Dollar Spot

Integrated approach for management

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Which of these technical challenges / problems has most impact on your ability to prepare high quality turf?

2019 Survey of Golf Course Managers

Dollar Spot changes its name!!

For a number of years pathologists felt 'dollar spot' did not typically display features of Sclerotinia fungus. In 2018 it was reclassified.

Clarireedia spp *(cleara-reed-ia)*

Four species have been identified. C. jacksonii & C.monteithiana are distributed globally and have been identified on cool-season and warm-season turf. (two species only identified on UK festuca = C. homeocarpa & C. benettii)

Plenty of published work

Turf Grass Information Files show:

4600 + papers and articles and trade press mentioning dollar spot.

217 refereed papers.

Majority focus on fungicide applications & strategies.

BECAUSE:

Dollar spot is a serious turf disease

- More money spent on Dollar Spot control than any other disease for Turf grass.. (Vargus, J. 2005. Management of Turfgrass Diseases).
- Fungicide applications every 7-14 days, 6-8 applications per year
- Serious turf disease in France / Spain / Italy / EE
- Recently confirmed in the Nordic region (2013) growing in severity in DE/AT

Dollar spot is a serious turf disease

- Add comments here about Dollar Spot problem in DE/AT

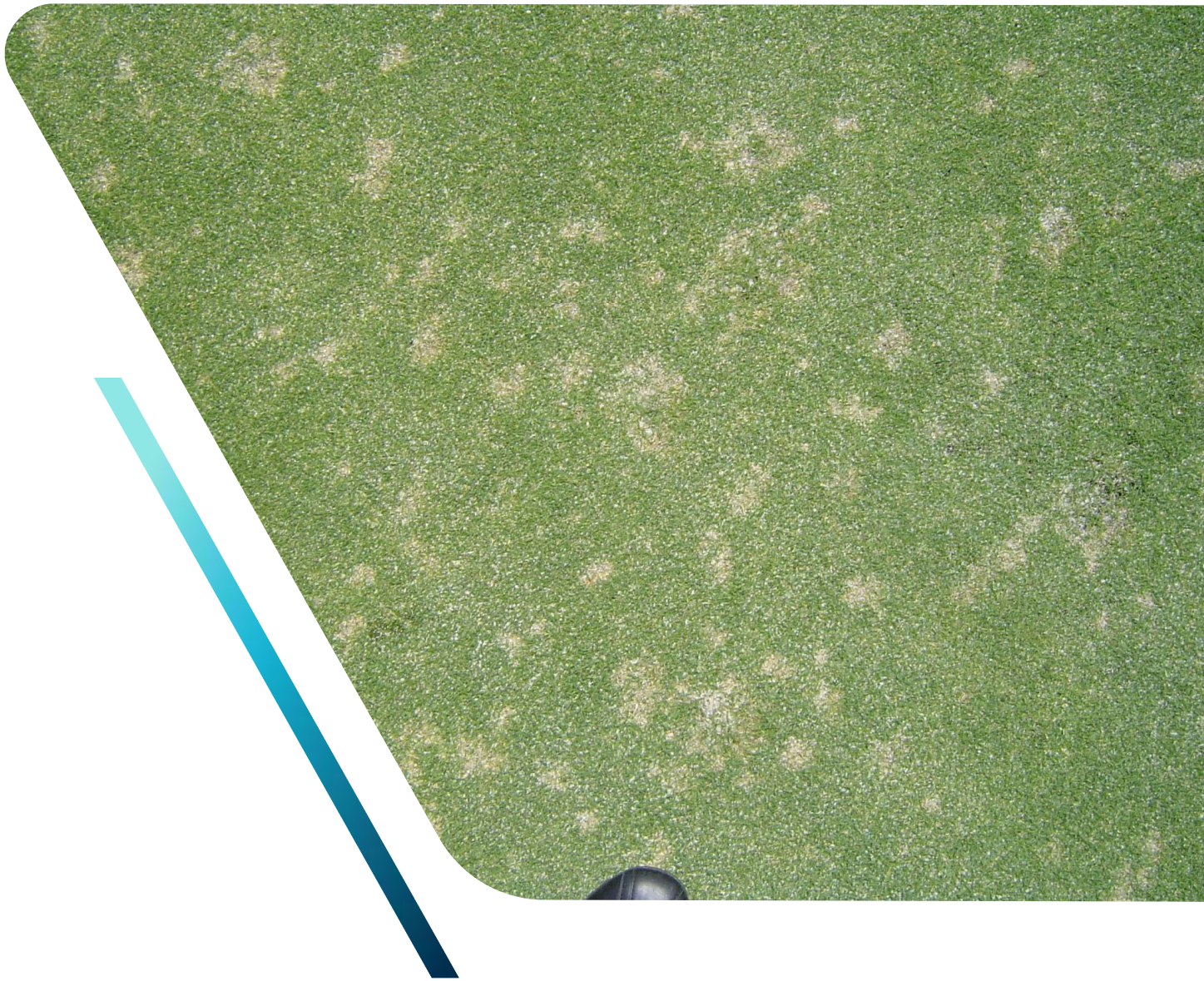
Hosts & Occurrence

Affects all the main turf-grass species. Cool-season & warm-season

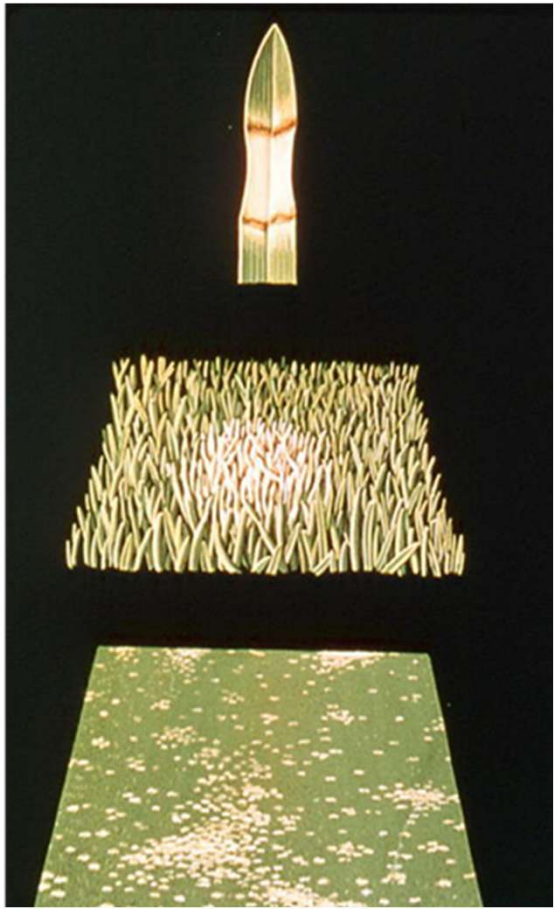
Temperature and humidity related occurrence

min temp = 5°C
ideal temp = 20°C
max temp = 35°C

Risk period = late spring – late autumn
Maximum pathogenicity 21-27°C with 85% humidity.
Modelling predicts rapid growth above humidity of >70%



Identification #1



- Bleached / bruin coloured bladwondenlesions on individual leaf with red/brown edges.
- Round bleached or straw coloured spots ‘dollar-sized’ show as sunken areas in the turf.
- Individual spots coalesce to destroy turf in larger areas.

Identification # 2

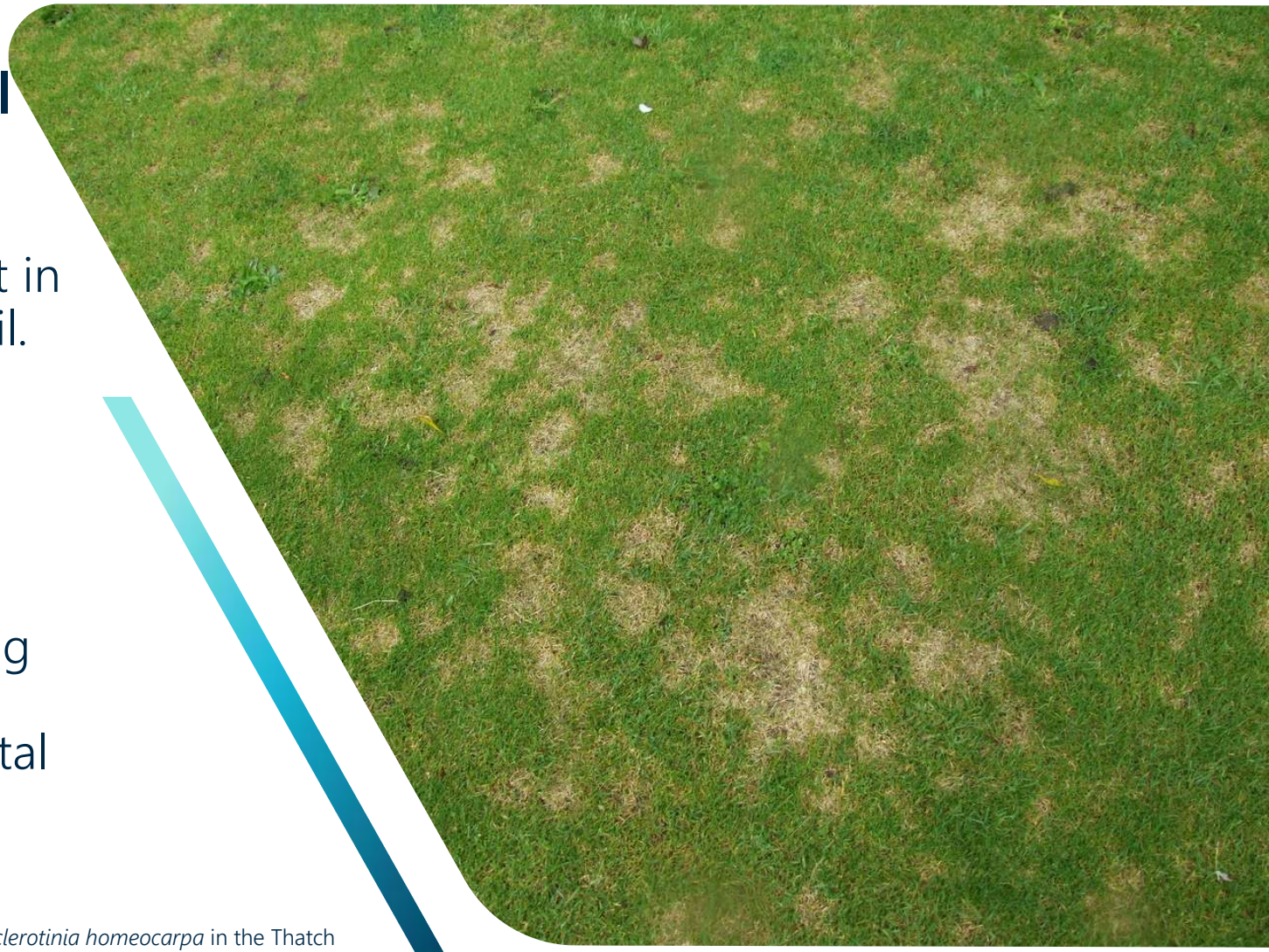
- Fresh outbreaks can be seen as ‘webs’ of greyish-white fungal hyphae early in the morning.
- Infection can be spread by mowers & shoes.
- Often seen on the side of greens that get traffic from infected collars & fairways

Thatch dwelling fungal pathogen

Significantly more abundant in the thatch layer than the soil.

Present in fairways, roughs and putting green thatch layers.

'extremely successful at living in the thatch – disease develops when environmental conditions are favourable'



Allan-Perkins et al. 2018. Abundance of Bacteria, Fungi and *Sclerotinia homeocarpa* in the Thatch and Soil of Golf Courses. Phytobiomes Journal.

Treatment

Dollar spot can be effectively managed with a fungicide programme.

Adaptable fungal pathogen that shows developing resistance to many fungicide active groups (DMI groups).

Best practice: rotating actives that are available. Utilising disease modelling to improve application timing. NON-fungicidal methodes.

Jung et.al. 2018. Management strategies of a *Sclerotinia homeocarpa* population with multiple fungicide resistance. ETS Manchester

Cultural Approaches to Management

Supported by published scientific work.

Select resistant cultivars

- Susceptibility does vary between species AND cultivar
- Older varieties more susceptible to newer ones

Rolling works

- Multiple studies & robust supporting data.
- More is better.
- 3x per week good, 5 x per week better.

Moisture management

- Remove dew
- Moist canopy favours development

Reduce Thatch

- Claireedia spp spread from thatch
- Thatch affects watering regime

Cultural controls #1 – cultivar change

Susceptibility to *Claireedia* spp does vary by species and cultivar.

TF<PRG<RF=CB<PA

No completely resistant cultivar has been bred BUT Clear differences between cultivars are seen.

'Old creeping bentgrasses are more susceptible than newer ones'

Kato et.al. 2005, A new creeping bentgrass cultivar shows resistance to dollar spot. 10th ITRC, Llandudno.

Latin, R. et.al., 2014. Integrating host resistance and fungicide for efficient control of dollar spot on creeping bentgrass. 4th ETS Osnabruck.

Non-Fungicidal applications

Summary from published scientific papers

Nitrogen applications

- Dollar spot is a low nutrition disease
- Reduced dollar spot with N applications in the summer
- No difference between N sources seen
- No benefit to Organic over Mineral nitrogen

Biological applications

- Very variable trial results.
- Some laboratory success
- Inconsistent field success
- Small successes only with multiple applications.
- No successful, registered bio-pesticides for dollar spot

Biostimulant Applications

- Many products tested
- Also variable results
- No replacement for fungicides
- Useful as part of an ITM programme
- Some focus on Si as having reasonable results.

Using Iron Sulphate

- High rates can reduce outbreak
- Bi- weekly applications @40kg/ha
- Iron effect (not sulphur)
- Iron chelate less effective than iron sulphate

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I need some advice for my dollar spot

The advice based on all this trial work is clear:

- Fungicides will provide control
- Look to introduce newer / resistant cultivars
- Roll. Roll more. Roll a lot.
- Reduce your thatch
- Moisture management / knock off dew, maintain soil water levels
- Increase N applications to at least 3-5 + kg N / ha / week
- No benefit to organic N source
- Biologicals could provide benefit (but might not)
- Biostimulants need to be selected carefully
- Liquid silica applications =best potential
- Iron applications could help

ICL has been working on research-led ITM programmes for dollar spot

Best practice (reduced fungicide approach) from our trial work

Include Rolling (3 x per week) Include Nitrogen (145 kg) (more?)	Only helped alongside additional treatments
Vitalnova stressbuster monthly Vitalnova silk monthly	Slowed the onset of disease, reduced total outbreak
Be prepared for preventative fungicide application at high pressure	Necessary when disease pressure is at highest

Thank You and Questions

- Email: andy.owen@icl-group.com