project leader on an IPM-project on Danish golf courses financed by the Danish Environmental Protection Agency.



**Fritz Lord**  
COMPO Expert (GER)  
*ETS Board Member*

Study of horticultural science at Rhein University Geisenheim, M.sc. in soil science/entomology. Study of Agricultural Science at Humboldt University Berlin; M.Sc. in crop science, plant diseases; Ph.D at Humboldt University Berlin in phytopathology, antagonistic rhizobacteria (PGPR), soil borne pathogens (Fusarium). Since 2008 working for one of Europe`s leading fertilizer manufacturer COMPO Expert in Münster, Germany. Responsible for the segment turf and public green, vegetation-technical consultation, research and development, product management and education. Specialties/ experiences: soil-plant-microorganism interactions, bio stimulants, microbial fertilizer, turf nutrition and maintenance. Various publications regarding turf fertilization and maintenance (e.g. European Journal of Turfgrass Science, New Landscape). Teaching turf seminars for greenkeepers and groundsman in Germany and abroad. ETS member since 2008, board member of the International Turf Grass Society (ITS) since 2014. Further memberships: German Turfgrass Society (DRG), Greenkeeper Association of Germany (GVD) , Austrian Greenkeeper Association (AGA), Förderkreis Landschafts- und Sportplatzbauliche Forschung (FLSF), Forschungsgesellschaft Landschaftsbau e.V. (FLL).



**Wolfgang Praemassing**

DEULA (GER)  
*ETS Board Member*

Study of Agricultural Biology (University Diploma) at University of Hohenheim, 1991 Doctoral Dissertation (PhD) Promotion with Prof.

Dr. H. Franken, University of Bonn, subject: Soil physical Effects of Aeration on Turfgrass Soils, 2008.

**Occupation and activities:**

Professor for Sustainable Turfgrass Management at University of Applied Sciences Osnabrueck, Agronomist and lecturer in Greenkeeper Education and Training for golf and sport sites at DEULA Rheinland GmbH, Education Center, Kempen. Member of editorial staff of "European Journal of Turfgrass Science". Member of Turf expert committee of German Soccer League (DFL).

Member of working group "Water" at German Golf Federation. Member of examination boards of Chamber of Agriculture Nordrhein-Westfalen Golf Course Greenkeeper and Head-Greenkeeper, Greekeeper/Groundsmen Sport Sites, Competence of Pesticide application.

**Carlos Guerrero**

University of Algarve (POR)  
*ETS Board Member*

Carlos Guerrero is graduated in Horticulture Engineering at the University of Algarve (Portugal). Has a M.Sc. in Soil Fertility and Plant Nutrition at the Agronomy Superior Institute, of the Technical University of Lisbon (Portugal) and a PhD in Environmental Agronomy at the University of Algarve (Portugal).



Assistant Professor at the University of Algarve (Faculty of Sciences and Technology), a former Diretor of the Degree Program in Agronomy (2015-2018) and also a former Director of the Master Program in Management and Maintenance of Golf Courses between 2008-2010.

Teaches Soil Science in Landscape Architecture and Soil Science and Agriculture Machinery in the Agronomy. Is also specialized in groundwater and soil nitrate pollution and has experience on organic and compost uses in agriculture and turfgrass.

Actually, is working on biological control of plant diseases, mainly turfgrass, and also on remote sensing for turfgrass maintenance purposes with unmanned aerial vehicles and multispectral sensors."

