



New varieties against dollar spot and microdochium patch

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Four years testing (2019-22) of new varieties for greens in STERFs SCANGREEN project have been completed with the documentation of significant differences in resistance to microdochium patch (*Microdochium nivale*) and dollar spot (*Clarireedia* sp.). We focus here on Chewings fescue (*Festuca rubra* ssp. *commutata*), slender creeping fescue (*Festuca rubra* ssp. *littoralis*) and creeping bentgrass (*Agrostis stolonifera*) since they were the species with most varieties tested. This article is a follow-up of the preliminary results article from SCANGREEN presented in May 2021 on www.sterf.org.



SCANGREEN – northern and southern zone

SCANGREEN includes four test sites. The two in the northern zone are located at NIBIO Apelsvoll – an inland research station 250 meter above sea level in Norway, and at Reykjavik GC in Iceland. The two sites in the southern zone are located on the south coast of Norway (NIBIO Landvik near Kristiansand) and on the island Sjælland in Denmark (Smørum GC near Copenhagen). The experimental green at Smørum was built in spring 2021, so here we only have two years of results, whereas from the other sites there are results from four years. In this article we present results which are averages from the northern and the southern zone respectively. Results from Smørum are presented as they showed dollar spot in some of the varieties of red fescue. Results from the other individual test sites are available in the complete report from the project at www.sterf.org.

Management and assessments on the four greens followed a protocol where

Photo 1: Symptoms of dollar spot in fescue plots in SCANGREEN Iceland, summer 2022. Photo: Bjarni Hannesson.

fescues were managed with low input of fertilizer (10 g N m⁻² on established greens) and mown at 5 mm while the bentgrasses were managed at a higher fertilizer rate (16 g N m⁻²) and mown at 3 mm. See protocol at www.scan-turf.org for further details.

Red fescue – differences in microdochium patch and dollar spot

Fourteen varieties of Chewings fescue were included in the experiment, of which eight were new varieties entered by various breeding companies in Europe and the USA, while six varieties were included as control varieties, i.e. top varieties from previous test rounds. There were ten varieties of slender creeping fescue, of which two were control varieties and one variety

of strong creeping fescue, commonly not used on greens.

The primary diseases were microdochium patch and dollar spot, while coverage of red thread was at maximum 0,5 % in the test plots. Overall winter damage (including winter diseases) in the northern zone was higher in Chewings fescue compared to slender creeping fescue, while it was opposite in the southern zone due to higher infestation of microdochium patch in slender creeping red fescue.

Dollar spot was found in Iceland in summer 2022 with less than 0,5 % coverage (Photo 1) and at Smørum in 2021 and 2022 with up to 6 % in some of the varieties of slender creeping fescue.

Chewings fescue

The highest ranked new varieties of Chewings fescue were ‘Euro Carina’ and ‘Gima’ in both test zones, but the difference from the previously tested control varieties, ‘Musica’ and ‘Barlineus’ were small and insignificant.

The results from Smørum showed that most varieties of Chewings fescue are resistant to dollar spot with incidence of max. 0,5 % (Figure 1). The exception was ‘Kalle’, which had 2,7 % dollar spot. ‘Kalle’ was also more infected by microdochium patch than the other varieties of Chewings fescue.

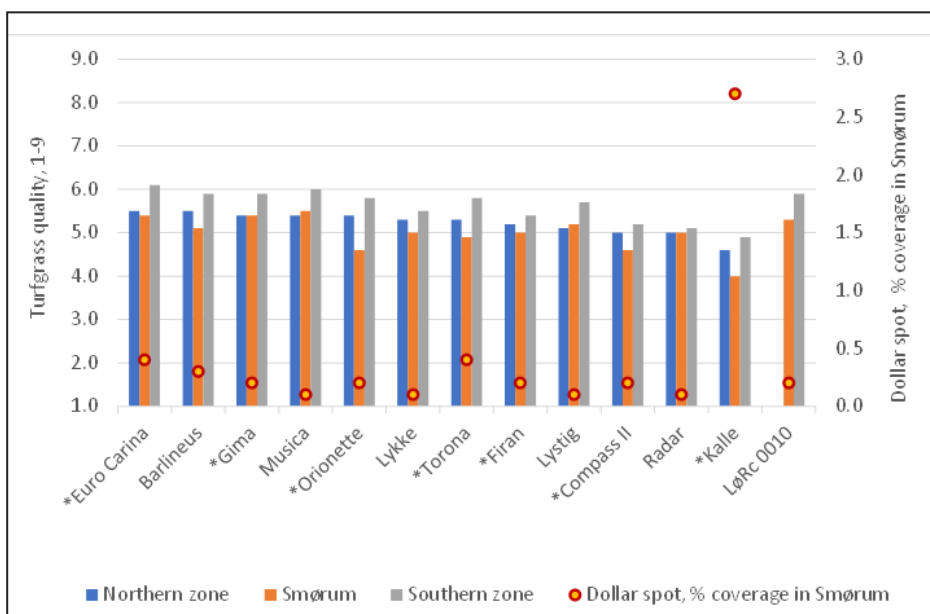


Figure 1: Results from four years’ testing of Chewings fescue varieties in SCANGREEN 2019-22. New varieties are marked with * Turfgrass quality in the northern zone (blue), Smørum (orange) and southern zone (grey). Yellow dots show percent of dollar spot in Smørum. The variety LøRc 0010 (Lodde) was only tested in the southern zone.

Slender creeping red fescue

In slender creeping red fescue, the new variety ‘Sybille’ was on top in the northern zone. In the southern zone it was ranked lower which could be explained by a coverage of 6 % dollar spot at Smørum (Figure 2).

Here, the new American variety ‘Sea Mist’ showed the lowest infection with only 0,1 % dollar spot. ‘Sea Mist’ was also lowest in coverage of microdochium patch (0,3 %) at Smørum. A parallel experiment in Massachusetts (where they also observed dollar spot) did not show the same differences between ‘Sea Mist’ and the other varieties.

The breeding line ‘DLF FRR-6039’, which is a strong creeping fescue, had low scores of turfgrass quality at all sites. Despite great efforts in turfgrass variety breeding, strong creeping red fescue is still way behind in terms of density and general turfgrass quality compared to the other two subspecies – Chewings and slender creeping red fescue.

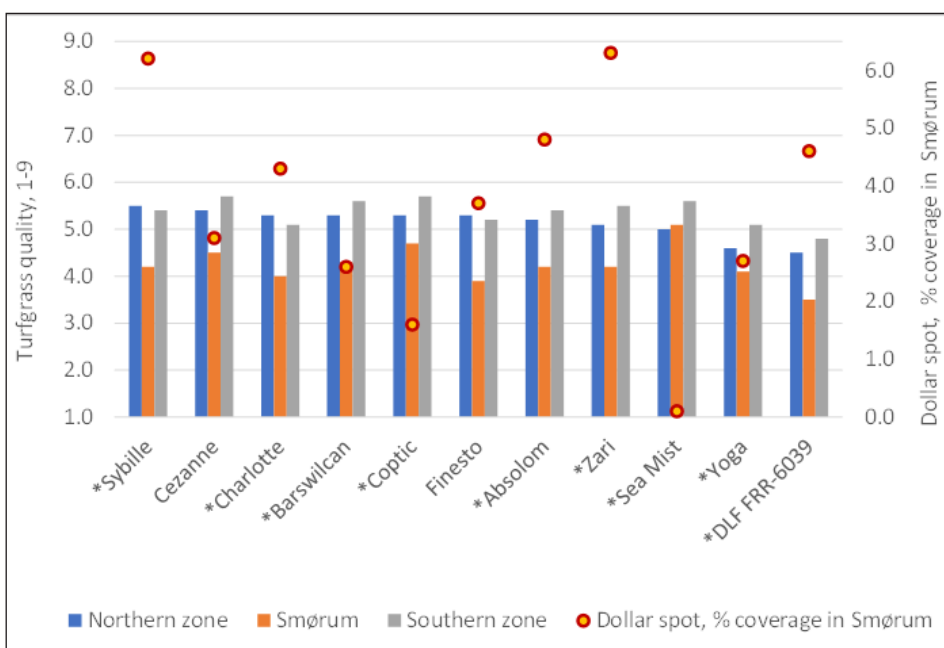


Figure 2: Results from four years’ testing of slender creeping fescue varieties in SCANGREEN 2019-22. New varieties are marked with * Turfgrass quality in the northern zone (blue), Smørum (orange) and southern zone (grey). Yellow dots show percent of dollar spot in Smørum.

Creeping bentgrass – differences in winter damage and microdochium patch

In total seventeen varieties of creeping bentgrass were tested (nine new and eight control). The new varieties ‘Matchplay’, ‘L-93 XD’ and ‘777

Triple Seven’ performed the best, closely followed by two other new varieties ‘Piranha’ and ‘Valderrama’ which were on level with the control ‘Luminary’.

Lowest ranked was ‘Pure Select’, which had significantly more overall winter damage, including coverage of microdochium patch during winter (Photo 2 and Photo 3 - next pages).

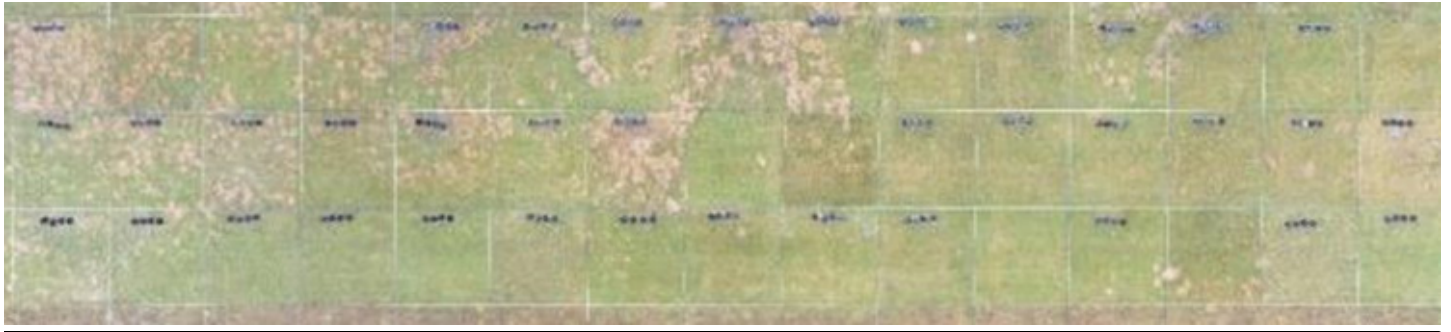


101 Luminary (36)	102 Tripleseve n (26)	103 Pure Select (27)	104 Ardent (28)	201 Valderra ma (29)	202 Matchpla y (31)	203 Ardent (28)	204 007 (37)	301 Independ ece (34)	302 Luminary (36)	303 L-93 XD (32)	304 Penntrio (40)
105 Matchpla y (31)	106 Valderra ma (29)	107 Tour Pro (30)	108 DLF- PS AP- 3018 (25)	205 Luminary (36)	206 Tour Pro (30)	207 Pure Select (27)	208 L-93 XD (32)	305 Valderra ma (29)	306 Crystal blue (39)	307 Matchpla y (31)	308 Tour Pro (30)
109 Independ ece (34)	110 Penncross (38)	111 007 (37)	112 Riptide (35)	209 DC 1 (33)	210 Independ ece (34)	211 Tripleseve n (26)	212 DLF- PSAP- 3018 (25)	309 Tripleseve n (26)	310 Pure Select (27)	311 DC 1 (33)	312 Riptide (35)
113 Penntrio (40)	114 DC 1 (33)	115 Crystal blue (39)	116 L-93 XD (32)	213 Penntrio (40)	214 Penncross (38)	215 Riptide (35)	216 Crystal blue (39)	313 Penncross (38)	314 DLF- PSAP- 3018 (25)	315 Ardent (28)	316 007 (37)

1.0 m border seeded with pure red fescue

117 AberRoyal (44)	118 Norgreen (48)	119 Villa (47)	120 Nordlys (46)	217 AberRoyal (44)	218 Nordgree n (48)	219 Nordlys (46)	220 Villa (47)	317 AberRoyal (44)	318 Nordgree n (48)	319 Nordlys (46)	320 Villa (47)
121 Leirin (45)	122 PPG- AT 104 (41)	123 Heritage (43)	124 Jorvik (42)	221 Leirin (45)	222 Jorvik (42)	223 PPG- AT 104 (41)	224 Heritage (43)	321 Leirin (45)	322 PPG- AT 104 (41)	323 Jorvik (42)	324 Heritage (43)

Photo 2: *Microdochium* patch in varieties of creeping bentgrass (upper four rows) and colonial and velvet bentgrass at Apelsvoll. Orange squares show 'Pure Select' whereas blue squares show 'Penntrio' May 2022. Drone photo: Kristian Rindal.



146 Pure Select (27)	147 Ardent (28)	148 Matchplay (31)	149 Valderra ma (29)	150 Tour Pro (30)	246 Riptide (35)	247 L-93 XD (32)	248 Independence (34)	249 DLF-PSAP-3018 (25)	250 Pure Distinction (40)	346 007 (37)	347 DC 1 (33)	348 Luminary (36)	349 Tripleseve n (26)	350 Valderra ma (29)
151 Riptide (35)	152 Tripleseve n (26)	153 Penncross (38)	154 007 (37)	155 DLF-PSAP-3018 (25)	251 DC 1 (33)	Pure Select (27)	253 Matchplay (31)	254 Ardent (28)	255 Luminary (36)	351 Tour Pro (30)	352 L-93 XD (32)	Independence (34)	354 Pure Select (27)	355 Pure Distinction (40)
156 Pure Distinction (40)	157 DC 1 (33)	158 Luminary (36)	159 Independence (34)	160 L-93 XD (32)	256 Penncross (38)	257 Tripleseve n (26)	258 Valderra ma (29)	259 Tour Pro (30)	260 007 (37)	356 Matchplay (31)	357 DLF-PSAP-3018 (25)	358 Ardent (28)	359 Penncross (38)	360 Riptide (35)

Photo 3: Microdochium patch in varieties of creeping bentgrass at Landvik February 2022. Drone photo: Karin J. Hesselsøe.

‘Ardent’ was significantly darker than the other varieties and performed well in Reykjavik, but not at the other sites. Winter damages in the creeping bentgrasses were generally highest at Apelsvoll (damages of 50-80 %), where we also experienced problems with reestablishment after winter kill. We suspect that some of these problems in creeping bentgrass at Apelsvoll were also related to other issues, e.g. nematodes in the rootzone (Photo 4).

Other species

A new variety of colonial bentgrass (*Agrostis capillaris*) ‘Musket’ and a new variety of Kentucky bluegrass (*Poa pratensis*) ‘Professor’ were tested. ‘Musket’ performed on level with the control varieties, while the control ‘Limousine’ was ranked higher than ‘Professor’.

New SCANGREEN trials started in 2023

In December 2022 a new SCANGREEN test round for the period 2023-2026 was funded by STERF, invitations have been sent to the breeding companies and in spring and summer 2023 new trials will be established at the four sites in Scandinavia and at a parallel trial site in Minnesota, USA.



Photo 4: Severe winter kill at Apelsvoll, May 2021. The substrate in the dead creeping bentgrass section to the left had been replaced in August 2020 after several unsuccessful attempts to reseed plots after winter kill during the previous 2019-20 winter. It was not until reseeding these plots in 2021 that we managed to reestablish a good cover on these creeping bentgrass plots. The damage in velvet bentgrass and colonial bentgrass in the front was very much dependent on variety. All red fescues to the right had good winter survival. Photo: Pia Heltoft.