ICL

Where needs take us

# The Disturbance Theory: The 4 Phase Approach

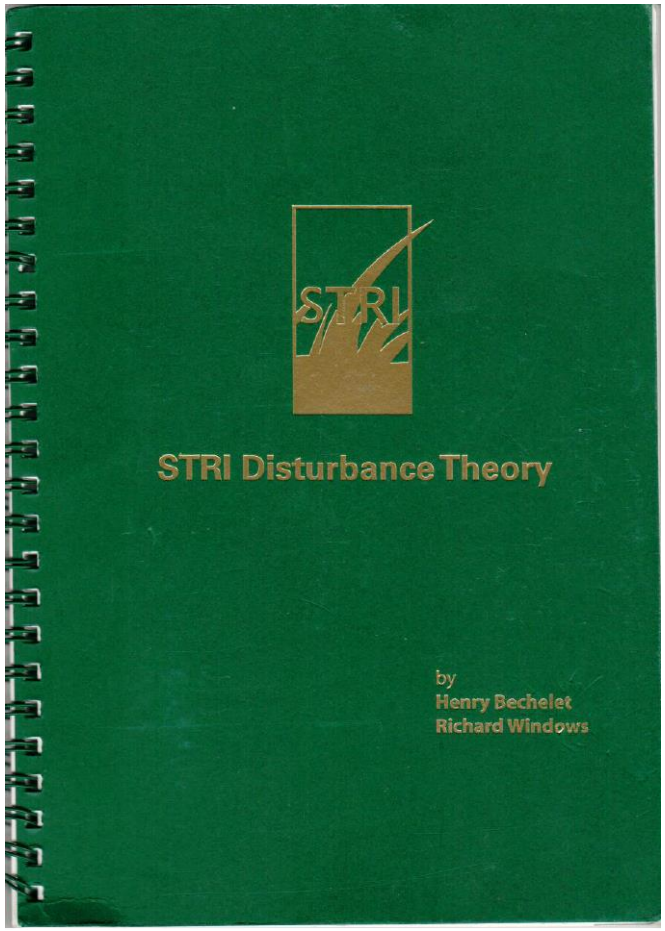
Henry Bechelet, Technical Manager, ICL UK & Ireland
Dr Andy Owen, Technical Manager, ICL International

# ICL Turf & Landscape Technical Team

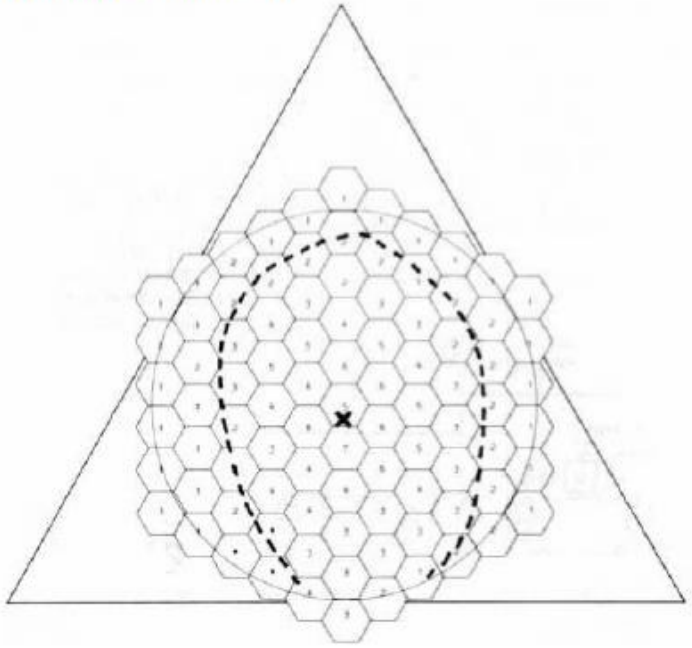
Henry Bechelet
Technical Sales Manager, UK&I, ICL


Dr Andy Owen
International Technical Manager, ICL

# The Disturbance Theory




Red fescue – *Festuca rubra* ssp. *Rubra*



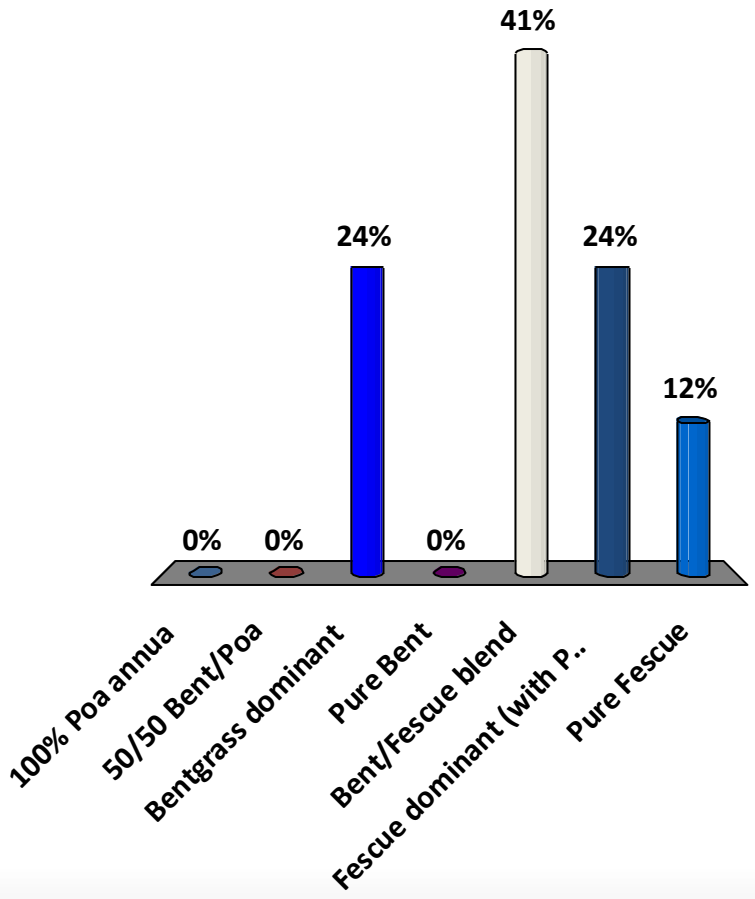
# Performance Measurement

# Sustainability

# Agronomic Ideal

# What species composition are you aiming for for your greens?

A. 100% *Poa annua*
B. 50/50 Bent/Poa
C. Bentgrass dominant
D. Pure Bent
E. Bent/Fescue blend
F. Fescue dominant (with Poa and Bent)
G. Pure Fescue



# Influences on grass type ideal

## WORKSHOP ACTIVITY

- Style of the course
- Desired playing qualities (speed/smoothness)
- Level of play
- Climatic conditions (rainfall)
- Soil pH
- Salinity levels
- Disease pressures

# What species composition are you aiming for for your greens?

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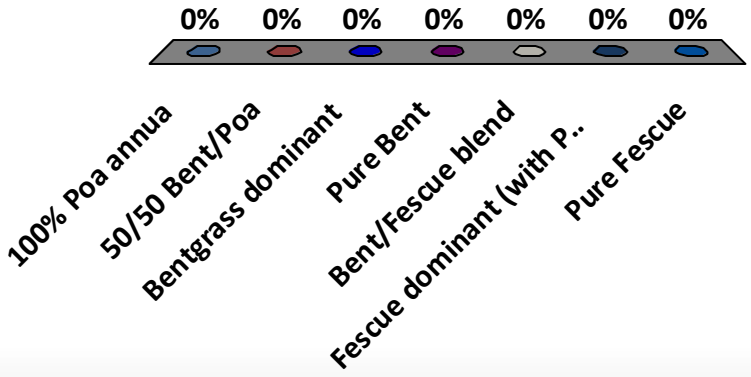
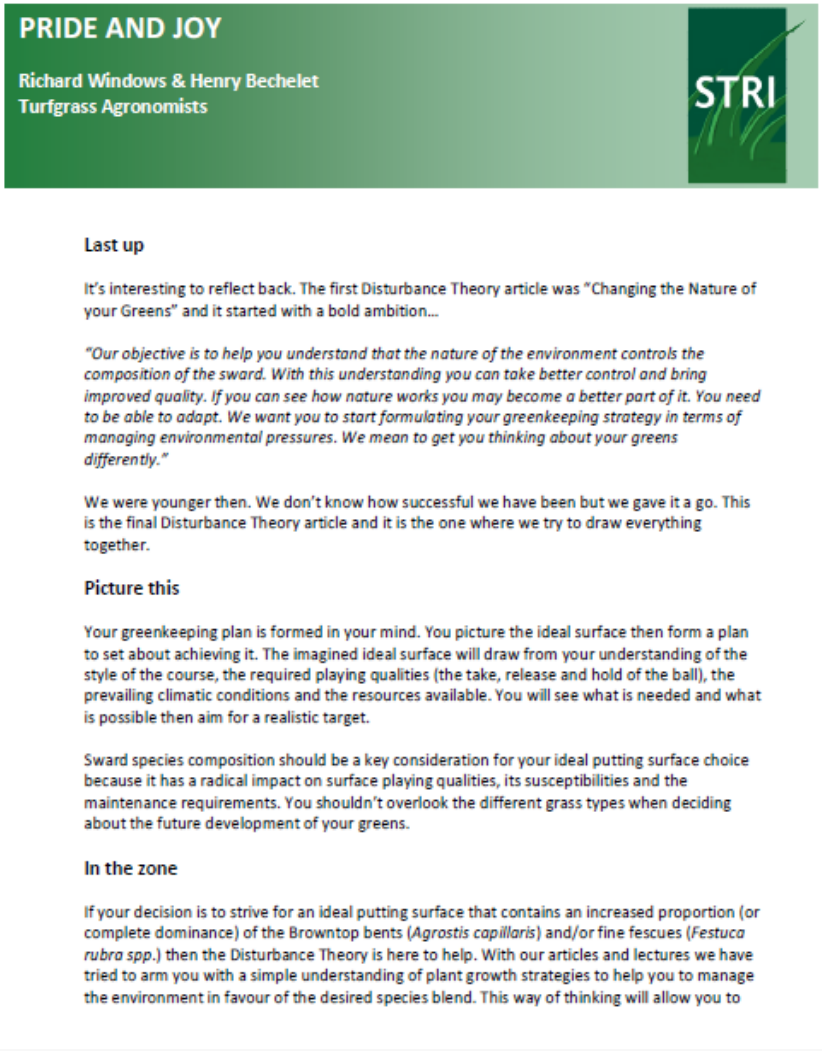


# The Disturbance Theory – "Pride and Joy"



**PRIDE AND JOY**

Richard Windows & Henry Bechelet
Turfgrass Agronomists

STRI

**Last up**

It's interesting to reflect back. The first Disturbance Theory article was "Changing the Nature of your Greens" and it started with a bold ambition...

*"Our objective is to help you understand that the nature of the environment controls the composition of the sward. With this understanding you can take better control and bring improved quality. If you can see how nature works you may become a better part of it. You need to be able to adapt. We want you to start formulating your greenkeeping strategy in terms of managing environmental pressures. We mean to get you thinking about your greens differently."*

We were younger then. We don't know how successful we have been but we gave it a go. This is the final Disturbance Theory article and it is the one where we try to draw everything together.

**Picture this**

Your greenkeeping plan is formed in your mind. You picture the ideal surface then form a plan to set about achieving it. The imagined ideal surface will draw from your understanding of the style of the course, the required playing qualities (the take, release and hold of the ball), the prevailing climatic conditions and the resources available. You will see what is needed and what is possible then aim for a realistic target.

Sward species composition should be a key consideration for your ideal putting surface choice because it has a radical impact on surface playing qualities, its susceptibilities and the maintenance requirements. You shouldn't overlook the different grass types when deciding about the future development of your greens.

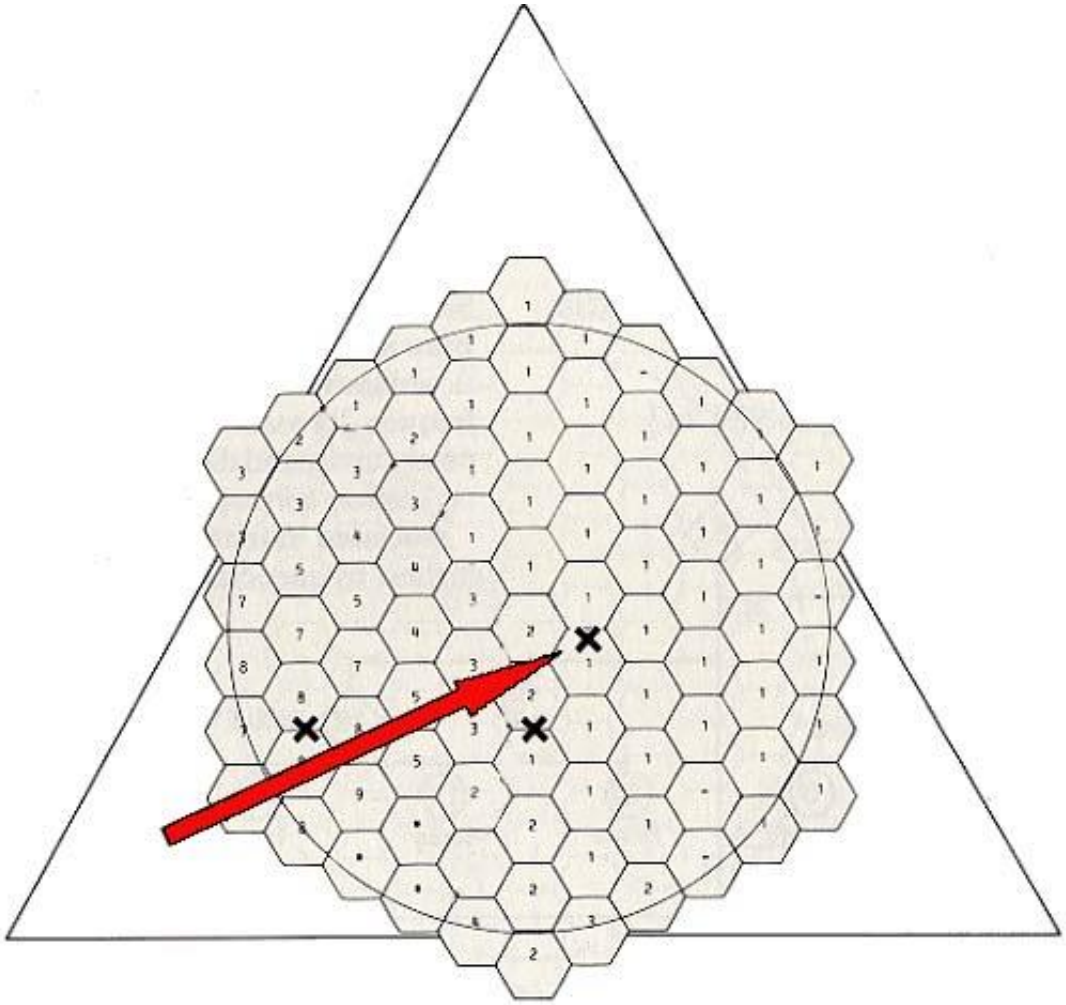
**In the zone**

If your decision is to strive for an ideal putting surface that contains an increased proportion (or complete dominance) of the Browntop bents (*Agrostis capillaris*) and/or fine fescues (*Festuca rubra spp.*) then the Disturbance Theory is here to help. With our articles and lectures we have tried to arm you with a simple understanding of plant growth strategies to help you to manage the environment in favour of the desired species blend. This way of thinking will allow you to

- The final DT article which tried to bring it all together.

*"We have tried to…help you to manage the environment in favour of the desired species blend. This way of thinking will allow you to make progress without having to compromise on playing quality."*

# To favour the finer grasses we simply need to move the environment out of the Disturbance corner

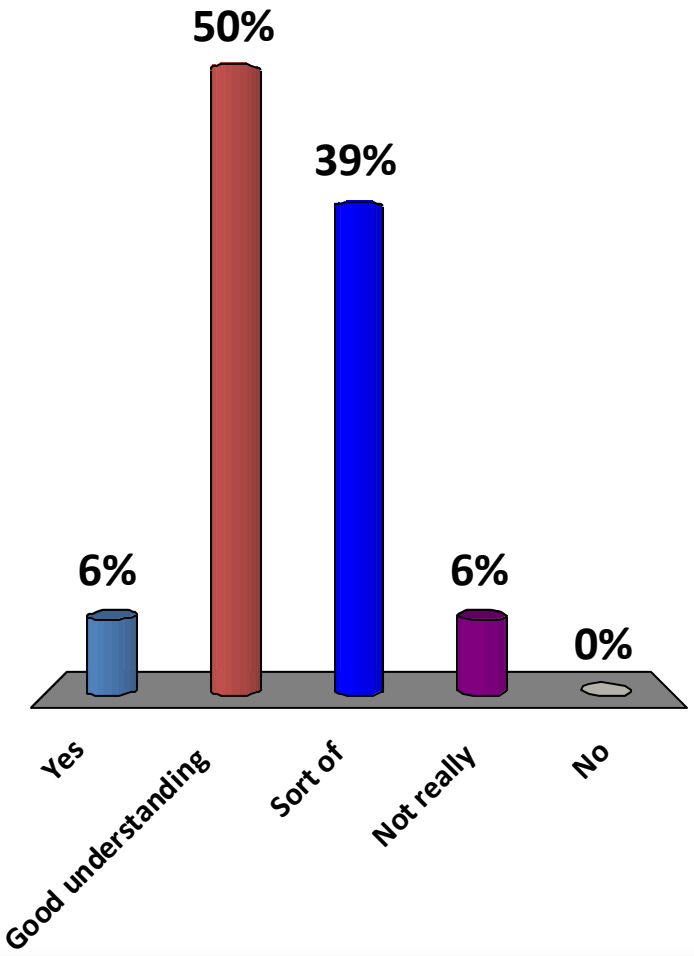


# The 4 phases of development

- Phase 1 – Lay the Foundation
- Phase 2 – Manage the Environment
- Phase 3 – Pressure the *Poa*
- Phase 4 – Prevent re-invasion

# Do you understand the different methods required to change the grass types in your greens?

A. Yes
B. Good understanding
C. Sort of
D. Not really
E. No



# Phase 1 – Lay the Foundation

Characteristics…

- *Poa annua* dominated
- High levels of thatch at turf base
- Poor drainage
- Variable playing qualities
- Vulnerable to disease

# Phase 1 – Lay the Foundation

Strategies…

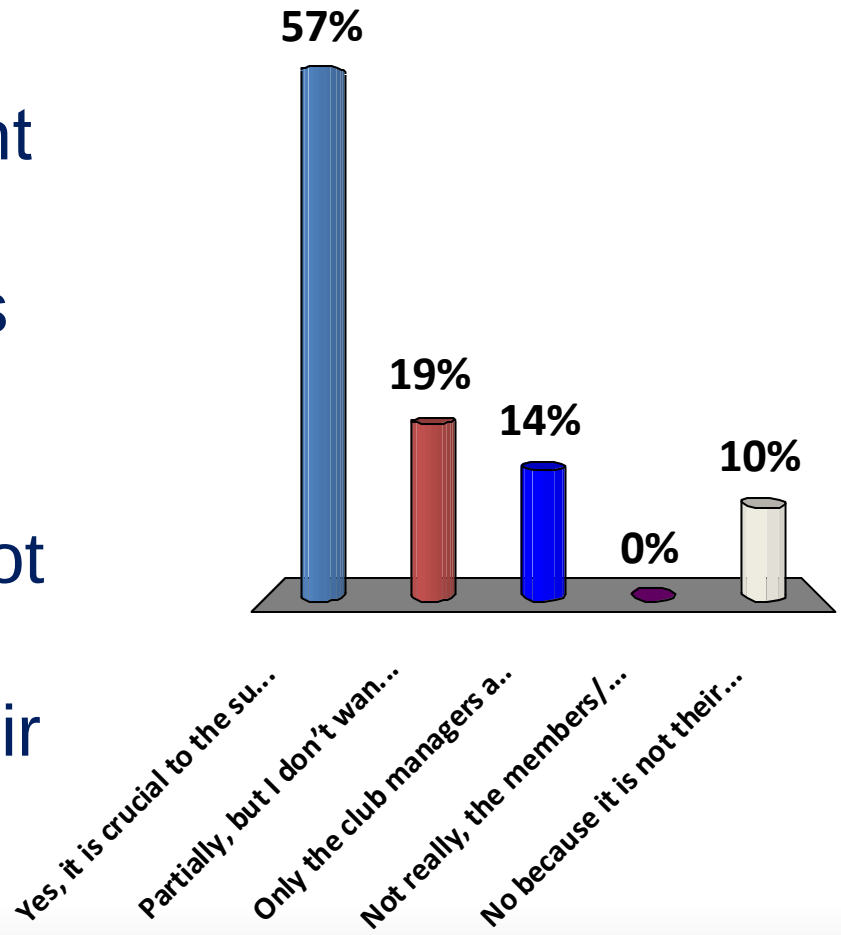
- Reduce thatch levels
- Improve drainage
- Improve light/airflow
- Reset fertiliser and irrigation strategy

…and all as quickly as possible without disrupting playing qualities unduly!

What tactics do we need to employ?

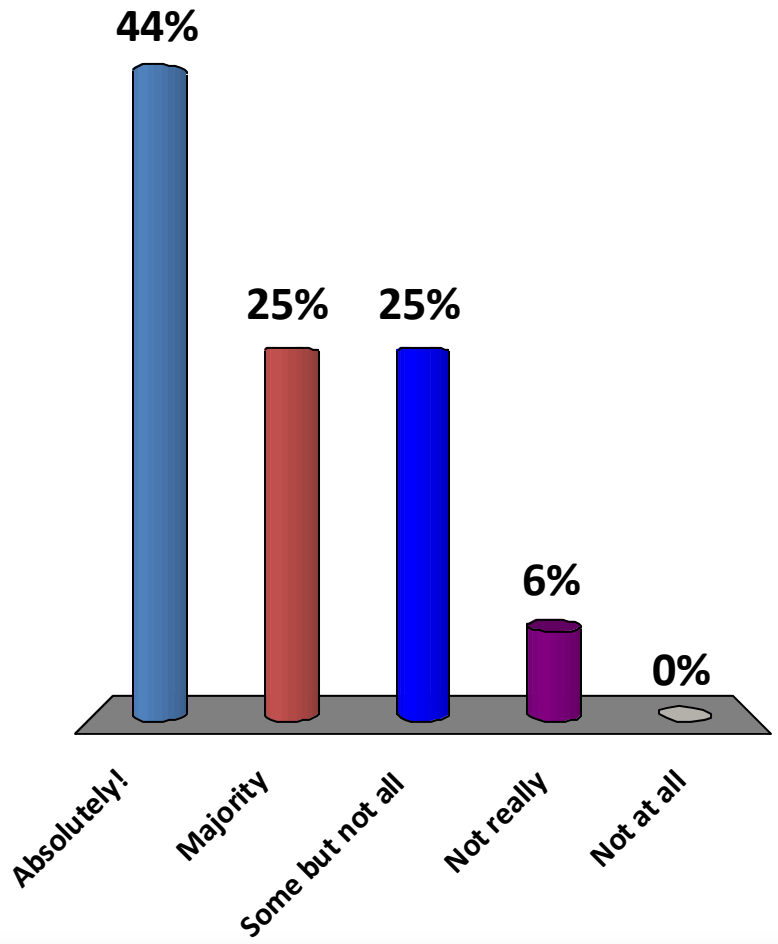
# Do you communicate your objectives to the membership/players?

A. Yes, it is crucial to the success of our plan
B. Partially, but I don't want them to know too much
C. Only the club managers are involved
D. Not really, the members/players are not interested
E. No because it is not their concern!



# Are you allowed to carry out all the maintenance operations you consider to be necessary?

A. Absolutely!
B. Majority
C. Some but not all
D. Not really
E. Not at all



# Phase 2 – Manage the Environment

Characteristics…

- The greens are already performing better! (firmer and more free draining)
- *Poa annua* dominant but increasing finer grasses indicates that they are ready for change

# Phase 2 – Manage the Environment

Strategies…

- Overseed with gusto!
- Manage the environment to allow the finer grasses to establish and flourish
- Ease back on disturbance pressure
- No undue stress!
- Maintain soil profile and drainage

- What tactics do we need to employ to prepare good surfaces with minimal disturbance?

# Phase 2 – Manage the Environment

Best overseeding method?

- Nutrition
- Growth regulation
- Seed type
- Placement
- Timing
- Aftercare

# Phase 3 – Pressure the Poa!

Characteristics…

- Fine grasses establishing
- You feel that you can discourage the Poa without loosing playing qualities

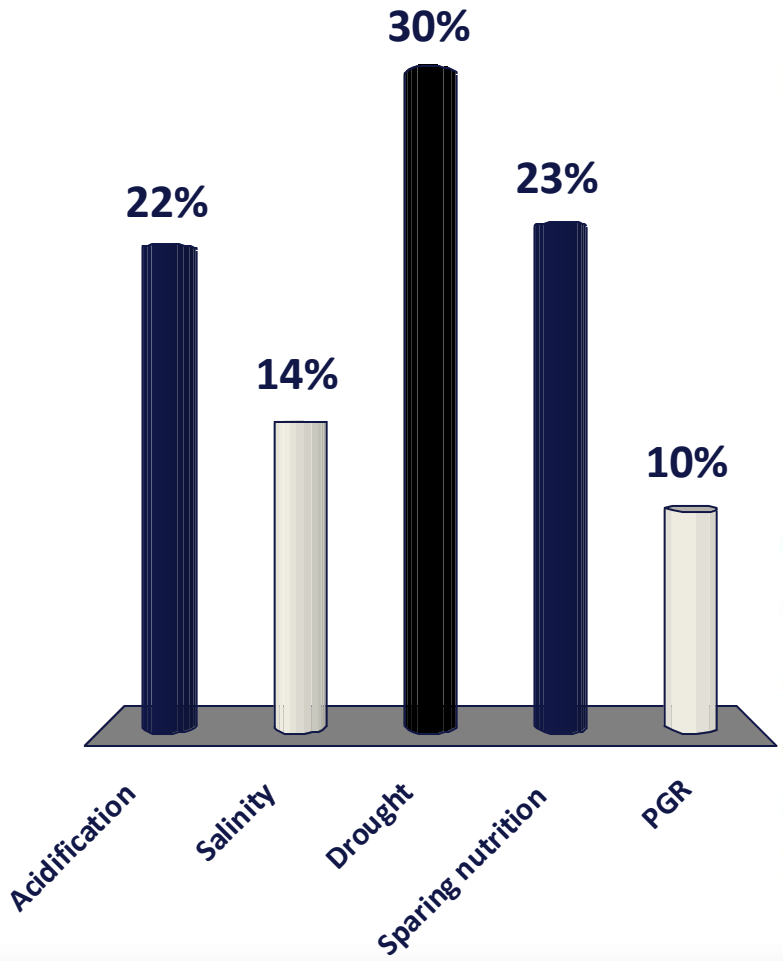
# Phase 3 – Pressure the Poa!

Strategies…

- Play with the pressures
- Still minimal disturbance but now you are actively discouraging the Poa with stress

# Rank in order of importance the stress factors that you use?

A. Acidification
B. Salinity
C. Drought
D. Sparing nutrition
E. PGR



# Phase 4 – Prevent Invasion

Characteristics…

- Fine grasses dominant
- Looking to prevent (inevitable?) deterioration

# Phase 4 – Prevent Invasion

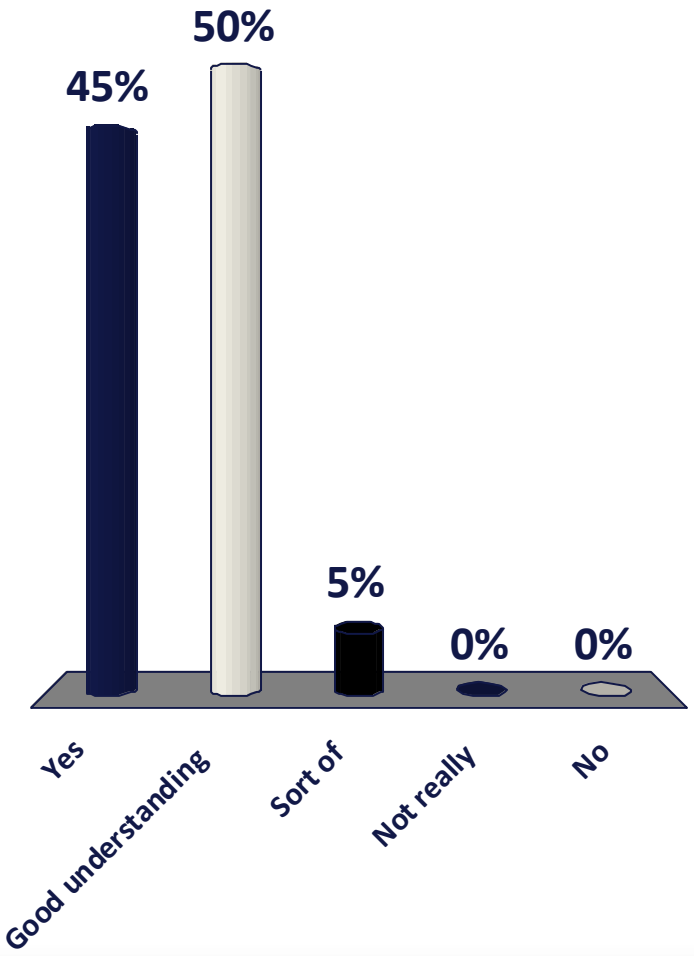
Strategies…

- Minimal disturbance - NO GAPS
- Adequate nutrition
- Manage wear
- Prevent pest/disease where possible
- Overseed into gaps

What tactics do we need to employ?

# Do you understand the different methods required to change the grass types in your greens?

A. Yes
B. Good understanding
C. Sort of
D. Not really
E. No



Where needs take us

# The Disturbance Theory: Nutritional Strategies

Henry Bechelet, Technical Manager, ICL UK & Ireland

# The 4 phases of development

- Phase 1 – Lay the Foundation
- Phase 2 – Manage the Environment
- Phase 3 – Pressure the *Poa*
- Phase 4 – Prevent re-invasion

# Phase 1 – Lay the Foundation

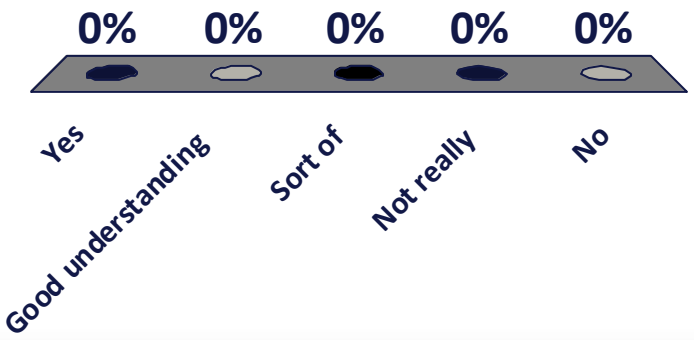
Nutritional strategies…

(We need to incorporate top dressing)

- Nitrogen inputs?
- Nitrogen sources?
- Phosphorus?
- Potassium?
- PGR?

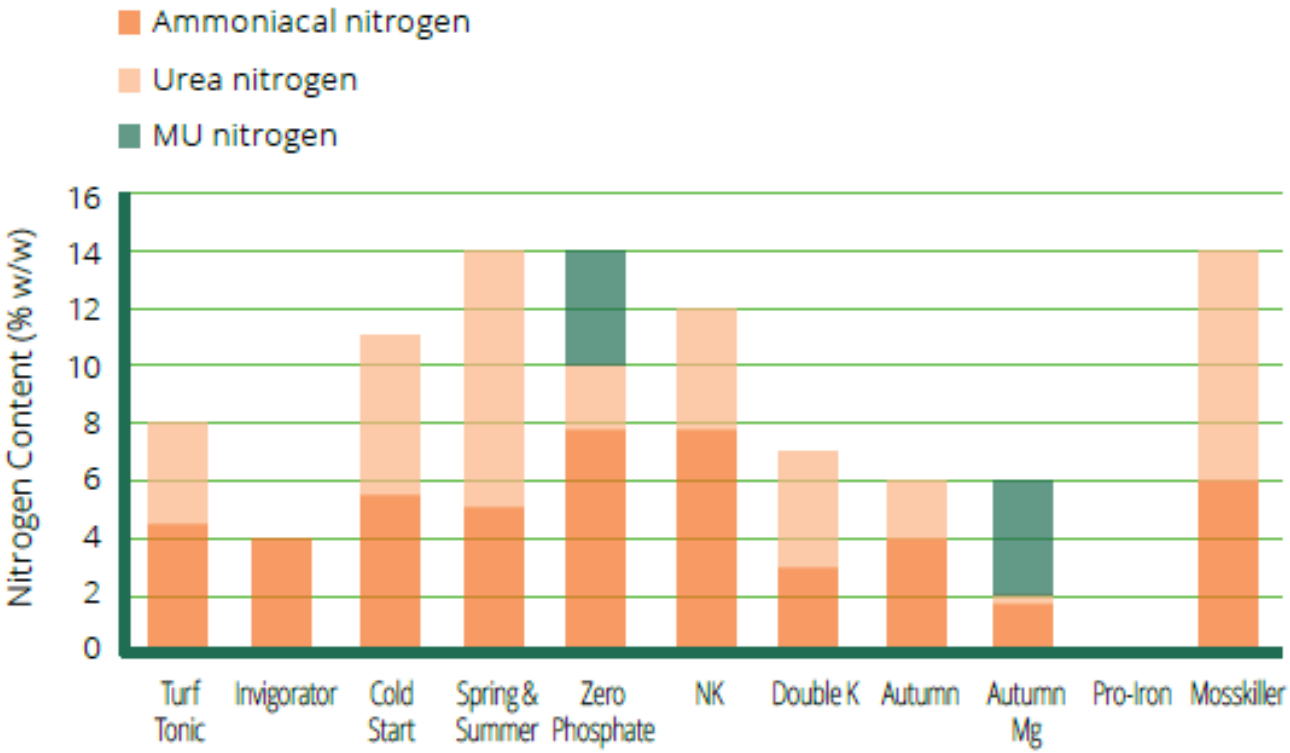
# Do you know the nitrogen sources in your greens fertilisers?

A. Yes
B. Good understanding
C. Sort of
D. Not really
E. No



# Phase 1 – Lay the Foundation

## Nitrogen Content



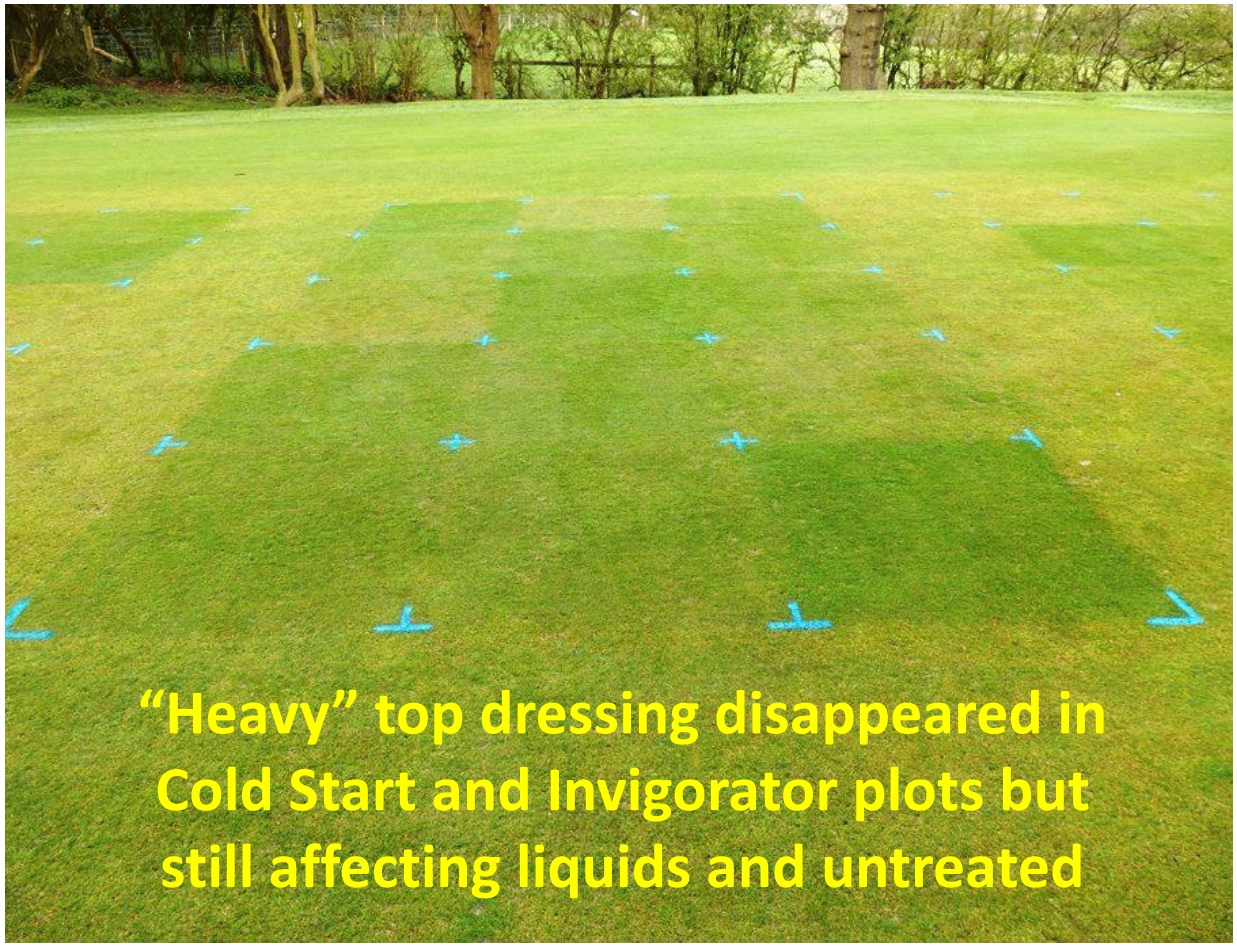
# 6 Days After Treatment – “Heavy” dressing


# 15 Days After Treatment – Heavy top dressing

Block 2 (heavy dressing)

| | | |
|---|---|---|
| 2 | 1 | 4 |
| 3 | 4 | 3 |
| 1 | 2 | 5 |
| 4 | 5 | 1 |
| 5 | 3 | 2 |

| Treatment No | Product |
|---|---|
| 1 | Control |
| 2 | GM Cold Start |
| 3 | Pot Nitrate |
| 4 | GM Invigorator |
| 5 | GML Spring & Summer |



# Phase 2 – Manage the Environment

Nutritional strategies…

(We need to overseed)

- Nitrogen inputs lower?
- Nitrogen sources?
- Phosphorus?
- Potassium?
- PGR?

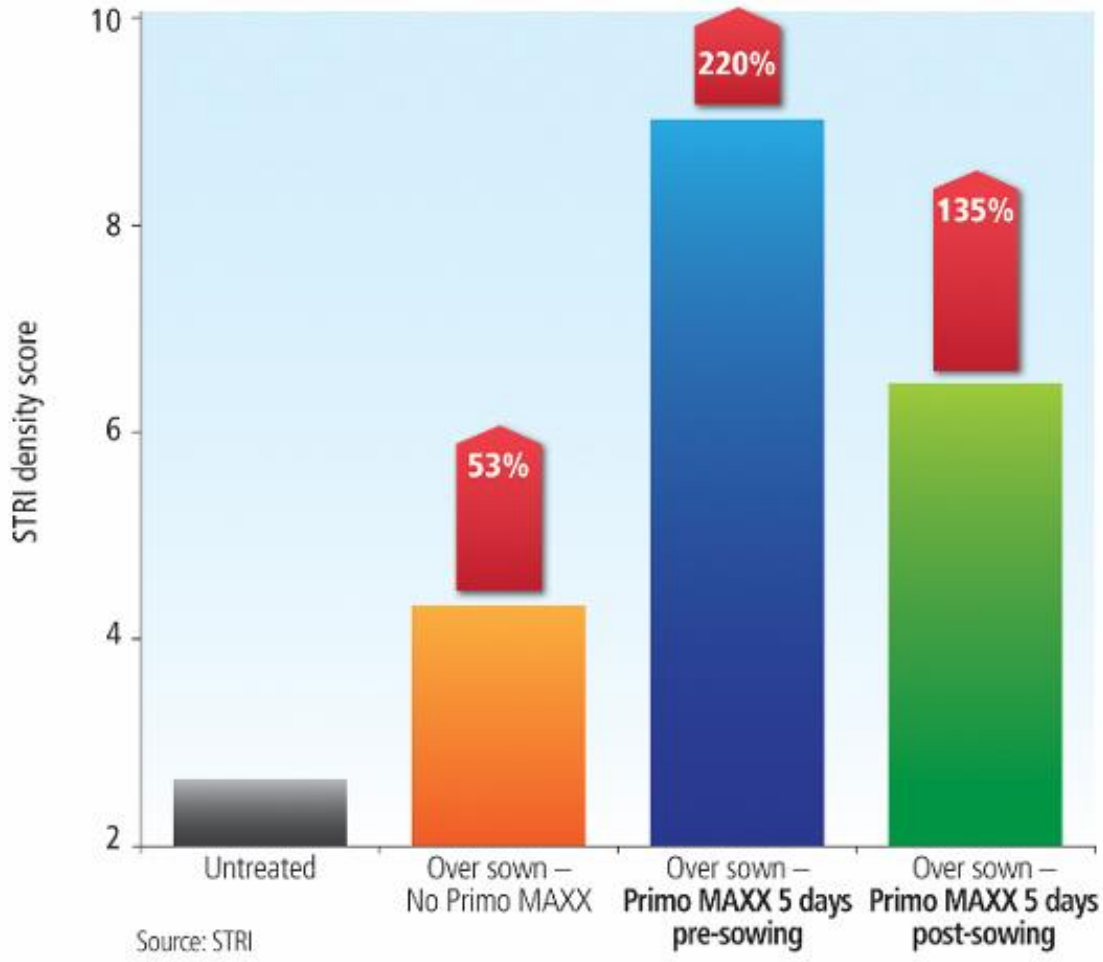
# Primo MAXX and Over Seeding

- ‘You can easily see the seedling coming up in lines in all the oversown plots. T3, T4, T5 and T6 also look more even than T2’ - R. Mann

No Primo MAXX prior to over seeding

Primo MAXX 5 days prior to over seeding

# Primo MAXX and Over Seeding – STRI Trial



# Phase 3 – Pressure the Poa

Nutritional strategies…

(We need to apply some stress at times)

- Nitrogen inputs lower?
- Nitrogen sources?
- Phosphorus?
- Potassium?
- PGR?

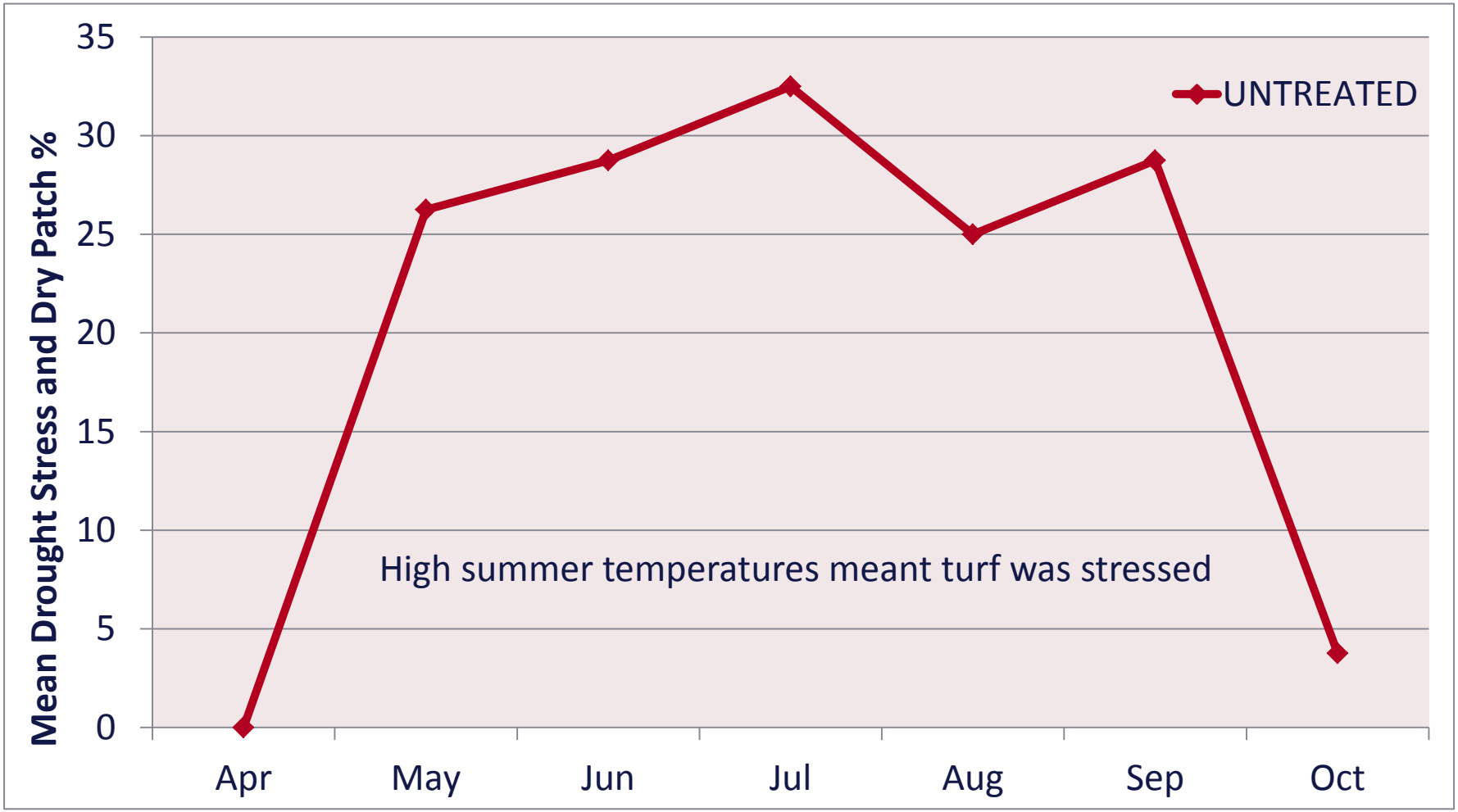
# Phase 3 – Pressure the Poa

Nutritional strategies…

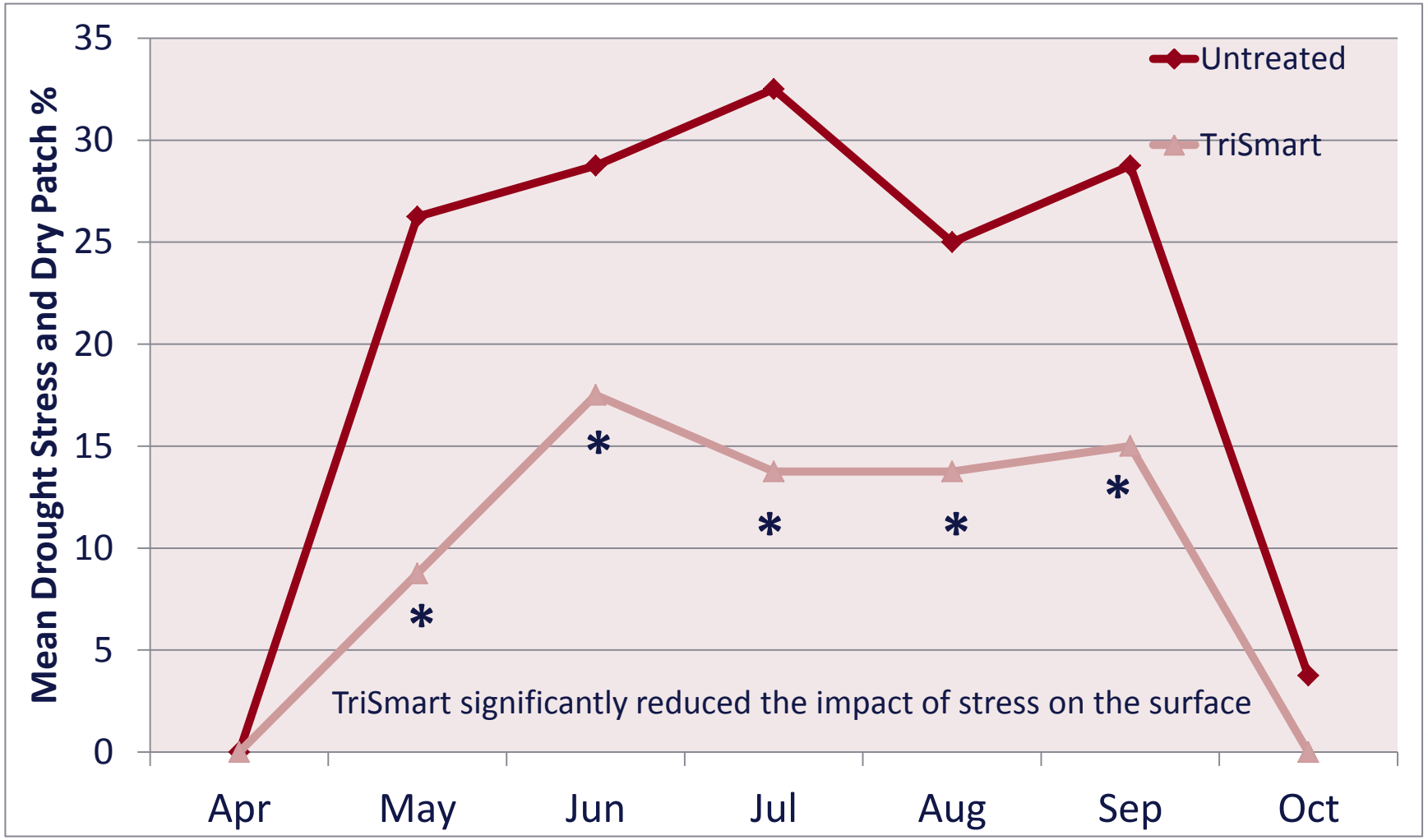
(We need to apply some stress at times)

- Nitrogen inputs lower?
- Nitrogen sources?
- Phosphorus?
- Potassium?
- PGR?

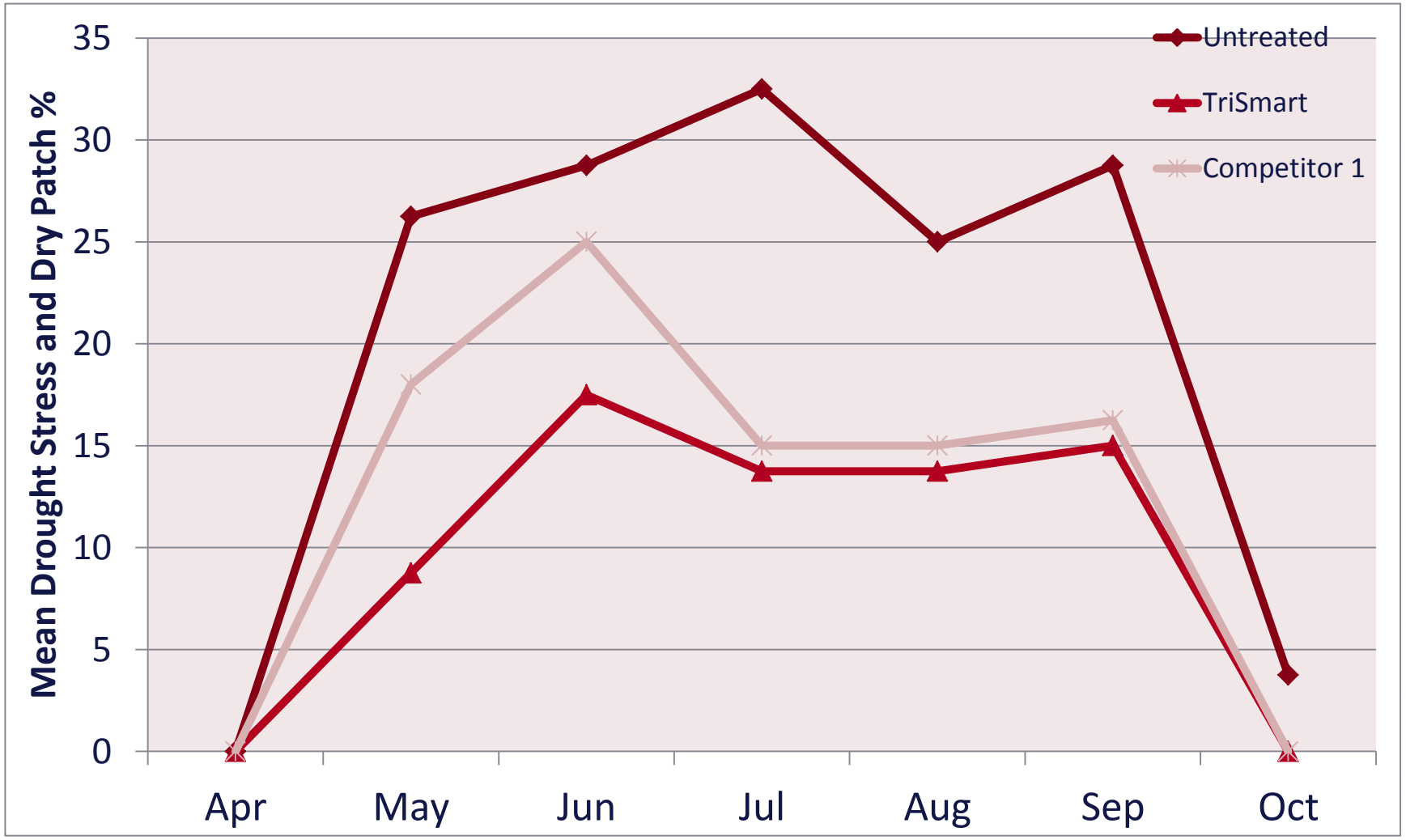
# Drought stress and dry patch assessment



# Drought stress and dry patch assessment



# Drought stress and dry patch assessment



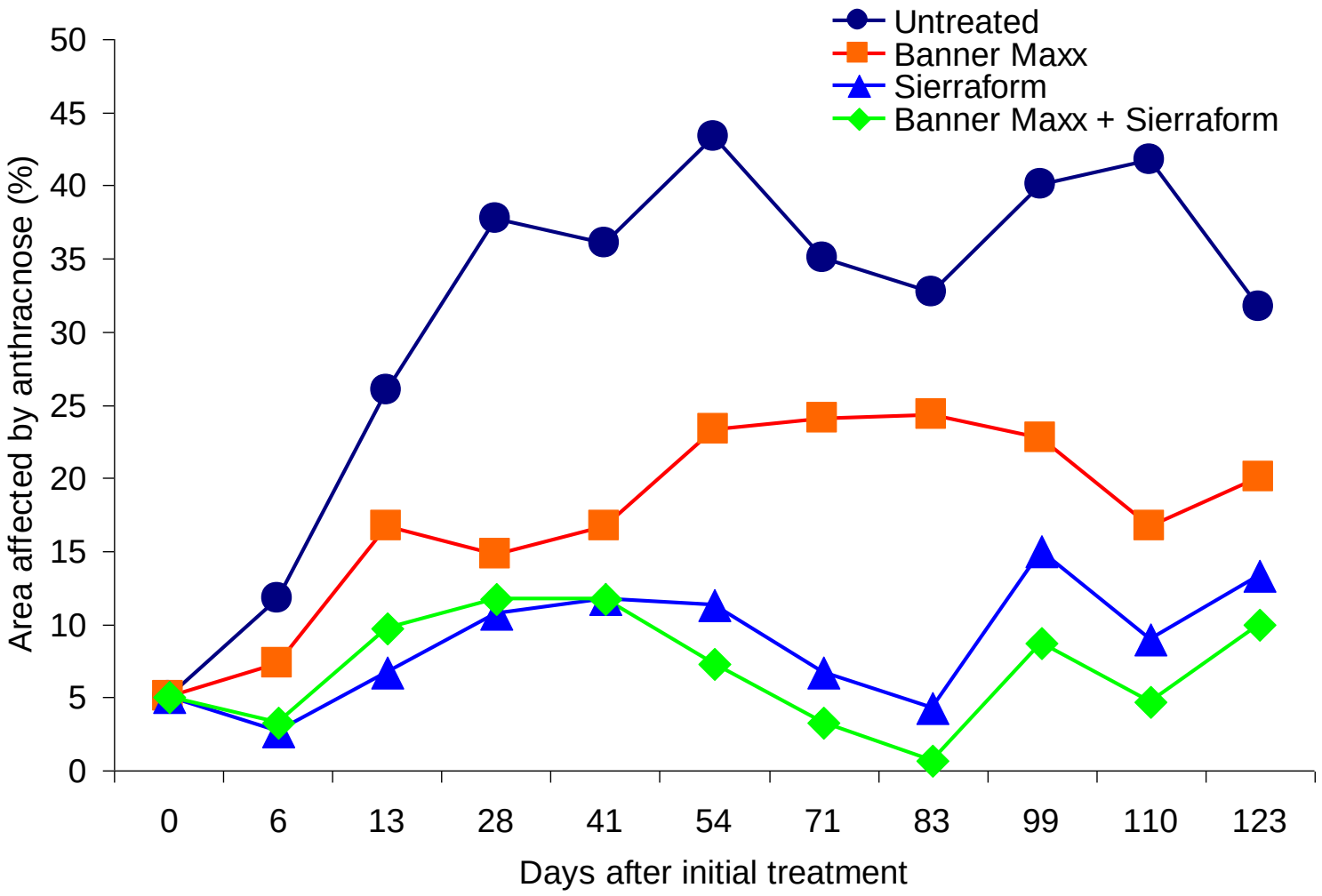
# Phase 3 – Prevent Reinvasion

Nutritional strategies…

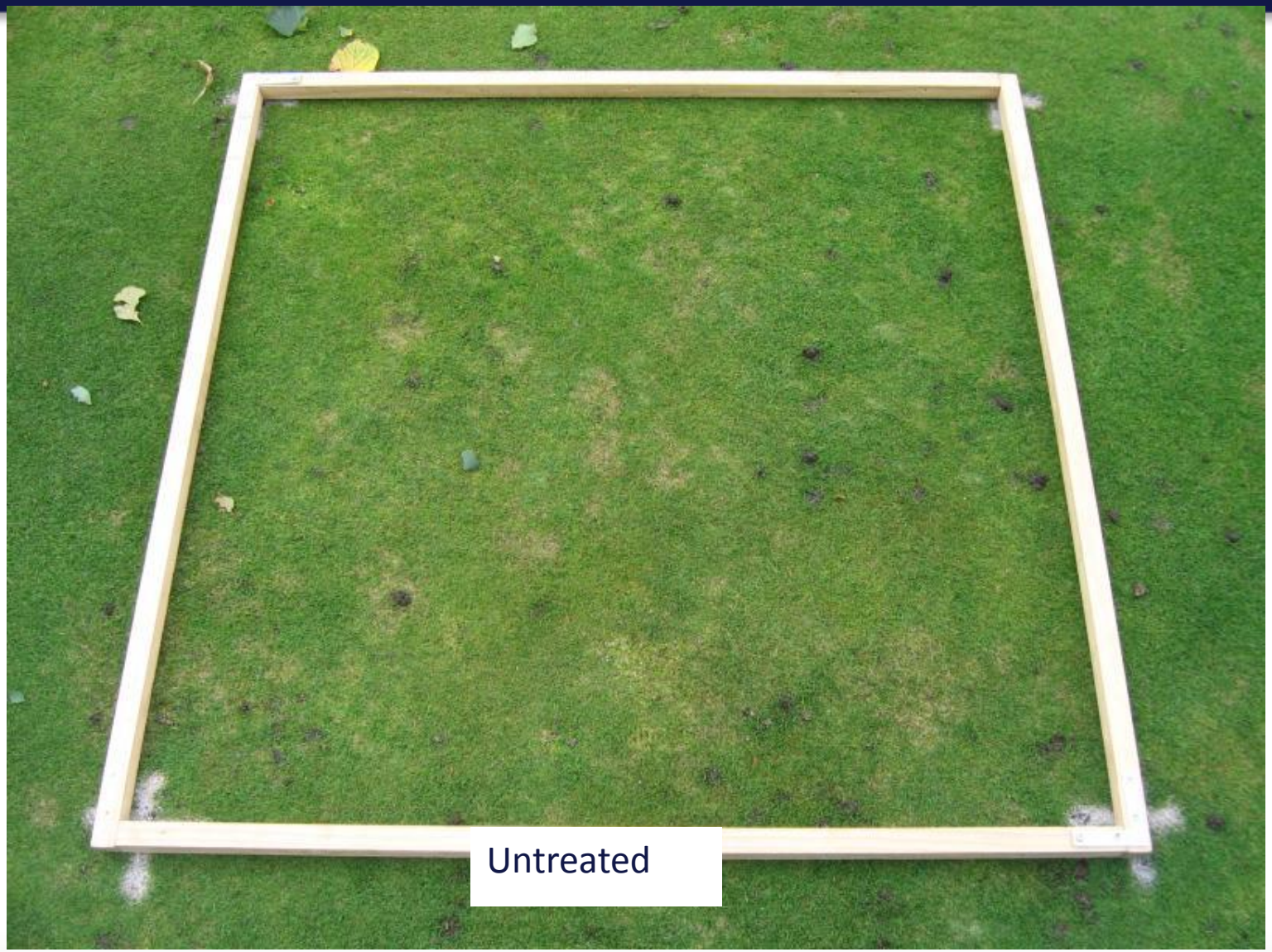
(We need to prevent gaps)

- Nitrogen inputs lower?
- Nitrogen sources?
- Phosphorus?
- Potassium?
- PGR?

# Integrated management



# Integrated management



# Integrated management

Banner Maxx alone

# Integrated management

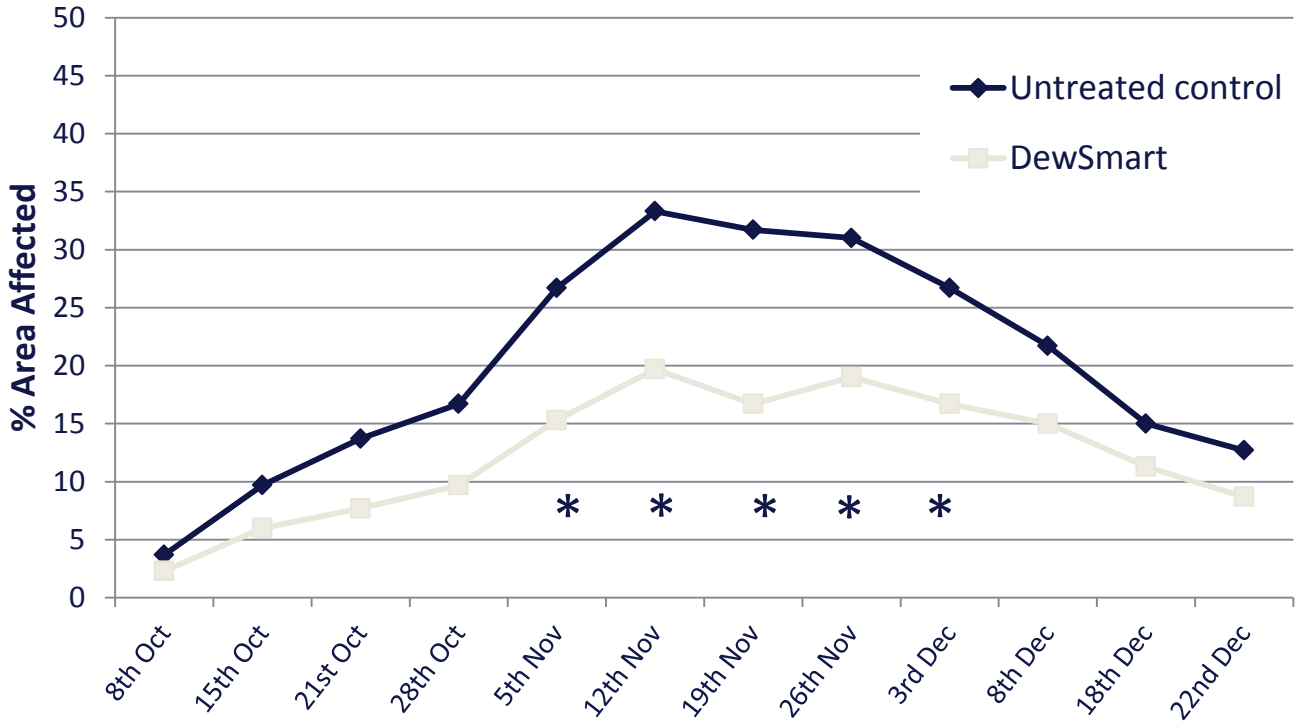
Sierraform fertiliser programme

# Integrated management

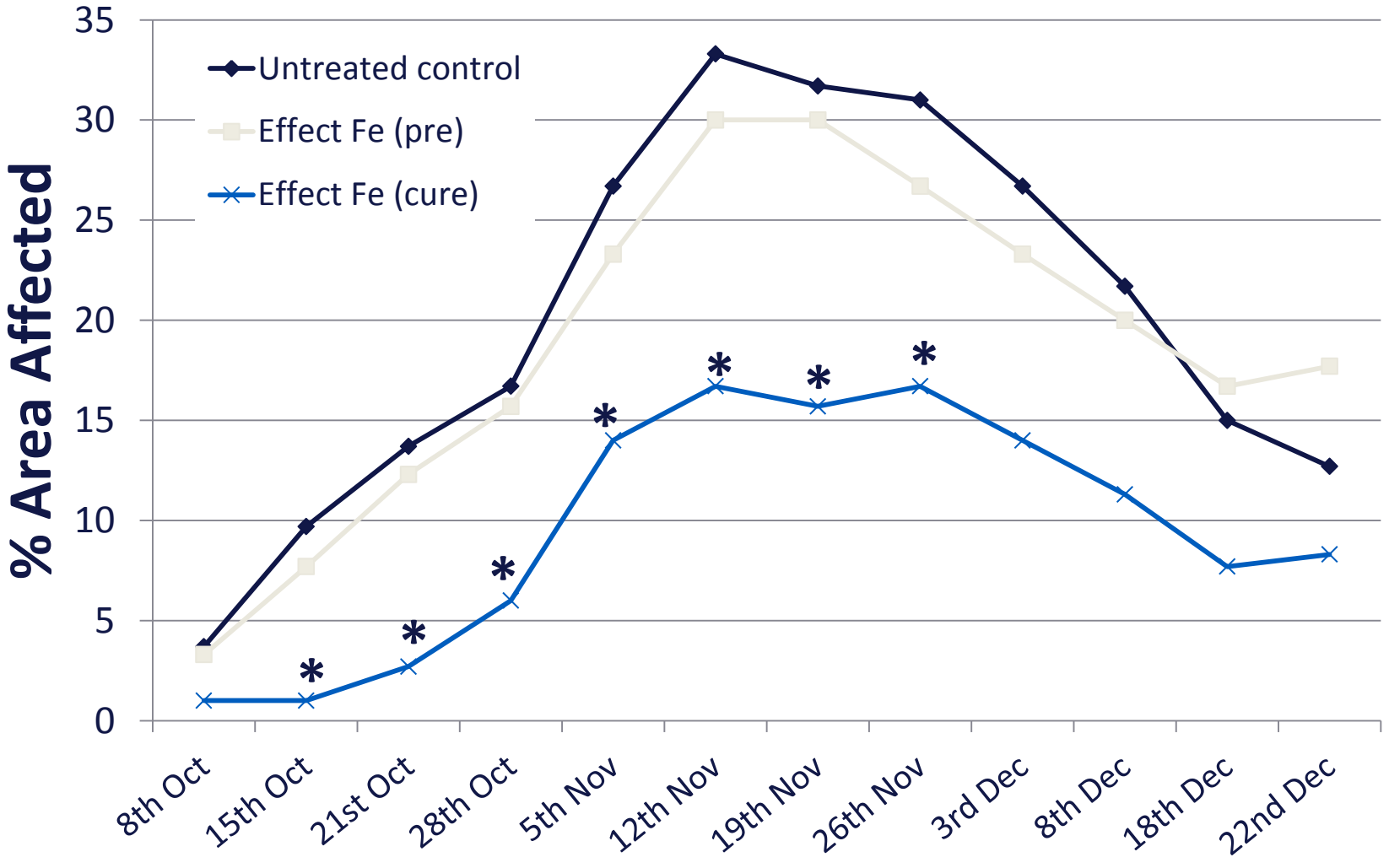
Sierraform programme + Banner Maxx

# 1. DewSmart programme

| % of Area Affected by Microdochium | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8th Oct | 15th Oct | 21st Oct | 28th Oct | 5th Nov | 12th Nov | 19th Nov | 26th Nov | 3rd Dec | 8th Dec | 18th Dec | 22nd Dec |
| Control | 3.7 | 9.7 | 13.7 | 16.7 | 26.7 | 33.3 | 31.7 | 31 | 26.7 | 21.7 | 15 | 12.7 |
| DewSmart | 2.3 | 6 | 7.7 | 9.7 | 15.3 | 19.7 | 16.7 | 19 | 16.7 | 15 | 11.3 | 8.7 |
| Significant | n | n | n | n | y | y | y | y | y | n | n | n |



# % area affected by Microdochium – Effect Fe




* = significantly different to control

# THANK YOU FOR YOUR ATTENTION

henry.bechelet@icl-group.com