

# STERF – the Nordic golf sector’s sustainability initiative

Take the initiative - Work proactively - Create change



FGU Board Meeting  
April 25<sup>th</sup> 2022  
Maria Strandberg, Bruno Hedlund

[www.sterf.org](http://www.sterf.org)

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## Future trends

### Climate and natural resources

- Adaption to climate change and minimizing factors affecting climate changes (SDG 13)
- Sustainable use of energy and resources for example water, fertilizer, pesticides (SDG 12)

### New diseases and strict laws and regulations

- Sustainable solutions for control of diseases, weeds and insects (SDG 13, 14, 15)
- Laws and regulations, and public resistance to chemical and plastics

### Land use and urban development

- Restore and enhance biodiversity (SDG 14,15)
- Competition for land (SDG 11)
- Outdoor life and recreation (SDG 3)

### New technology

- Automation, sensor technology and AI (SDG 9)

### Partnership and collaboration (SDG 17)



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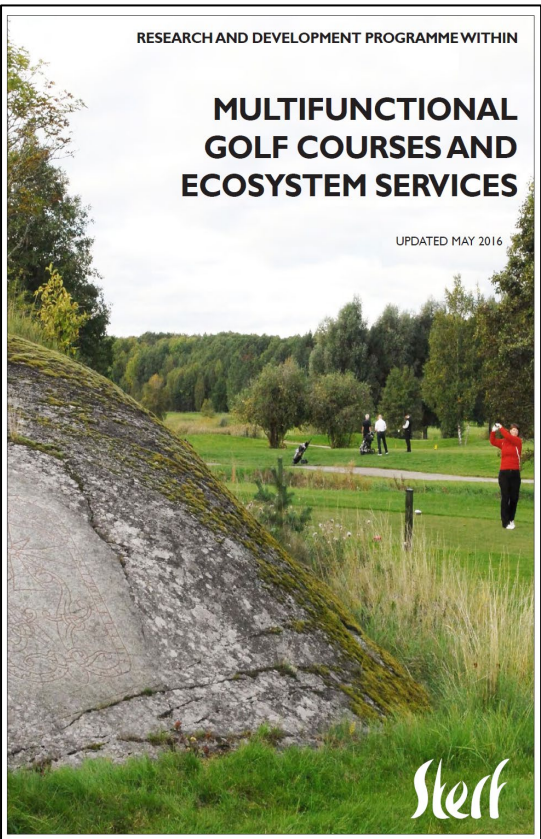
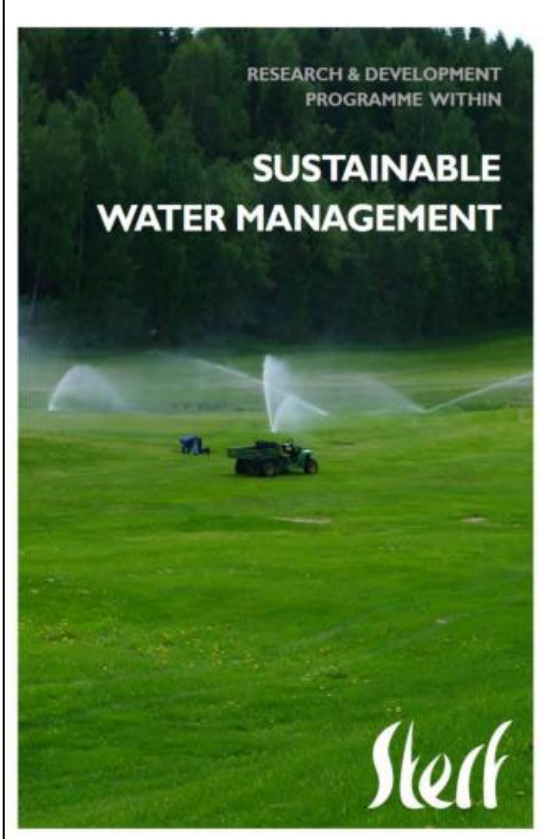
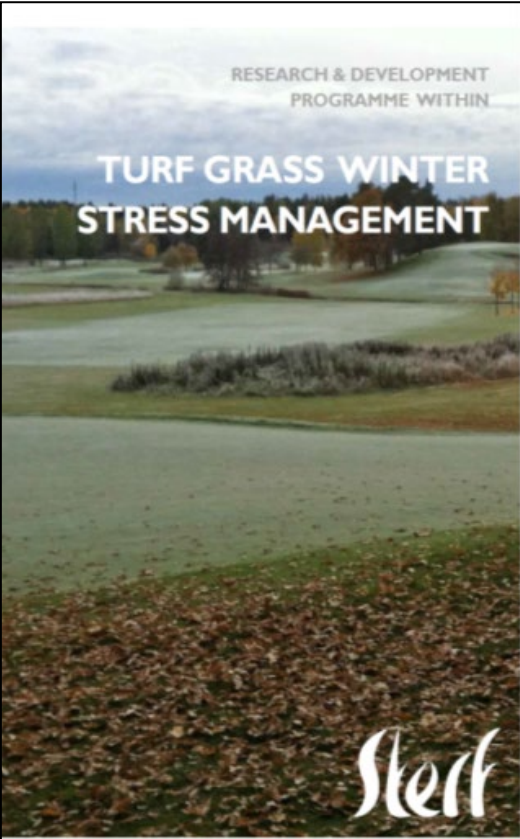
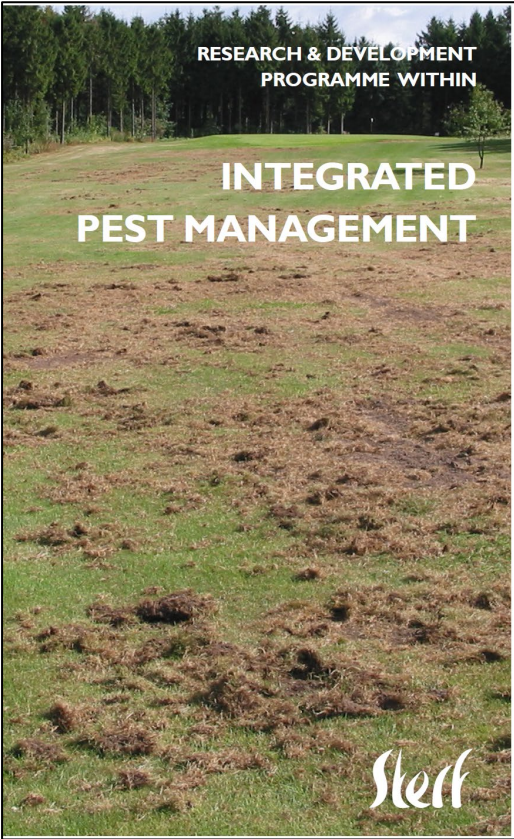
## 95% of Nordic research on turfgrass and golf course management is coordinated by STERF

### Nordic collaboration

- Nordic golf federations high international status and credibility
  - Best expertise in every country
  - Joint investment in publication of results
- 
- Research funding – 40% from golf federation and 60% match-funding
  - Delivers ready-to-use results
  - Leading international centre of expertise
  - Role model to build a research and development organisation
  - Open call for proposals every three years



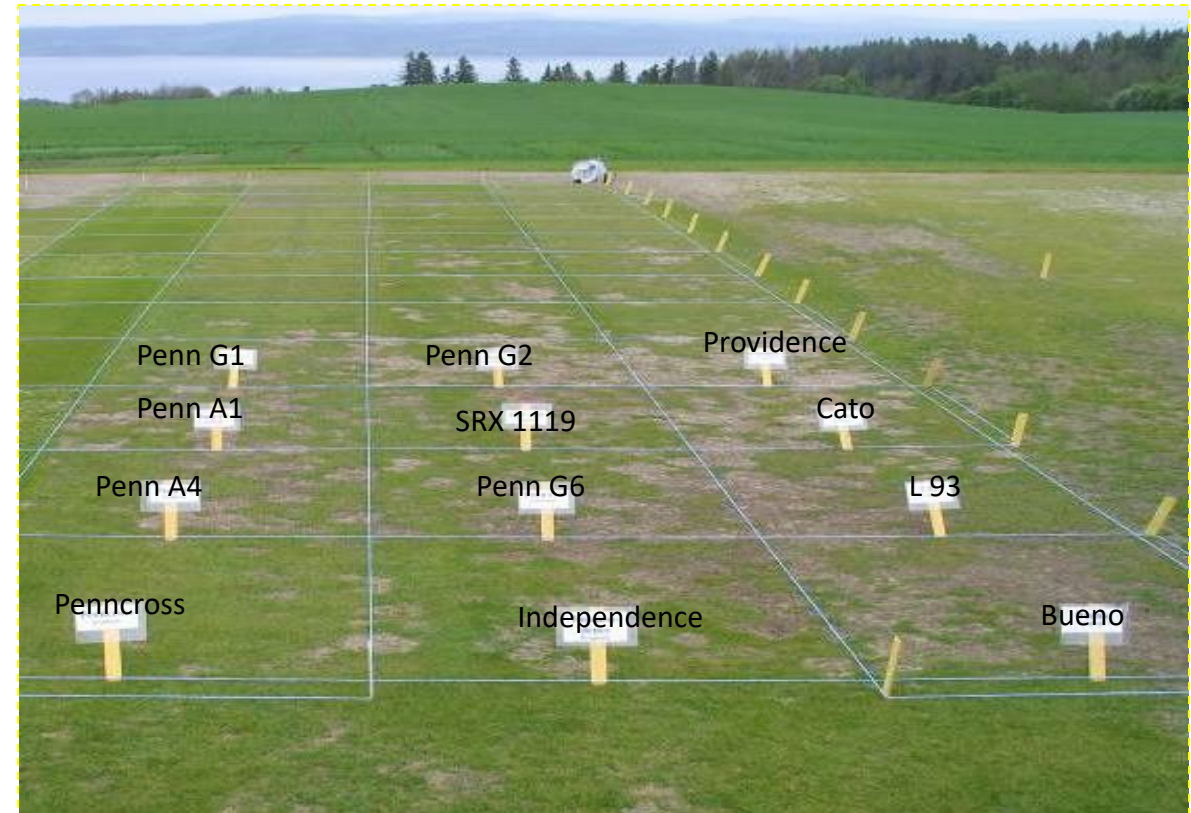
# Internationally important areas and programmes



# Turfgrass species and varieties that survive in a changing climate and are tolerant to diseases

SCANGREEN 2019-2022

- Trials in Iceland, Norway, Denmark, and USA (Massachusetts)
- Seed companies: DLF Seeds, Barenbrug, DSV, Scandinavian Seeds, Mountain View Seeds, Graminor, Svensk Jordelit, Semillas Fito, Landmark Seeds, ICL / Everris, PGM, Tempo Verde, Germinal
- SDG: Climate change, Minimize chemical pollution, Partnership and collaboration
- Total funding for four years: STERF €186 792 and Match-funding € 35 000



## Control of new disease caused by warmer climate

### IPM-GOLF -Integrated management of important turfgrass diseases on European golf courses, 2020-2023

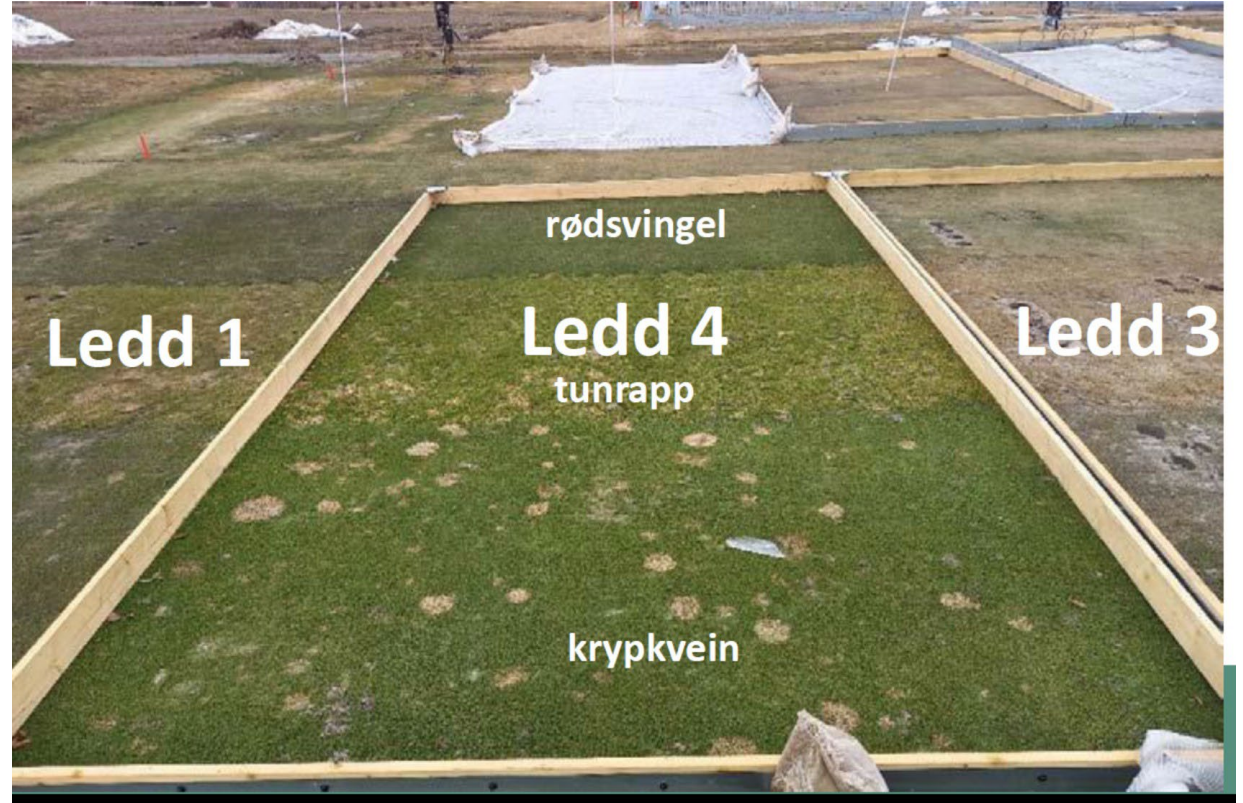
- A Golf Course 2030 project, collaboration with the R&A
- Partners: NIBIO, Norway; STRI, UK; The Turf Disease Centre, UK; Københavns Golf Club, Denmark; Nyholt ApS, Denmark; University of Applied Sciences Osnabrueck, Germany; Golf Course Osnabrueck, Germany; ProSementis GmbH, Germany; Botaniska Analysgruppen, Sweden; University of Algarve, Portugal; All-Russian institute of plant protection, Russia; XEMA, Finland; University of Eastern Finland
- SDG: Minimize chemical pollution, sustainable use of fertilizer, water etc, Partnership and collaboration
- Total funding for three years: STERF €117 400, The R&A € 117 400 and Match-funding € 208 100



## Strategies to prevent and repair damages caused by ice cover and melting water

### ICE-BREAKER: Reducing the agronomic and economic impact of ice damage on golf courses

- Costs caused by ice cover: 400 – 600 000 SEK per year
- Ten up-dated fact sheets
- Partners: NIBIO, Norway; RCN Norway; NGF; SGF; University of Massachusetts; University of Minnesota; Nodic golf clubs.
- SDG: Climate change, Minimize chemical pollution, sustainable use of natural resources, Partnership and collaboration
- Total funding for four years: STERF 1 558 kSEK  
RCN 4 605 kSEK and Match-funding € 3 441 kSEK



## Better turf quality, reduced fertiliser cost and less use of fossil energy

### ROBO-GOLF - Robotic mowers on golf course fairways and semi-roughs, 2020-2023

- Trials at NIBIO experimental facilities and at Nordic golf clubs
- Collaboration with Husqvarna AB
- SDG: Climate changes, Sustainable use of natural resources, Partnership and collaboration
- Total funding for three years: STERF €107 200 and Match-funding € 227 800





# Practical advise and recommendations

## 42 fact sheets in IPM, Winter stress management, and Biodiversity

**FAKTABLAD - Integrerat växtskydd**

**Minimering av ogräs på fairway och andra kortklipppta gräsytor**

Januari 2020



**Att minimera ogräs**

Ogräs är ett problem på golfbanor som används till golf, fotboll och andra aktiviteter.


I de nordiska länderna finns det betydande skillnader i artens utbredning på golfbanor, särskilt till exempel när det gäller ogräs. Detta beror på olika klimatförhållanden och på att olika typer av gräs används på olika delar av golfbanan. För att kunna hantera ogräs på bästa sätt är det viktigt att känna till vilka ogrärsarter som finns på sin golfbana och vilka förhållanden som råder där.

Det är viktigt att tänka på att ogräs inte bara är ett problem för golfbanor utan också för miljön. Ogräs kan bidra till att minska biodiversiteten på golfbanor och kan också bidra till att minska mängden gödning som används på golfbanor. För att kunna hantera ogräs på bästa sätt är det viktigt att tänka på miljön och att använda sig av ekologiska metoder för att hantera ogräs.

**FAKTABLAD - Integrerat växtskydd**

**Torrfläckar**

Juni 2019



**FACT SHEET - Multifunctionality & Biodiversity**

**From dense swards to biodiverse roughs - Methods to diversify existing rough areas**

**HANDBOOK TURF GRASS WINTER SURVIVAL**

**HÖSTFÖRBEDDELSE AV GREENER för bättre vinteröverlevnad**



**Inledning**

Detta handboken fokuserar på att ge golfbanor bästa möjliga förberedelse inför vintern. Detta innebär att ta tillvara på de goda förhållanden som råder på golfgreenerna under sommaren och förbereda dem för vintern. Detta innebär att ta tillvara på de goda förhållanden som råder på golfgreenerna under sommaren och förbereda dem för vintern.

**Sammanfattning**

Höstförberedelse av greener:

- Skottning (kortklippning) och lufttorkning
- Upprättning av goda gräs
- Skottning av gräs
- Tillräckligt vatten till greener och i tillräckligt stora mängder
- Goda förhållanden för gräs och för gräset

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**HANDBOOK TURF GRASS WINTER SURVIVAL**

**ISBRÄNNA - När ska isen krossas?**



**Inledning**

Isbränna är en viktig del av vinterarbetet på golfbanor. Detta innebär att krossa isen på golfgreenerna och på andra delar av golfbanan. Detta innebär att krossa isen på golfgreenerna och på andra delar av golfbanan.

**Sammanfattning**

Isbränna ska göras när isen är tjock och hård. Detta innebär att krossa isen på golfgreenerna och på andra delar av golfbanan. Detta innebär att krossa isen på golfgreenerna och på andra delar av golfbanan.

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**Motivation to diversify**

A more diverse vegetation is required for rough areas to provide resilience for pollinators and biodiversity in general, have higher aesthetic appeal, and contribute to the environmental profile of the golf course.

For older roughs with a dense grass cover it is more of a challenge. There are two limiting factors: a low input of seeds and strong competition from grasses that prevent establishment. Here we present approaches to overcome these limitations for both golf course roughs and other amenity grasslands.

Key actions are to establish a more diverse vegetation on parts of the golf course, primarily in rough areas and edges towards forests, and follow up with targeted management through cutting.

Here we present simple guidelines to how this can be achieved by seeding and reducing the strong competition from grasses. We also address where and on which spots a higher success rate is expected.

**Summary**

Golf courses can have substantial contributions to biodiversity and ecological processes in their neighbourhood, given proper design and management.

Key actions are to establish a more diverse vegetation on parts of the golf course, primarily in rough areas and edges towards forests, and follow up with targeted management through cutting.

Here we present simple guidelines to how this can be achieved by seeding and reducing the strong competition from grasses. We also address where and on which spots a higher success rate is expected.

By Trygve S. Aamlid, Wendy Woolen, Pia Heltoft, Marte Skattebu and Jan Tangveen, NIBIO

Popular Scientific Articles - STERF, August 2021

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# Handbooks and Popular scientific articles

**Sustainable Fertilisation**

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Upload, livestream, and create your own videos, all in HD.

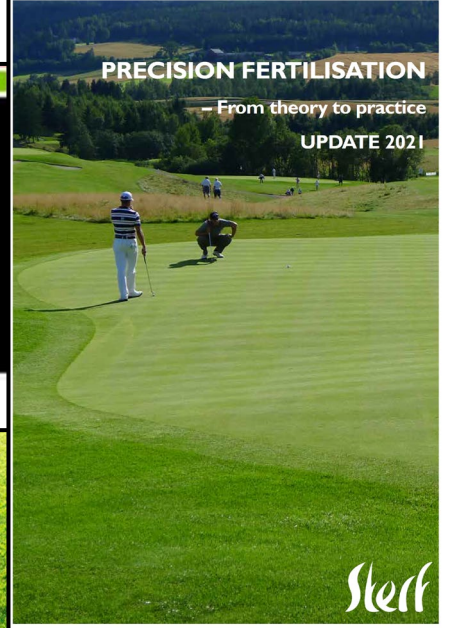
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**PRECISION FERTILISATION**

From theory to practice

UPDATE 2021



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**Better winter survival with impermeable plastic covers on annual bluegrass, creeping bentgrass and red fescue putting greens**

Results from NIBIO Apelsvoll confirm superintendents' experiences:

By Trygve S. Aamlid, Wendy Woolen, Pia Heltoft, Marte Skattebu and Jan Tangveen, NIBIO

Popular Scientific Articles - STERF, August 2021

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**Can golf courses store carbon?**

New STERF research project estimates the carbon status of land used by Icelandic golf courses

By Einar Rögnvald, M. Gudmundsson

Popular Scientific Articles - STERF, January 2021

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## New fertilization handbook and video

**SUSPHOS: Precision Fertilization - higher quality, lower cost and lower impact on the environment**



- Simple tool for every golf club to use
- Focus on the basic need of the grass and quality of the soil/root zone
- Published in English, Swedish, Danish, Finnish
- Experimental trials in Germany (Dütetal GC,) Netherlands (Princenbosch GC), Sweden (Falkenberg GC), China (Jingshan GC), Norway (NIBIO research station)

## STERF key indicators 2006-2021

292 handbooks, fact sheets, videos

578 popular scientific articles

1 084 conferences, seminars,  
webinars

222 projects

204 scientific publications

2849 Subscribers newsletter (2021)

Investment:

€ 5 800 000 Nordic Golf sector

€ 3 500 000 Match-funding

Year	Funding (kSEK)		Applications		Ongoing projects	Scientific publications		Popular publications	Presentations at seminars, webinars, conferences	Handbooks, Fact sheets, videos Programmes	Subscribers to STERF newsletters	
	STERF	Match-funding	Received	Approved for funding		Peer-reviewed papers	Publications and reports				English	Swedish
2006	1 500		17	7	12	7		23	46			
2007	4 900		1	1	13	3		12	26	1		
2008	4 500		22	6	18	11		29	42	2		
2009	5 500		1	1	15	16		20	49	1		
2010	3 000		16	9	13	7		29	46	1		
2011	3 700				19	4		32	50	25		
2012	3 400				18	9	12	24	98	25		
2013	4 100				14	2	11	36	71	11		
2014	6 300		19	8	22	13	18	33	84	12		
2015	4 400				17	6	7	23	77	9		
2016	4 100		15		19	14	6	25	86	126		
2017	4 700	3 682		7	18	10	3	50	92	16	893	1233
2018	3 300	4 711	3	1	15	10	7	48	114	19	898	1238
2019	2 412	4 129	17	6	7	2	4	49	122	5	1303	1271
2020	2 900	5 952			9	7	1	88	85	13	1374	1293
2021	2 900	5 467			7	5	8	57	103	26	1452	1397



# ITRC 2022

## 14<sup>TH</sup> INTERNATIONAL TURFGRASS RESEARCH CONFERENCE

### ITRC 2022 Confirmed Sponsors

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[WWW.ITRC2022.ORG](http://WWW.ITRC2022.ORG)

Copenhagen, 10-15 July, 2022

[www.itrc2022.org](http://www.itrc2022.org)

# Modern Sports Turf Management - Practitioner Seminar, 12 July 2022

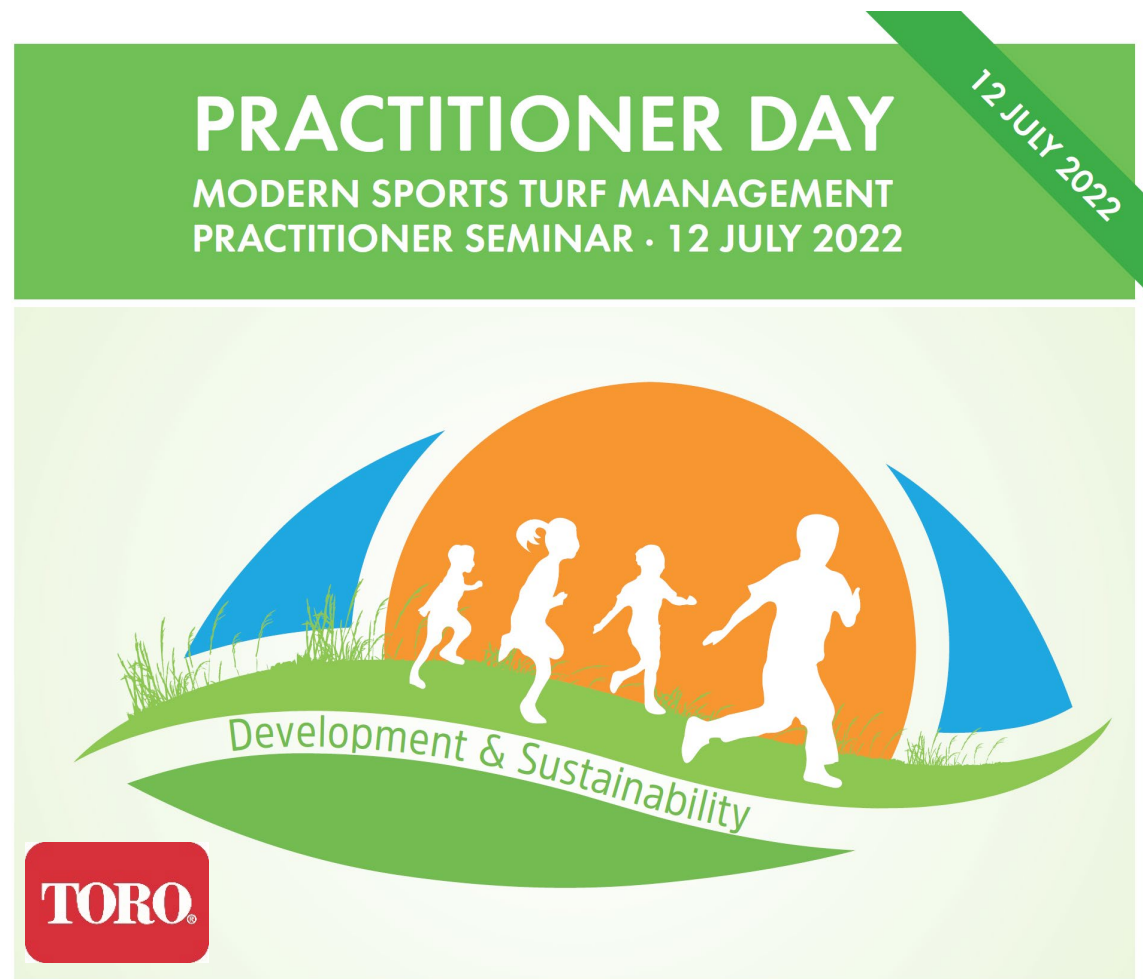
Brings news directly from the laboratories and test fields to practical turfgrass managers

## Topics

- Low input management
- Stress management
- New technological tools
- Turfgrass ecosystem services
- Pesticide free future

"Eat your golf course" Dinner at Furesø Golf Club based on local ingredients from the golf clubs in the area.

Register also for Technical tours, July 13<sup>th</sup>



**Copenhagen, 10-15 July, 2022**

**[www.itrc2022.org](http://www.itrc2022.org)**

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