Integrated Turf Management: Microdochium Patch

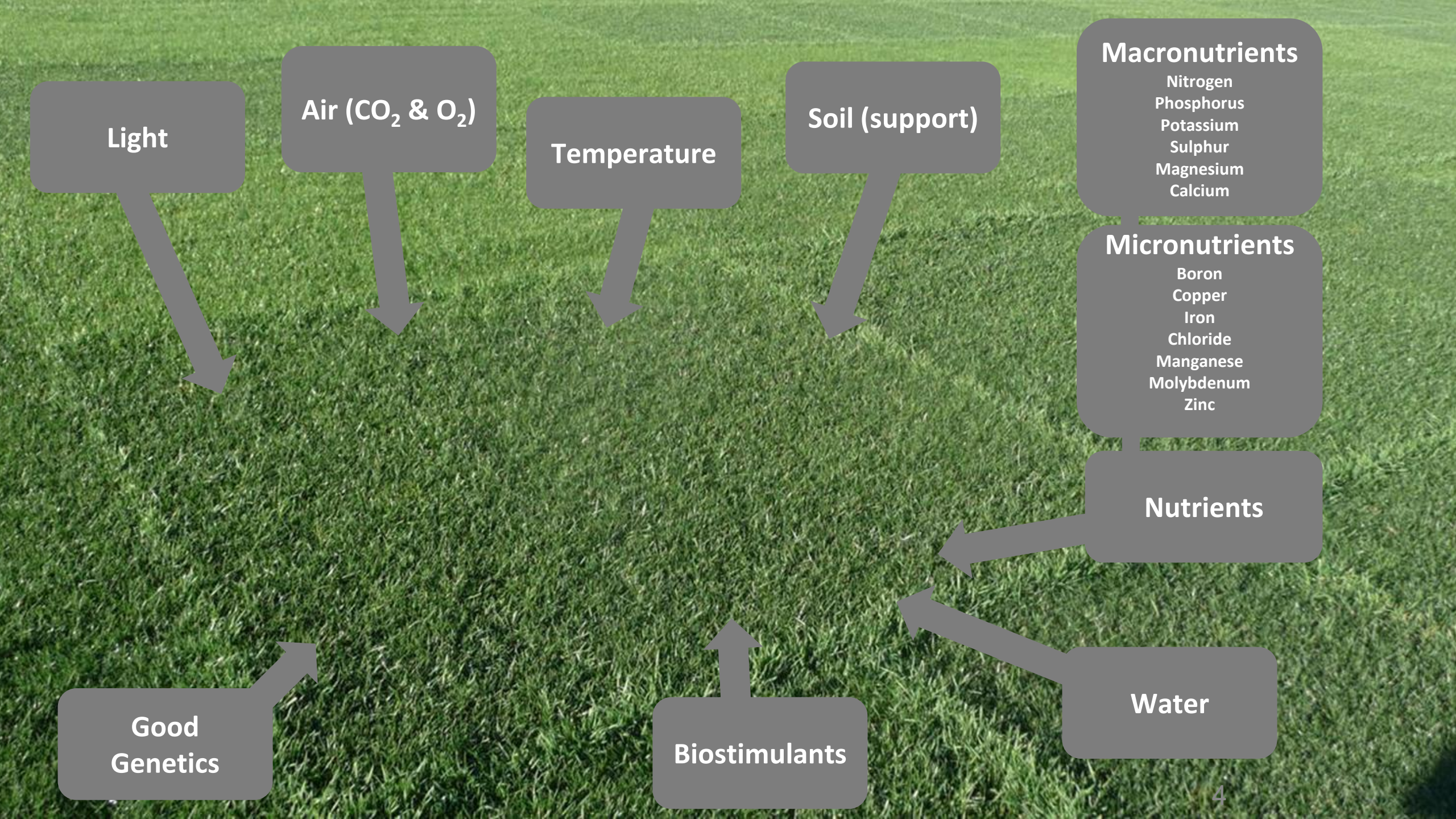
Dr Andy Owen,
International Technical Manager

ICL Growing Solutions
Nov 2025

NUTRITION, SEEDS, WETTING AGENTS, BIOSTIMULANTS

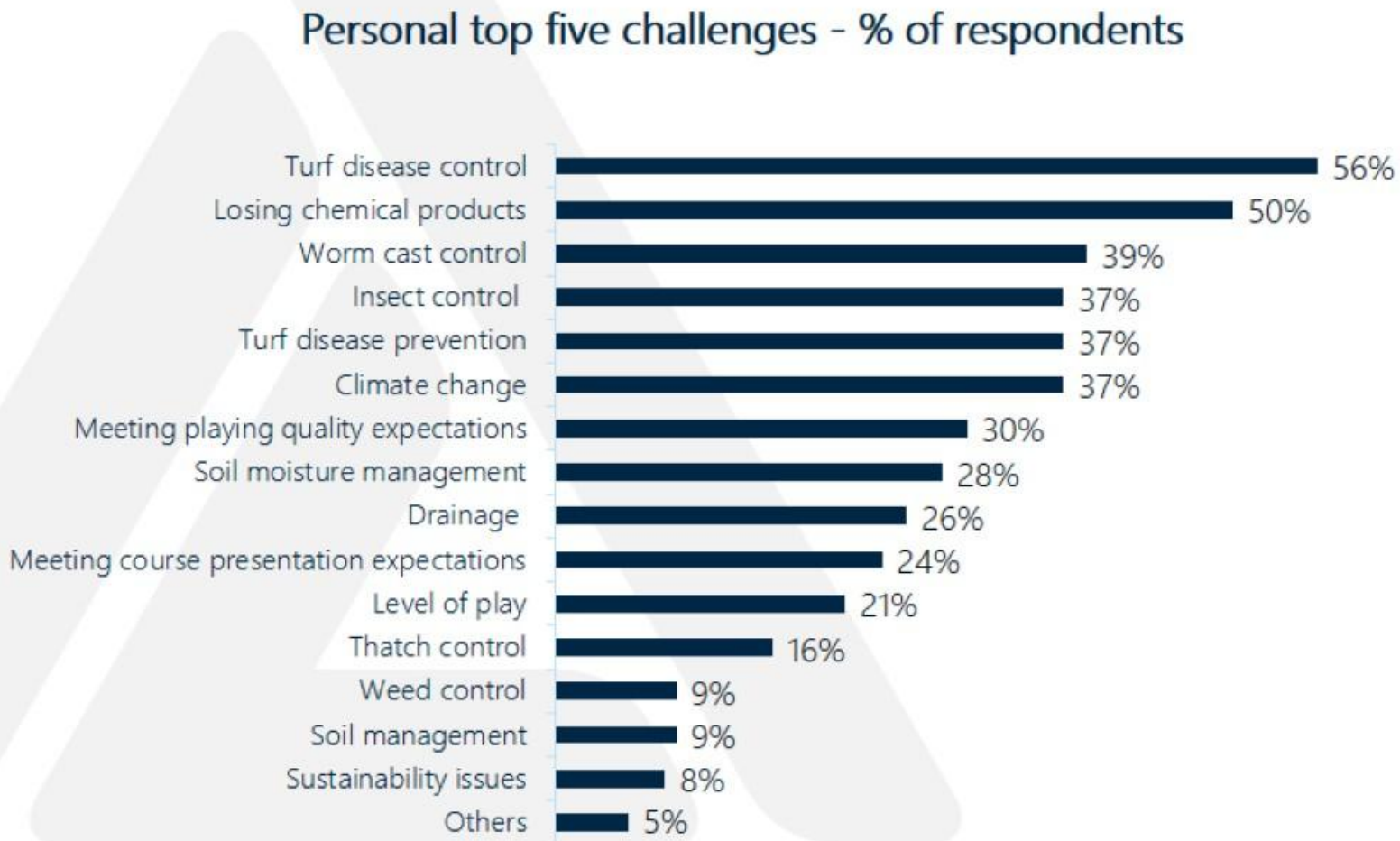
Technical Values

- Products that **perform**
- All claims based on **research**
- To be **progressive** and **responsible** with our advice
- **Conscious** of our **impact**


Light
Air (CO_2 & O_2)
Temperature
Soil (support)
Macronutrients
Nitrogen
Phosphorus
Potassium
Sulphur
Magnesium
Calcium
Micronutrients
Boron
Copper
Iron
Chloride
Manganese
Molybdenum
Zinc
Nutrients
Water
Biostimulants
Good Genetics

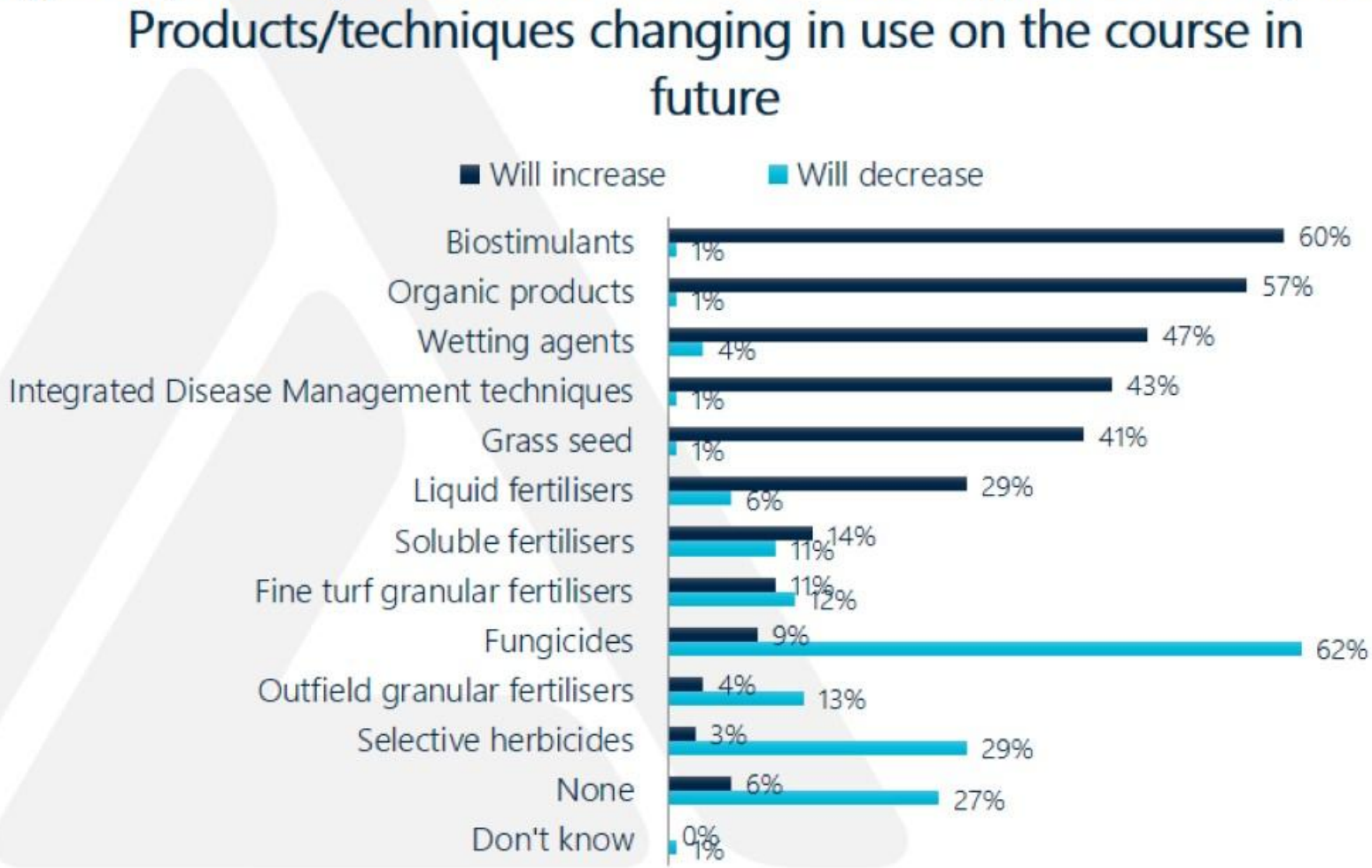
Customer challenges

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



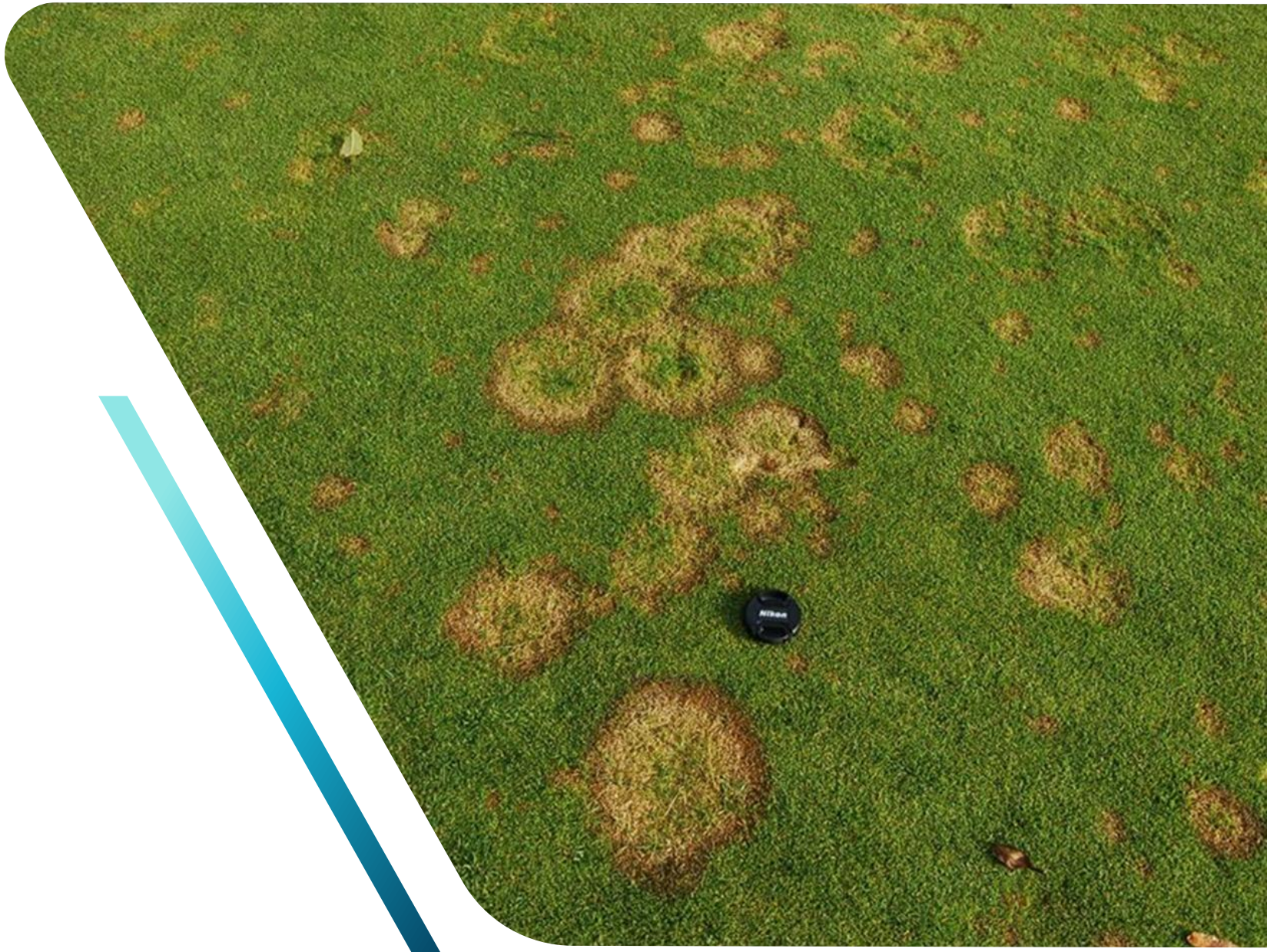
Customer aspirations

Which of the following products/techniques do you think you will decrease using over the next 5 years? And which of these product types do you think you will increase the use of or start using over the next 5 years?



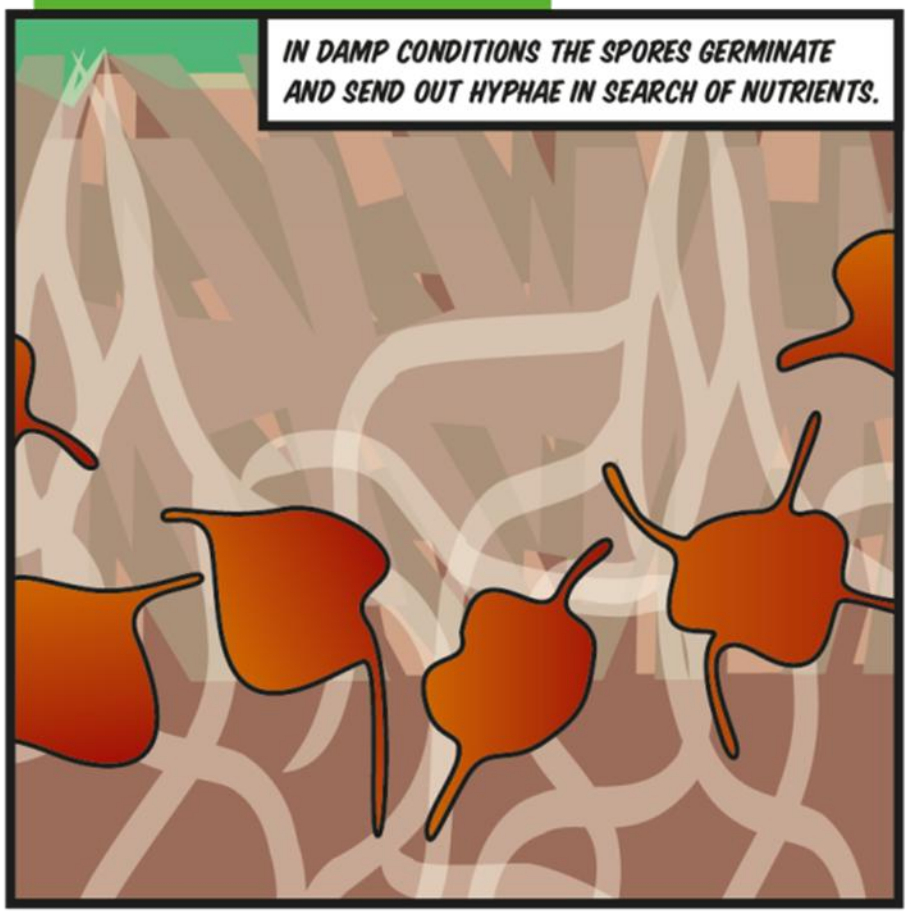
Microdochium nivale

(sometimes called fusarium patch)
(or monographella nivale)

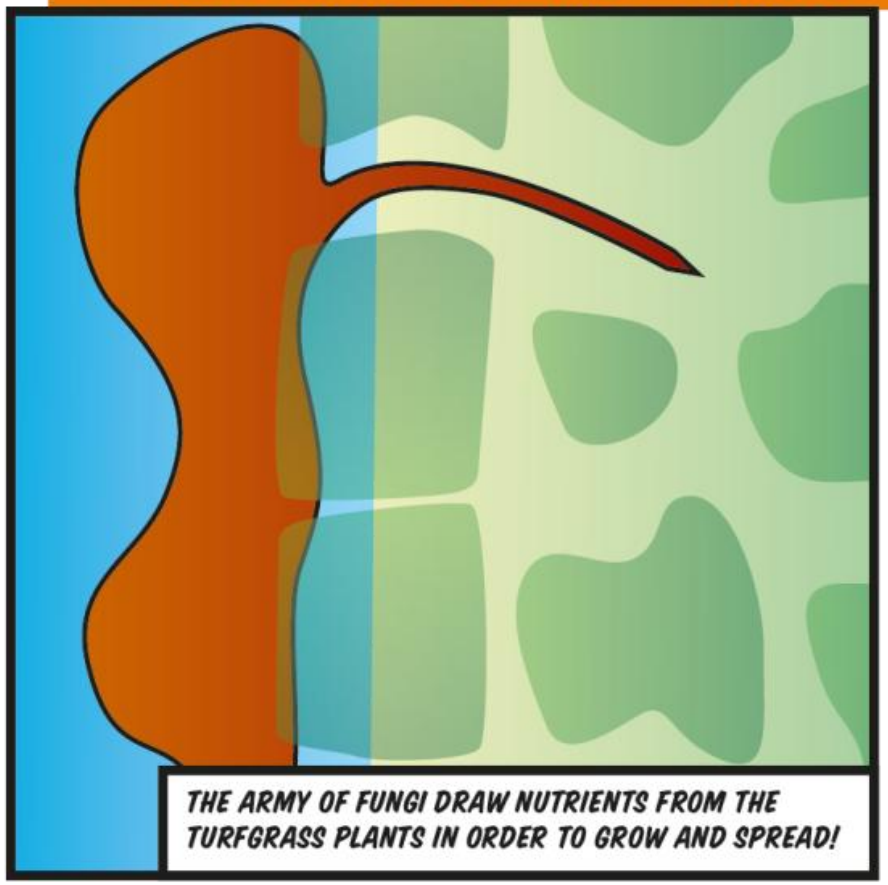


LAYING IN WAIT

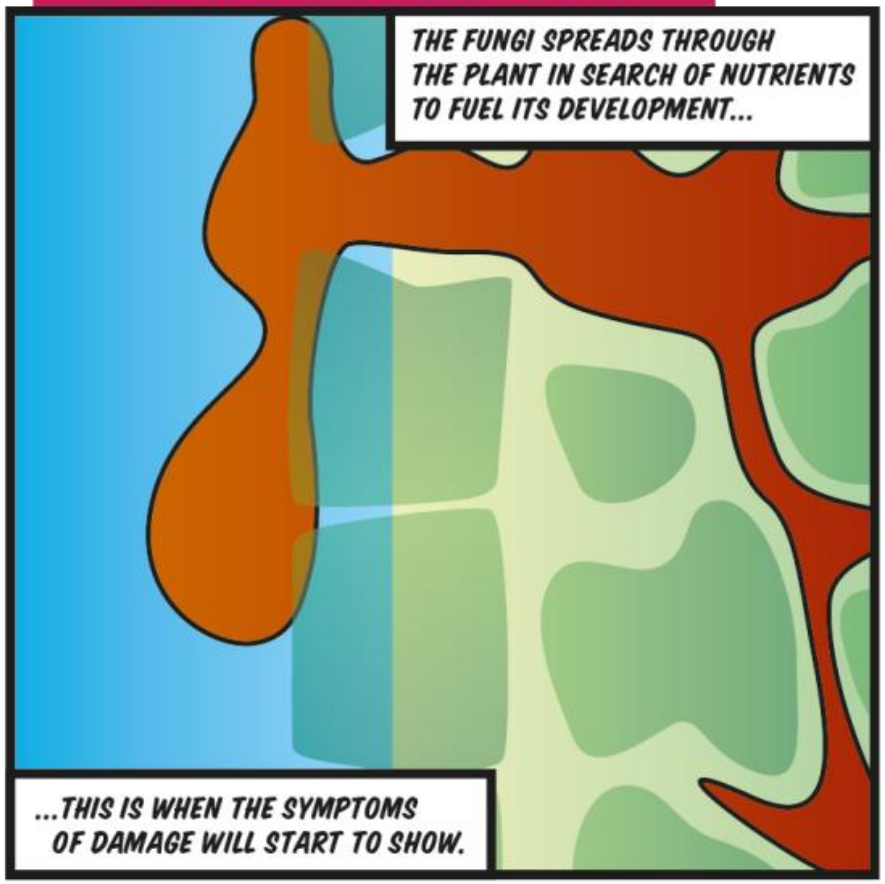
GERMINATION

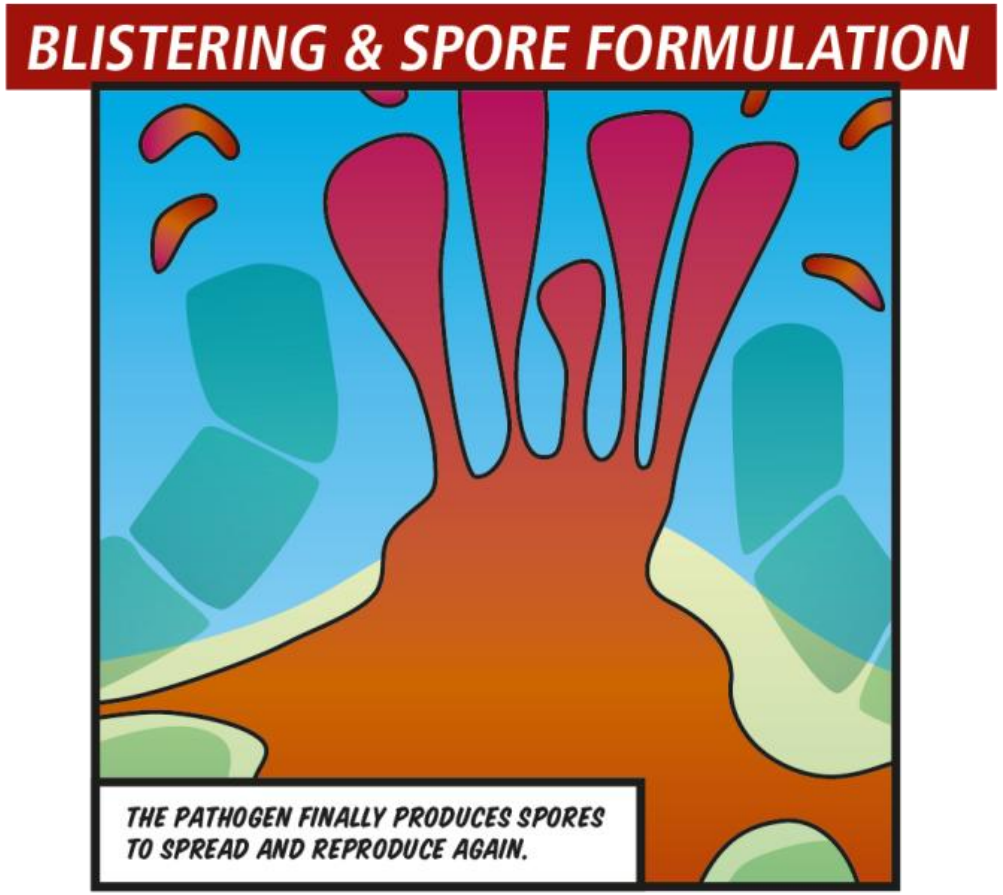


PENETRATION / INFECTION

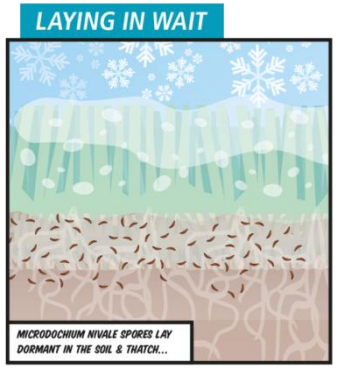


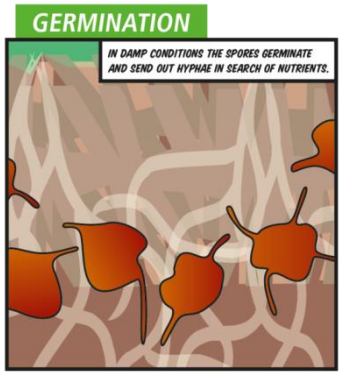
MYCELIAL GROWTH

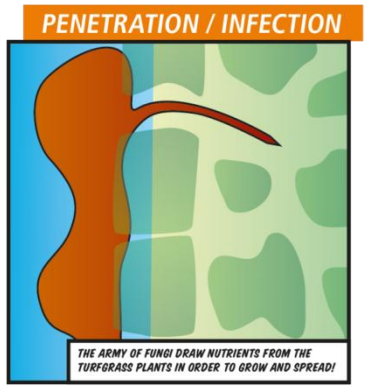



BLISTERING & SPORE FORMULATION
THE PATHOGEN FINALLY PRODUCES SPORES TO SPREAD AND REPRODUCE AGAIN.

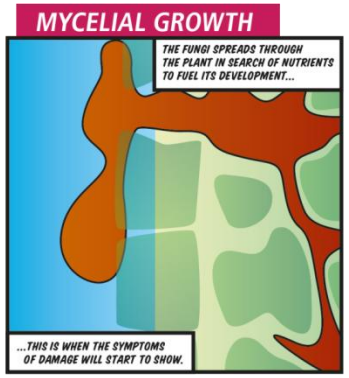
The development of *Microdochium patch*

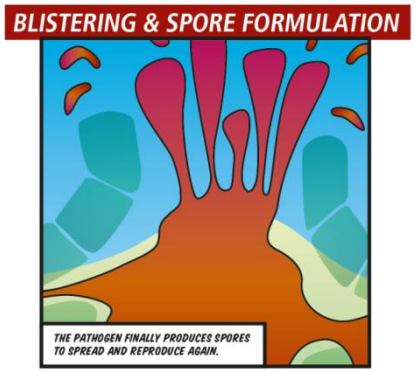






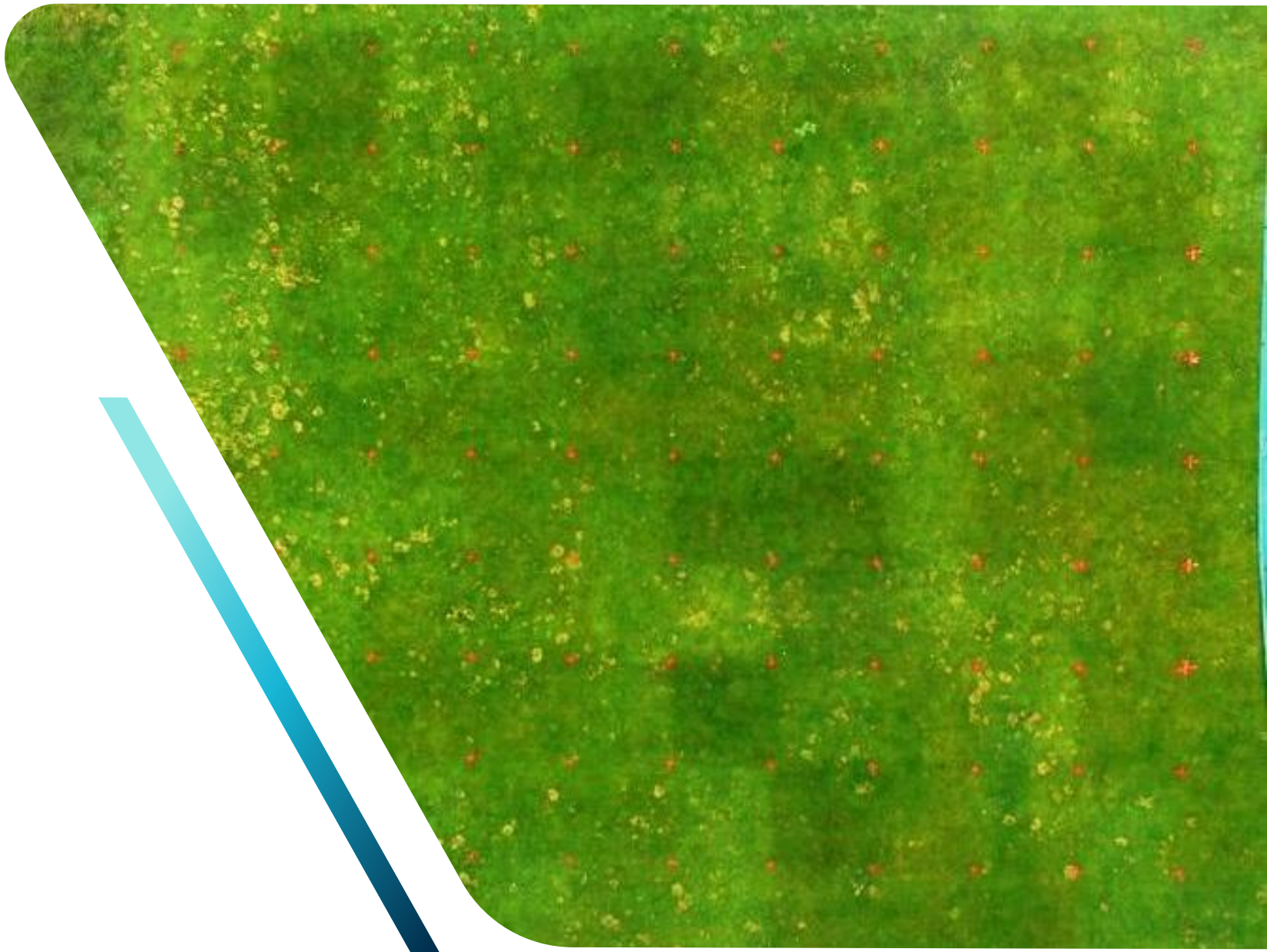
Symptoms and damage





2 – 4 days

ICL have been running independent ITM disease trials for years



Microdochium trial STRI 2016

Slow down microdochium first

Effective disease prevention is a long-running process

Henry Bechelet and Andy Owen, technical managers at ICL

Effective Microdochium patch (Microdochium nivale) disease control is a primary focus of all our autumn greens management programmes.

The preventative application of fungicides is certainly an important aspect of this, but you will only achieve effective control if the background management is fully supportive.

Extensive independent trial work carried out by ICL in recent years has repeatedly shown how effective the use of appropriate nutrition, moisture management and sulphate of iron can be at slowing down the rate of development of Microdochium patch. This is important because if we can slow the disease down, we can reduce the risk of a severe outbreak developing.

Slowing the disease also helps us achieve fully-effective fungicidal control and potentially reduces the need for an excessive number of applications.

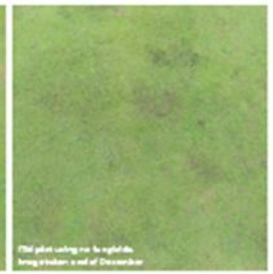
Our latest trial demonstrating this was set up at the Irish Sports Turf Institute in autumn 2018. We used annual meadow grass (*Poa annua*) dominated turf being maintained to create genuine golf green quality surfaces. The environmental conditions during the trial were mild and damp and so highly conducive for the development of Microdochium patch.

> If we want to achieve effective disease control, we must manage the turf holistically

The trial itself was a randomised block design with four replications and regular assessments were carried out to monitor disease activity.

There were various treatment programmes within this trial:

- The untreated control plots received no supplementary treatments beyond the routine surface preparations (the best way to encourage disease).
- The so-called 'positive control' plots received a single application of granular slow release fertiliser (SierraformGT 'K-STEP' 6-0-27 +TE at 25g/m²) along with three fungicide applications (Instrata Elite, Instrata Elite and Medallion from Syngenta), each applied at recommended rates at 28-day intervals.
- The non-fungicidal Integrated Turf Management (ITM) plots received an application of granular fertiliser (SierraformGT 'K-STEP' 6-0-27 +TE at 25g/m²) followed by monthly applications of the liquid fertiliser Vitalnova 'Stressbuster' (7-0-0 +2Fe at 30L/ha) tank-mixed with a specialist penetrant surfactant (H2Pro 'FlowSmart' at 10L/ha), three applications of dew dispersant (H2Pro 'DewSmart' at 10L/ha in October, November and December) and the occasional applications of liquid iron (Greenmaster Liquid 'Effect Fe' at 30L/ha), when disease pressure was considered to be high.



The graph shows that we measured significantly reduced levels of disease in the treated plots and demonstrated effective disease control.

The untreated control plots (without any nutritional input or moisture management) suffered greatly from Microdochium patch disease scarring, on average 20%. These surfaces were devastated and their visual and playing qualities would have been extremely poor. The plots were left to the mercy of the disease.

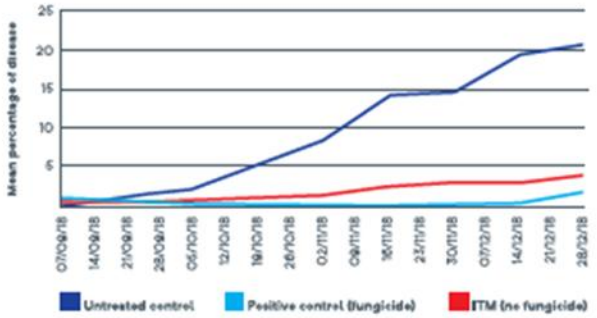
The 'positive control' (with fungicide) plots achieved the highest levels of disease control (less than 2% on average). The turf health was maintained nicely, with slow release nutrition and the fungicides served to protect the plant from infection and also targeted fungal spores to reduce the level of potential future inoculum. These plots really highlighted the effectiveness of using quality fungicide technologies applied preventatively on the back of simple nutrition. These surfaces were great!

The ITM (without fungicide) plots showed that maintaining turf health with appropriate nutrition, managing leaf and soil moisture with specialist surfactants and the well-timed use of liquid iron was really effective at slowing the rate of development of the disease down. This served to keep the level of scarring to what many people might regard as being an acceptable threshold (below 3% on average). These surfaces showed good turf colour and quality with very little disease activity.

There are a few take-home messages from this work. If we want to achieve effective Microdochium patch disease control, we must manage the turf holistically. Plant health is clearly vital and appropriate nutrition must be the backbone of your autumn plan. When we combine plant health with moisture management and the selective use of iron, we can achieve significant reductions in the rate of disease development. The fungicides, when applied correctly, are extremely effective and provide excellent levels of disease control by actively targeting the fungal pathogen.

If we combine a good background programme with the correct use of fungicide technologies we can achieve fantastic levels of control even during extended periods of high disease pressure. But in order to give your strategy the best chance of working, you need to slow down the Microdochium first.

Percentage of Microdochium patch | ISTI Trials 2018



Working in partnership with ICL

We have published articles and presented data in a range of forums

We have published articles and presented data in a range of forums

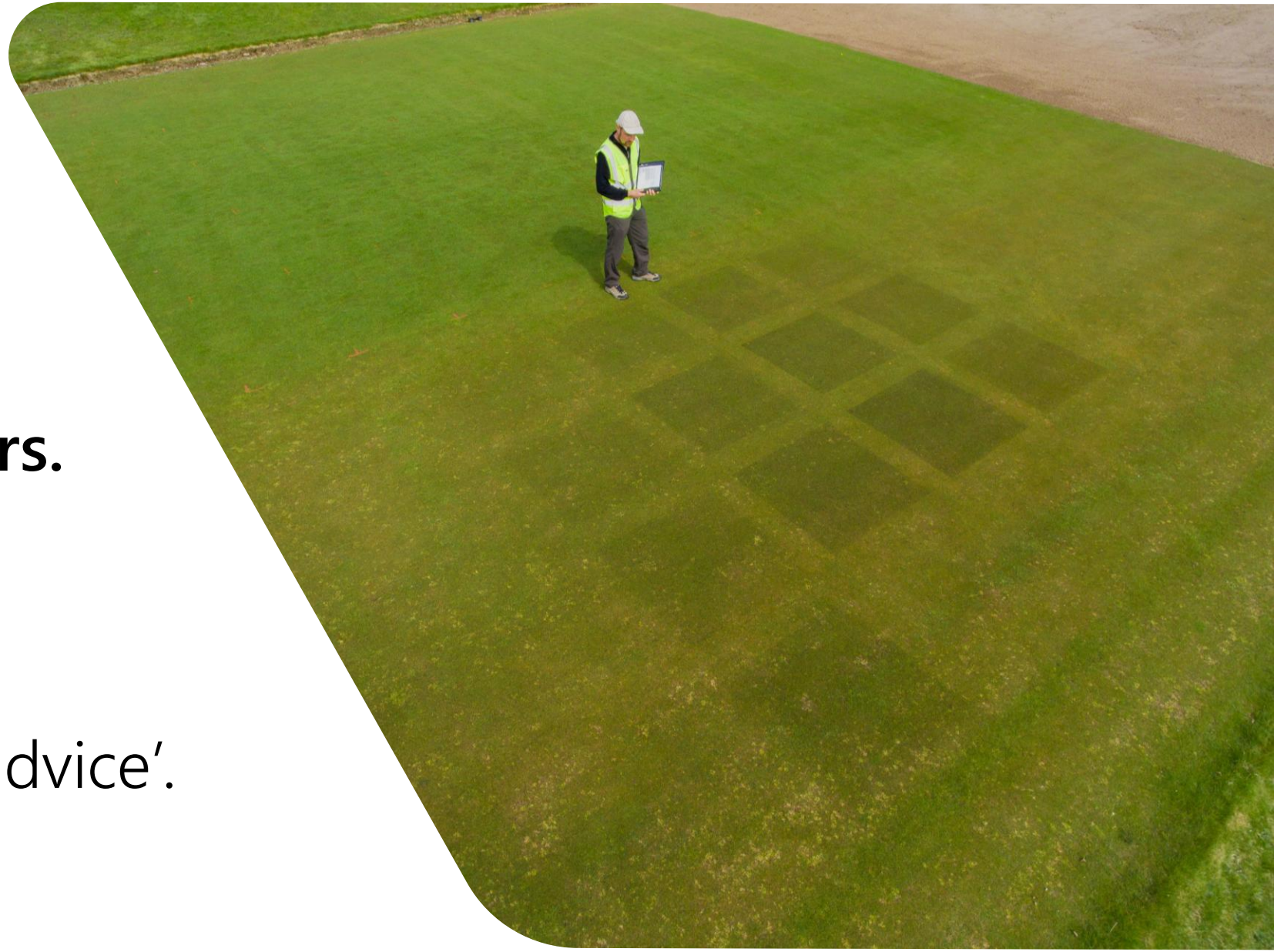
EU Legislation: Sustainable Use of Pesticides Regulation

Sustainable Use Regulation

Reduce by 50% the use and risk of chemical pesticides by 2030

Integrated Turf Management Trials every year for 10 years.

‘Be progressive and responsible with our advice’.



Species conversion is important.

Poa annua is more susceptible to fungal pathogens than other species.

Non-fungicidal Microdochium management

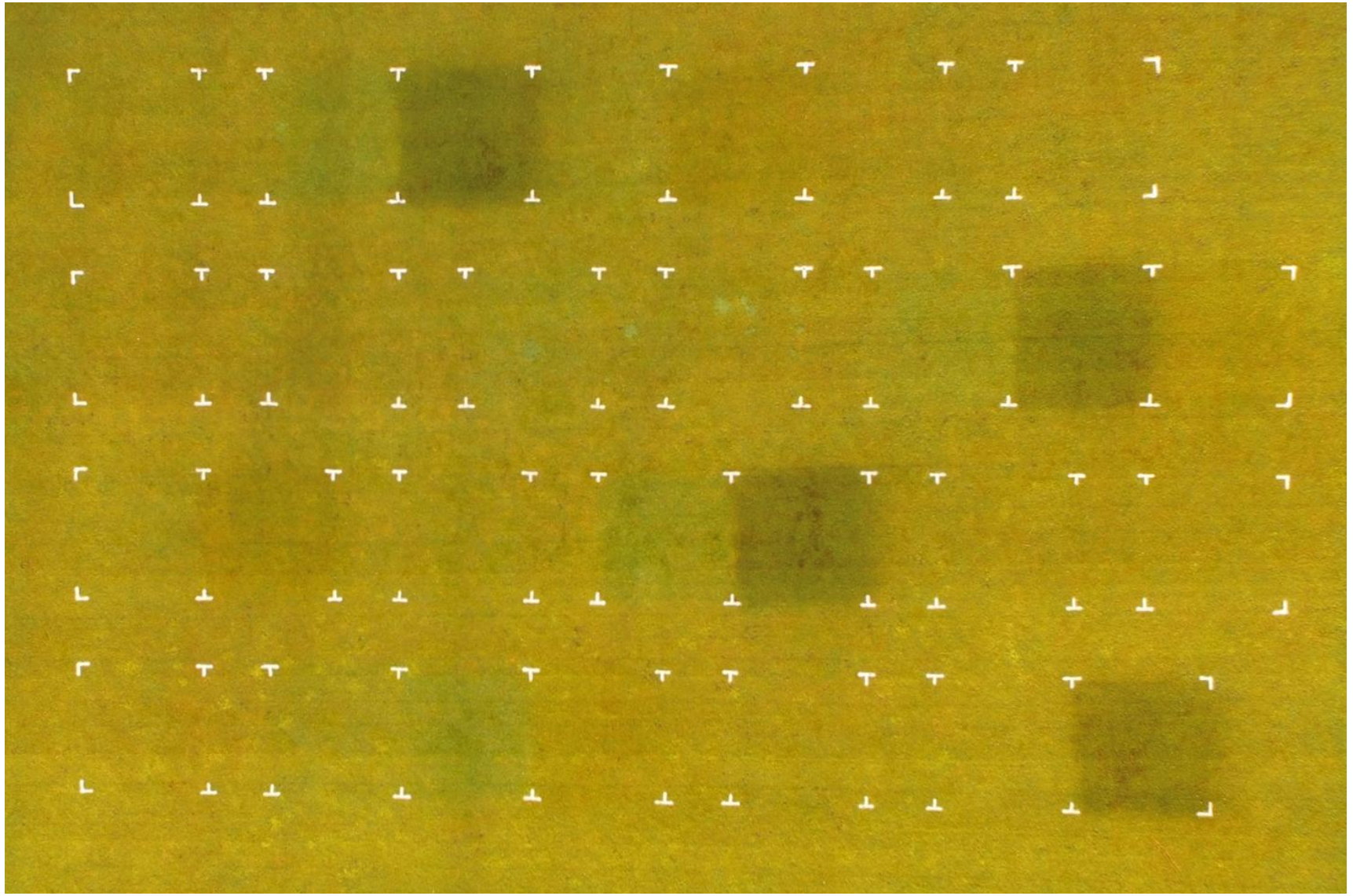
Control plots, high disease content

ICL-ITM plots, low disease content

Autumn (and Spring) nutrition is critical

Moisture management – dew dispersal + wetting agents

Utilise iron sulphate effectively



For management of *Microdochium on fine turf* :

I do not recommend biologicals

I do not recommend biostimulants

I do not recommend citric acid

I do not recommend copper / zinc

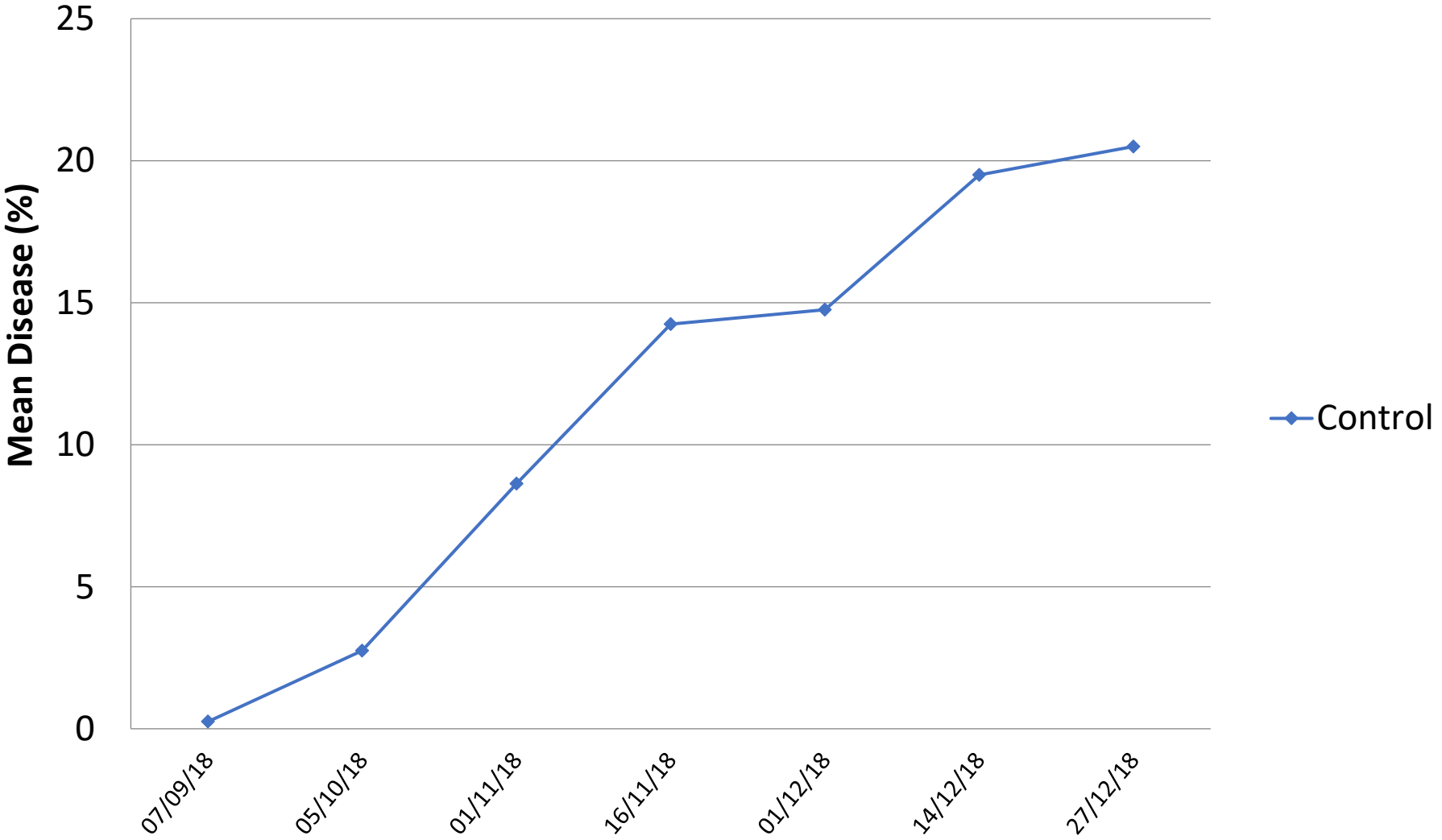
I can not currently recommend phosphite

values in food or feed.

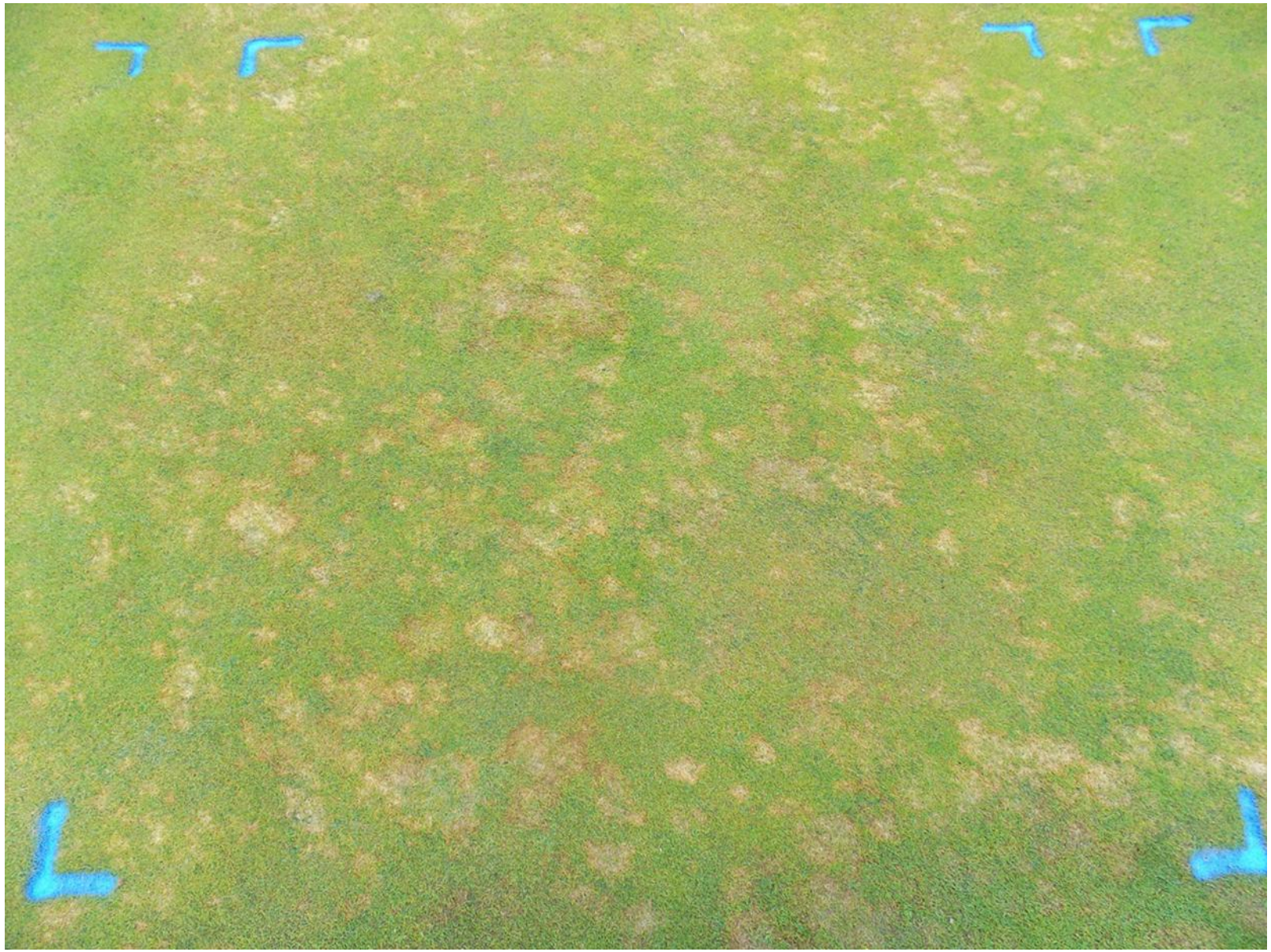
6. Phosphonates shall not be intentionally added to any EU fertilising product. Unintentional presence of phosphonates shall not exceed 0,5 % by mass.

The requirements in this Annex are expressed in oxidised form for certain nutrients. Where compliance is assessed

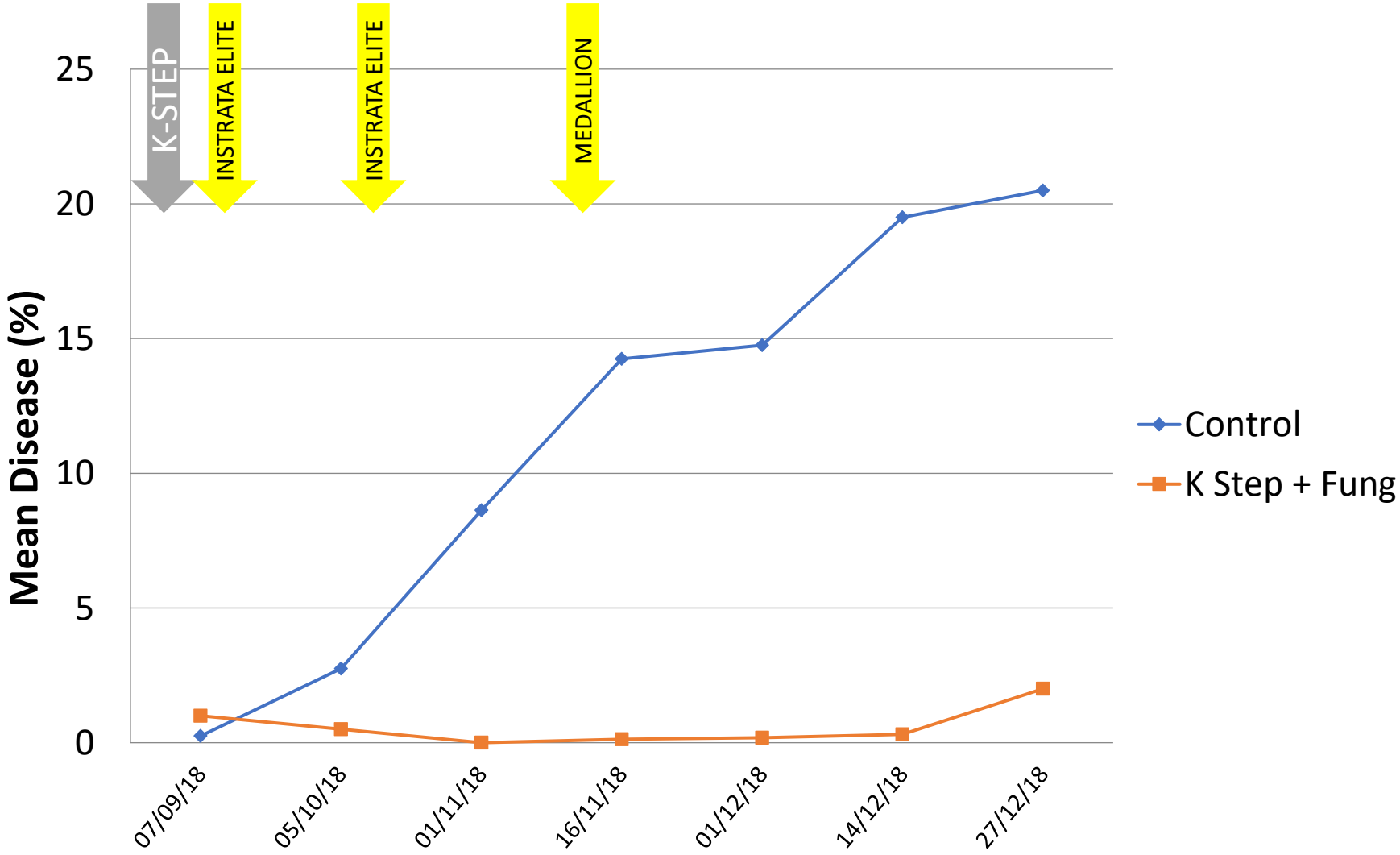
Disease progression (%)



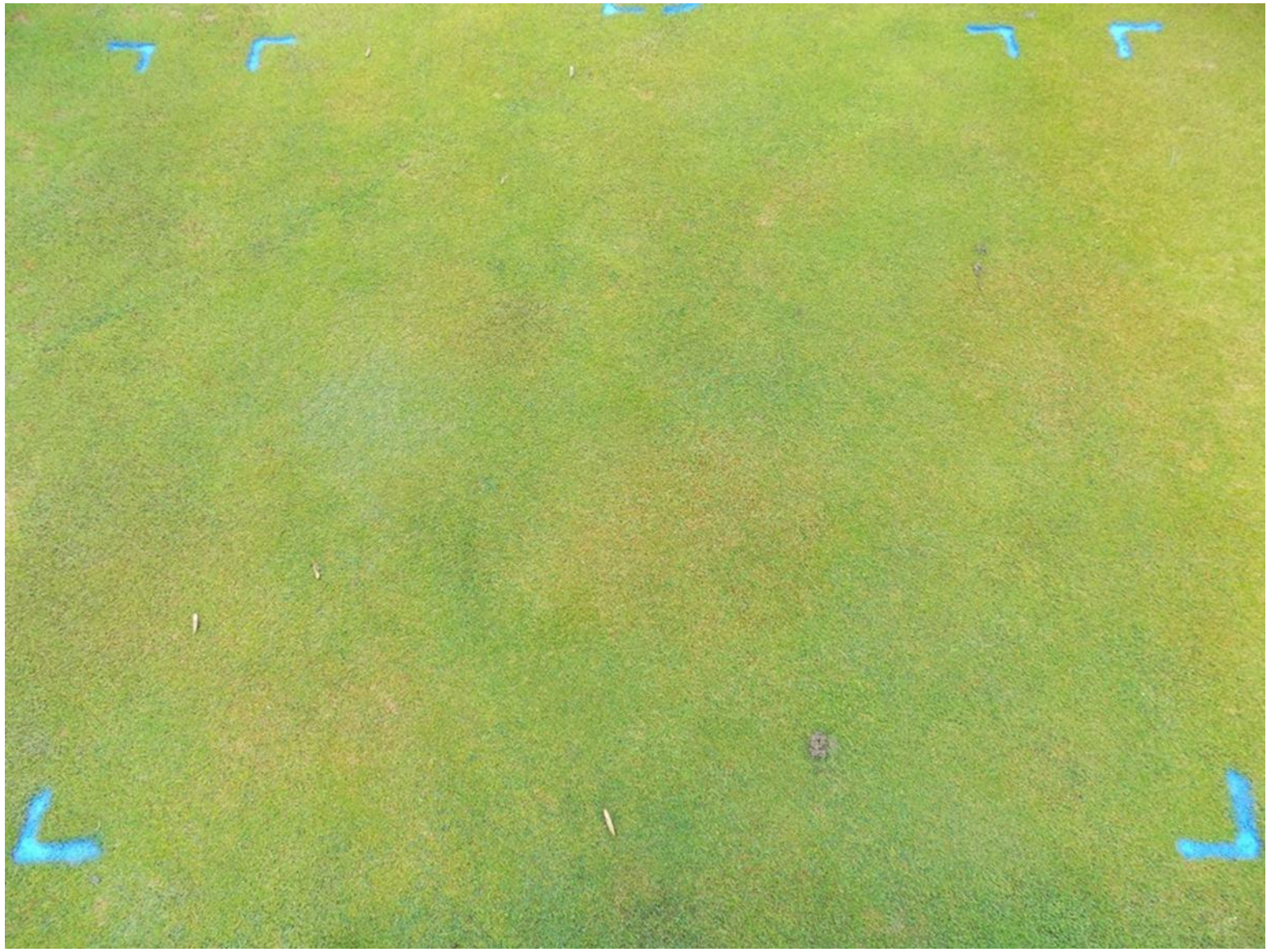
Control plot- disease @30%



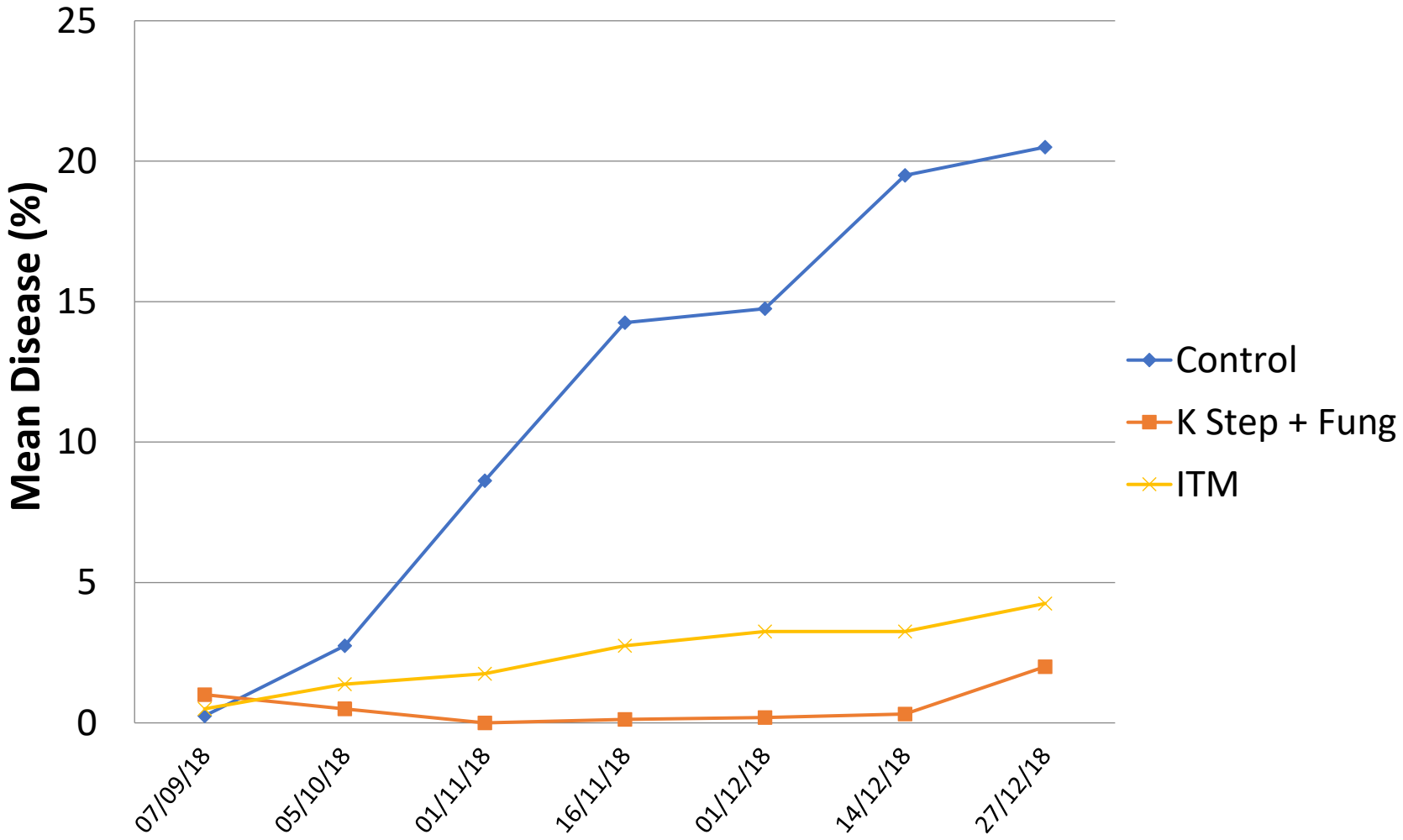
An effective fungicide programme



Fungicide programme = low disease

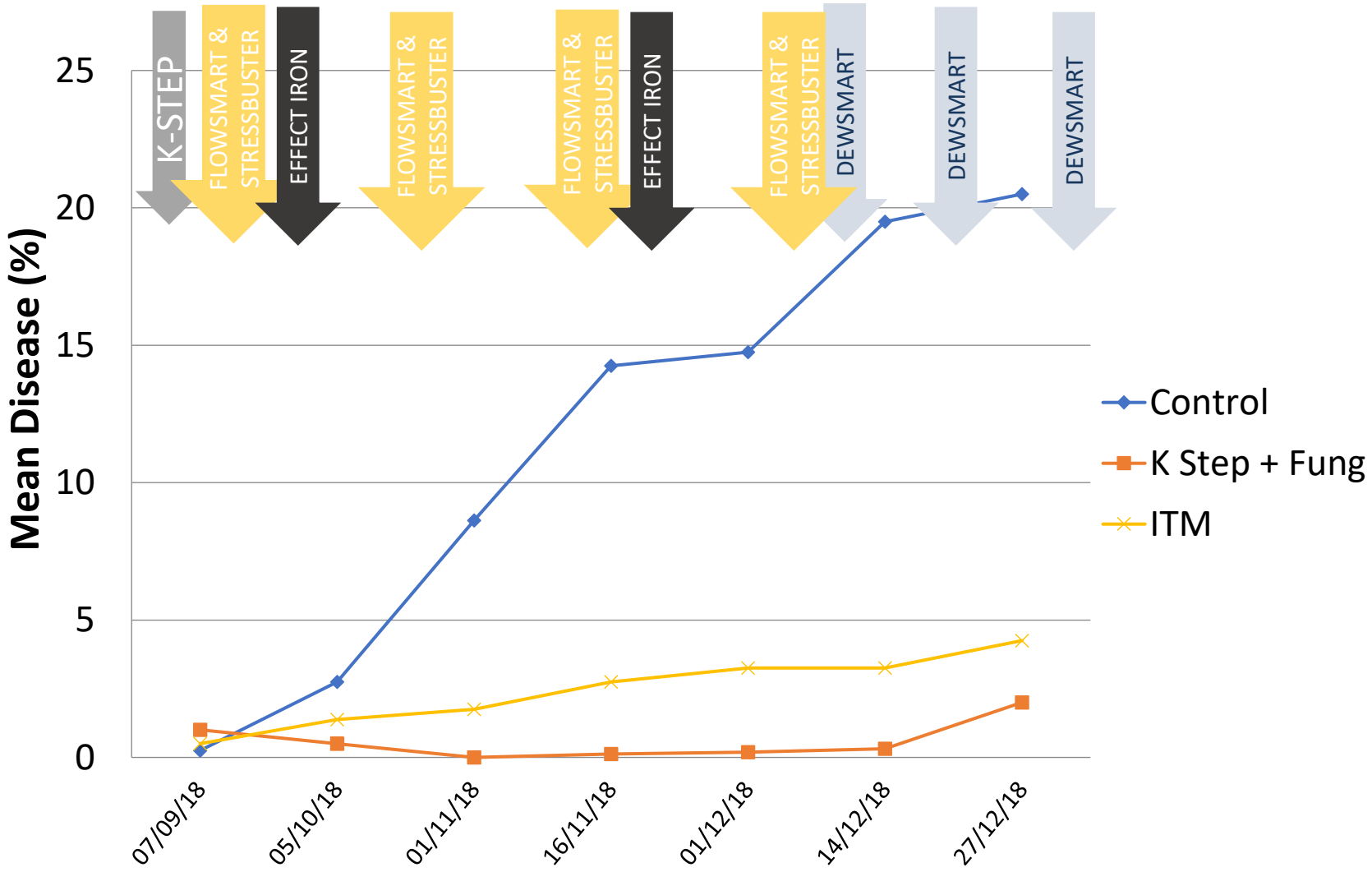


An effective ITM programme



ITM = good quality, low disease plots

An effective ITM programme



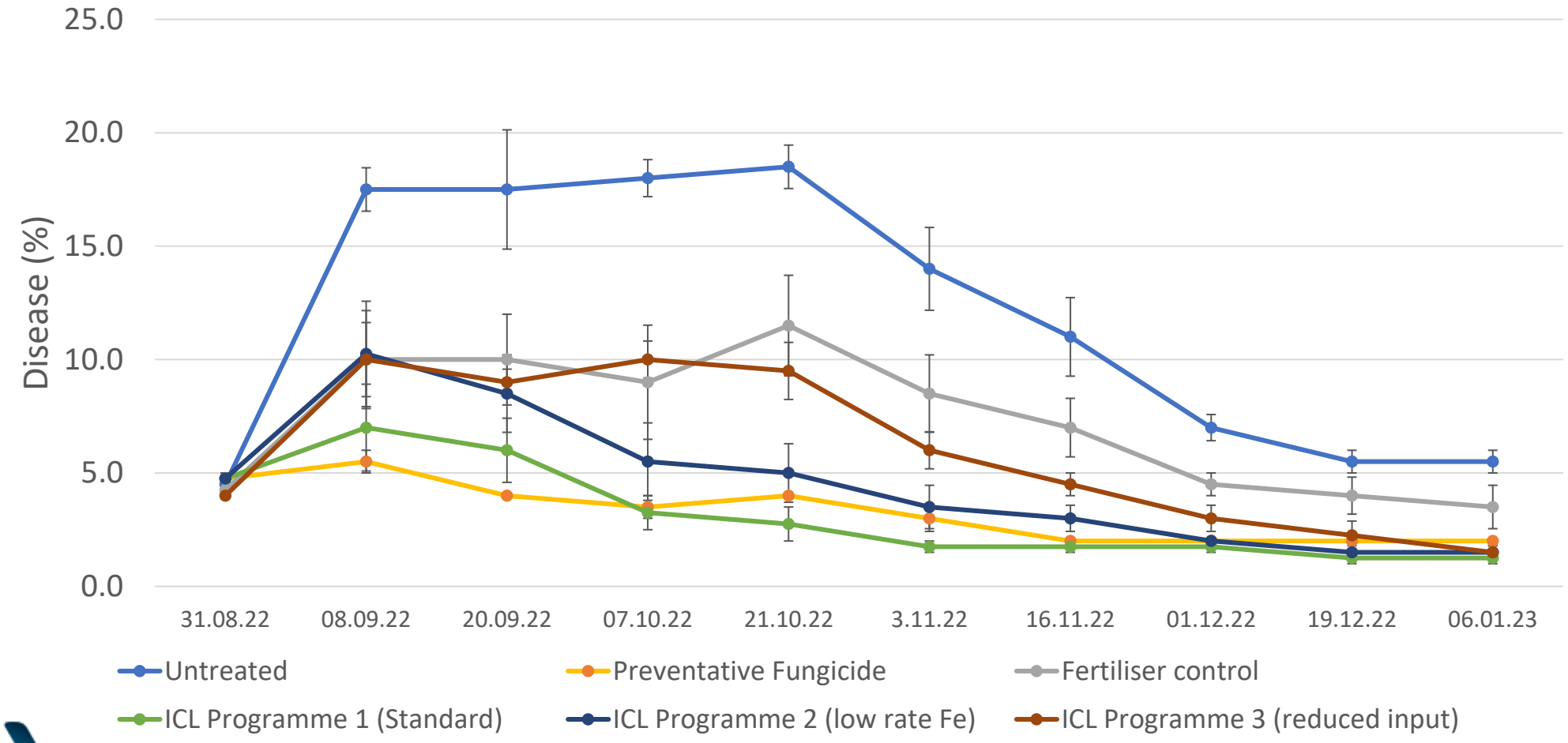
2022 Autumn Disease trial

ICL Autumn Disease Trial - Treatments

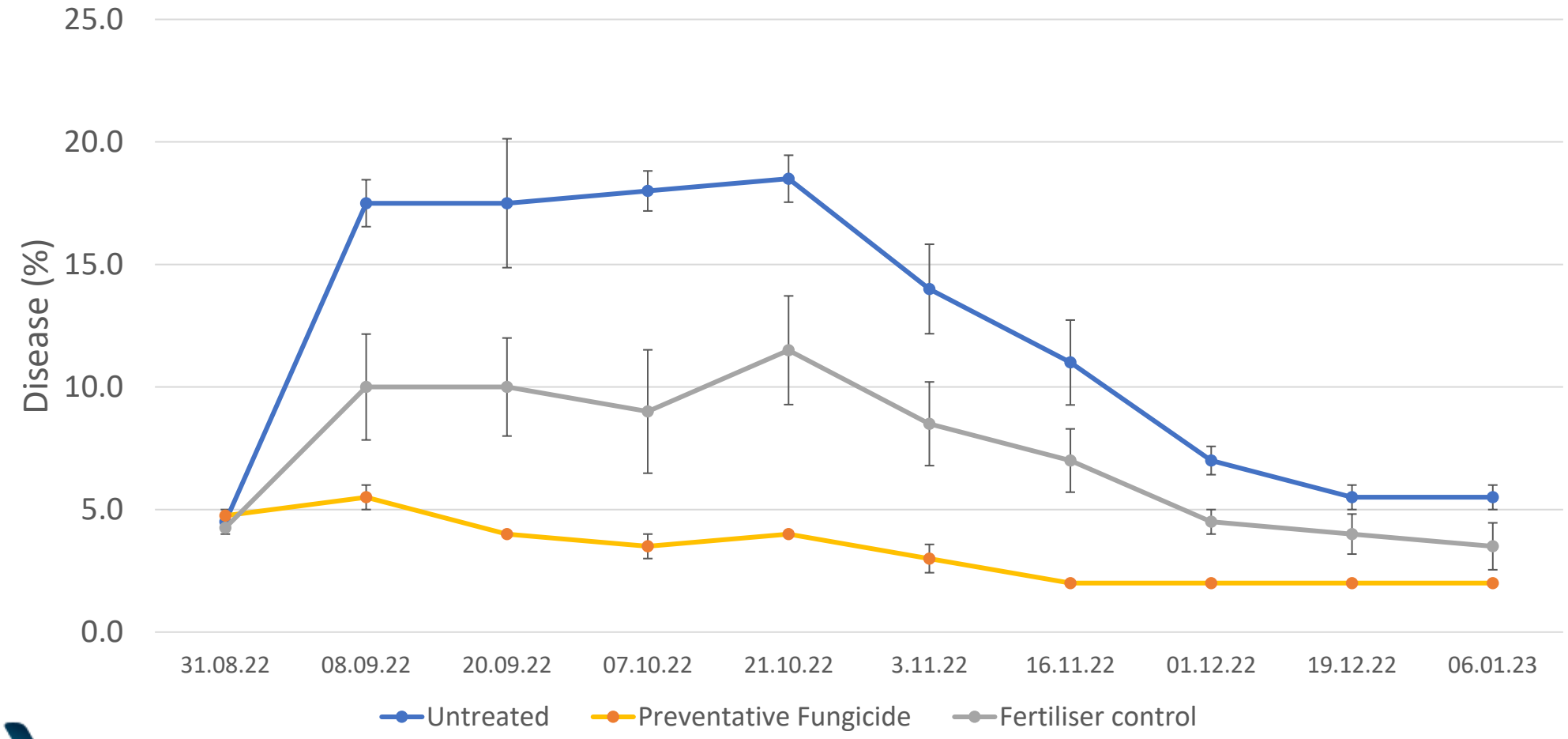
No	Treatment	Fertilizer Sierraform GT K-Step 6-0-27 @ 25g/m²	Products	Timing
T1	Untreated control			
T2	Preventative	September + Mid Oct	Instrata Elite + Ryder, Instrata Elite + Ryder, Medallion + Ryder	Sep Oct Nov
T3	Fertilizer control	September + Mid Oct		
T6	ICL programme 1	September + Mid Oct	H2Pro FlowSmart (10L) GML Effect Iron (20L)	Monthly x4
T7	ICL programme 2 (Low Fe)	September + Mid Oct	H2Pro FlowSmart (10L) GML Effect Iron (10L)	Monthly x4
T8	ICL programme 3 Low input	September + Mid Oct	GML Effect Iron (10L)	Sep Again curatively as needed


T8 T0 T6 T2 T3 T1 T7 T4 T5
BLOCK 1
T5 T0 T4 T6 T8 T7 T1 T3 T2
BLOCK 2
T0 T4 T1 T2 T5 T6 T7 T8 T3
BLOCK 3
T7 T3 T6 T1 T2 T4 T8 T0 T5
BLOCK 4

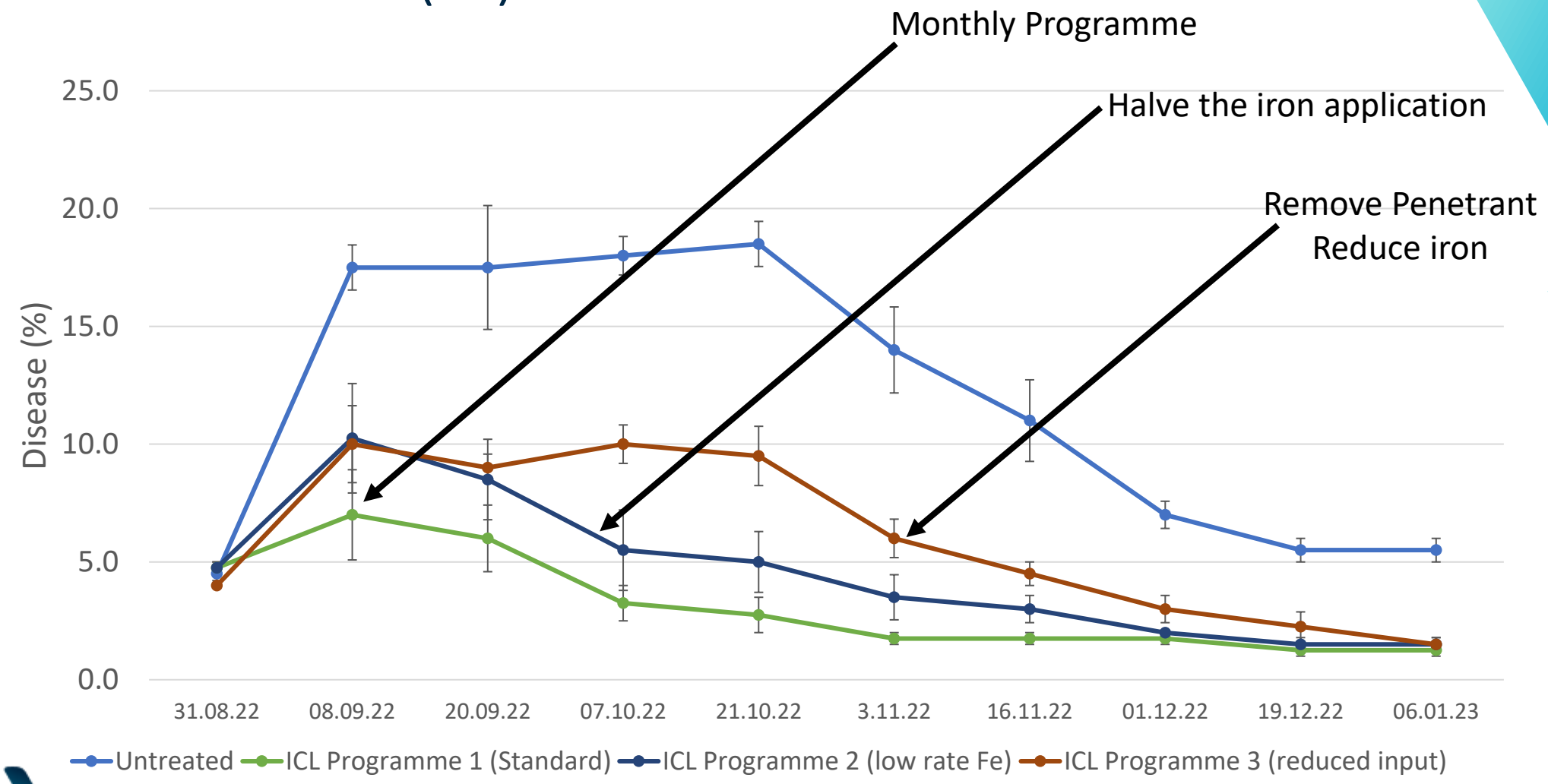
Turf Disease (%)



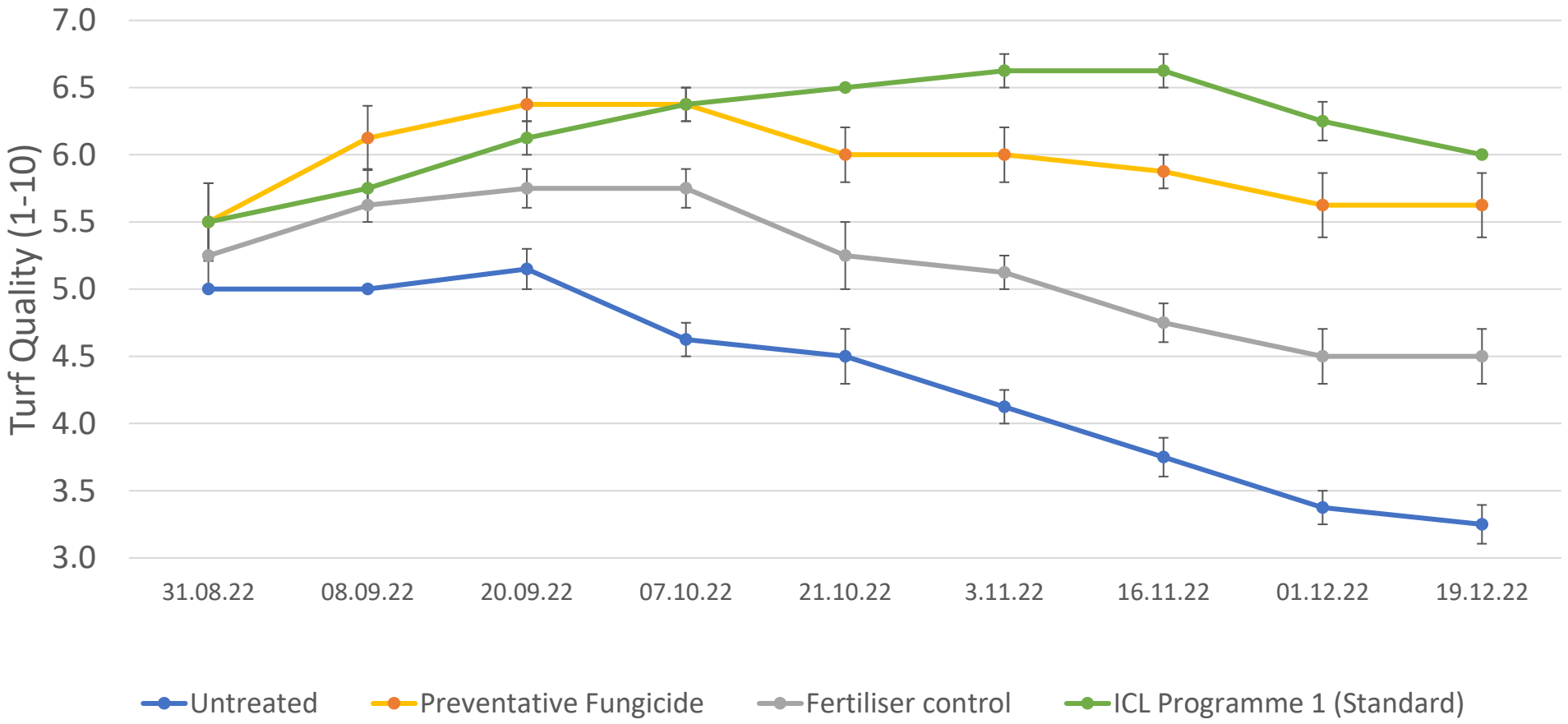
Turf Disease (%)



Turf Disease (%)



Turf Quality (1-10)



STRI Autumn Disease Trial

- 2024

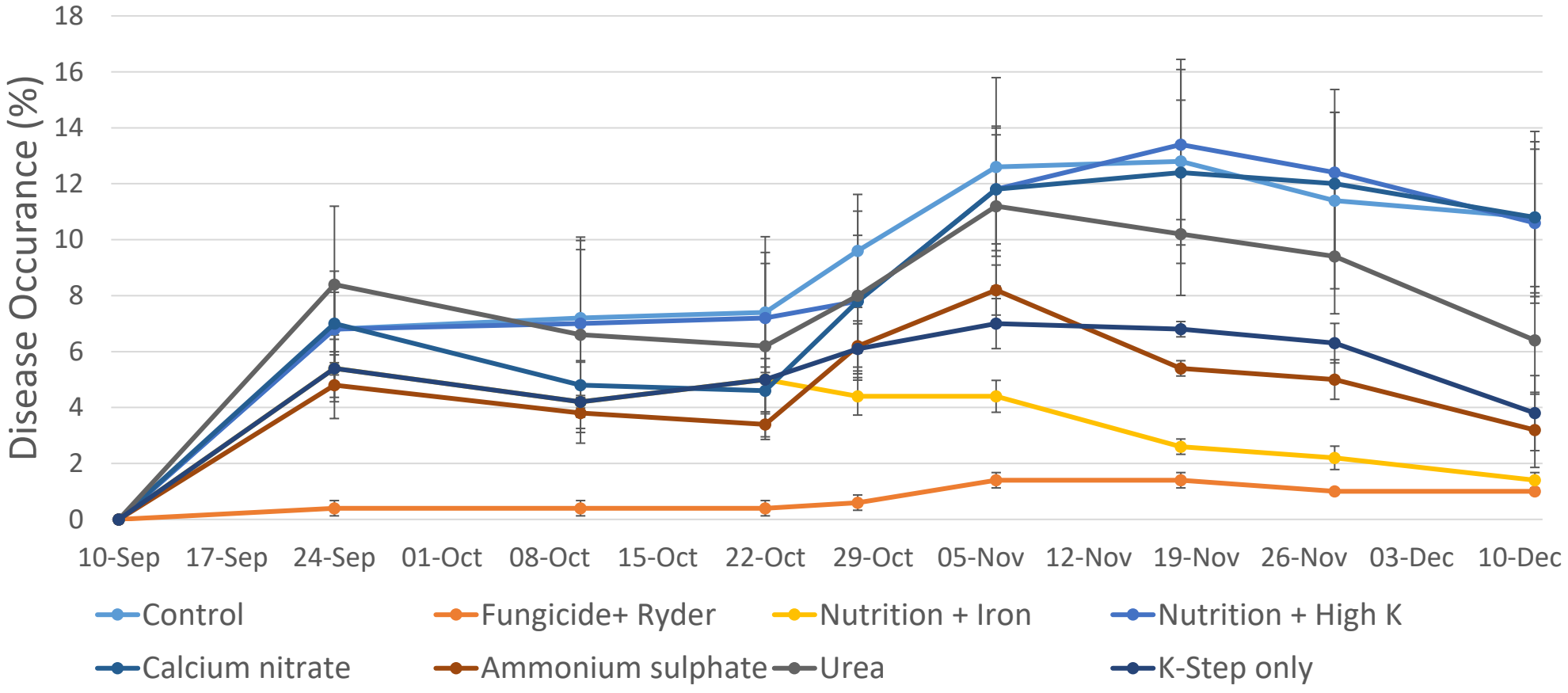
STRI field trial

- Sandy-loam soil
- Mixed sward, Poa dominated.
- Trial started September 2024
  Running for 16 weeks
- Randomised complete block design 1m x 1m plots replicated x5

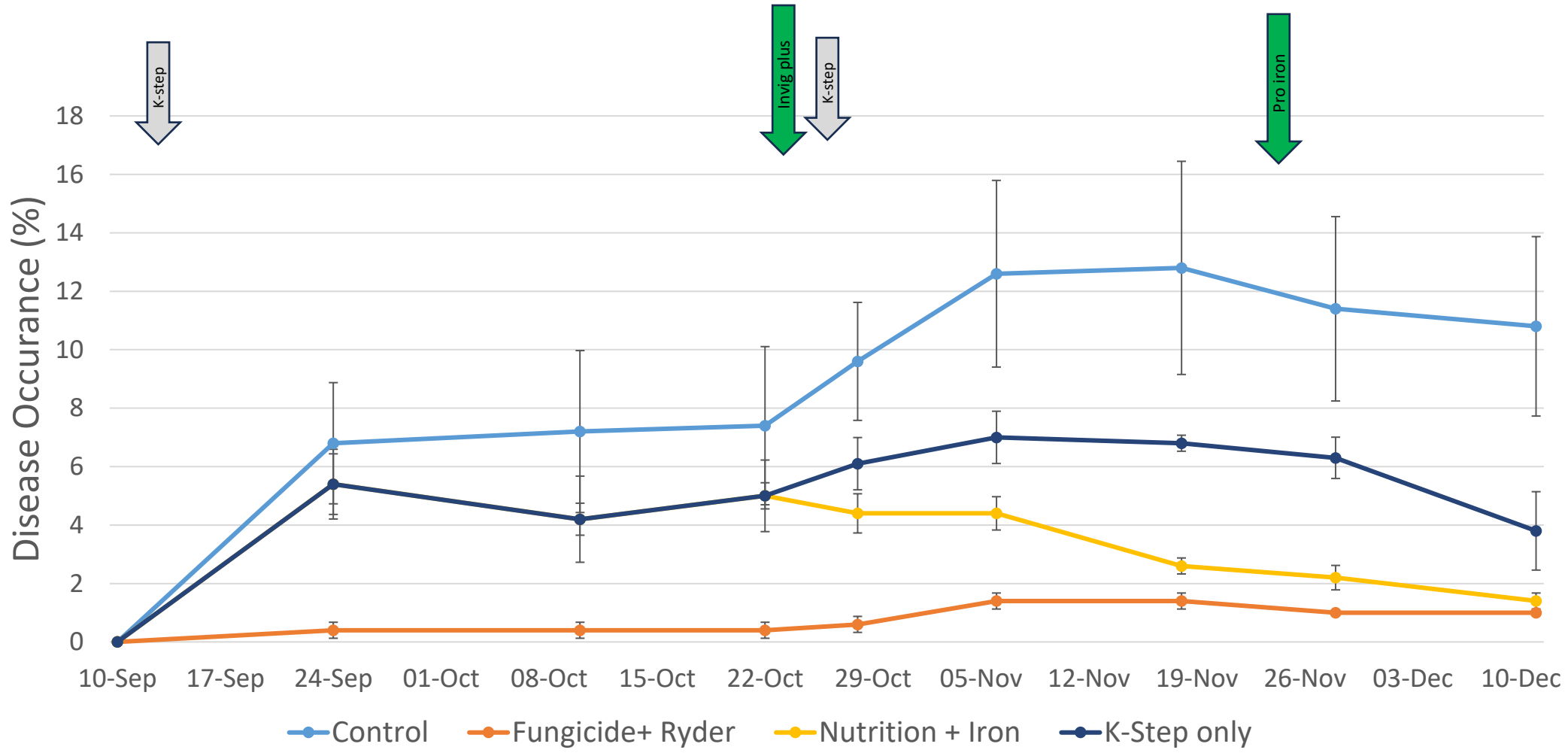
Treatments

No	Treatment	Products	Rate (g/m2)	Timing	Total N per ha
1	Control	Untreated	-	-	-
2	Fungicide	Sierraform GT K-Step Instrata elite + Ryder Instrata elite + Ryder Medallion + Ryder	25g/m2 3+1 L/ha 3+1 L/ha 3+1 L/ha	Week 0 Week 0 Week 4 Week 8	15 kg N / ha
4	Nutrition +Fe	Sierraform GT K-Step Invigorator Plus Pro Iron Granular	25g/m2 25 g/m2 25 g/m2	Week 0 Week 6 Week 10	32.5 kg N / ha
5	High Potassium	Sierraform GT K-Step Greenmaster Liquid High K	25g/m2 100 L/ha	Week 0 Week 0, 4, 8, 12	29 kg N / ha
7	N check 1	Calcium Nitrate	80kg/ha (in 500L)	Week 0, 4, 8, 12	48 kg/N/ha (12/app)
8	N check 2	Ammonium sulphate	57kg/ha (in 500L)	Week 0, 4, 8, 12	48 kg/N/ha (12/app)
9	N check 3	Urea	26kg/ha (in 500L)	Week 0, 4, 8, 12	48 kg/N/ha (12/app)
11	Nutrition	Sierraform GT K-Step Sierraform GT K-Step	25g/m2 25g/m2	Week 0 Week 6	30 kg N / ha

Fungicides work

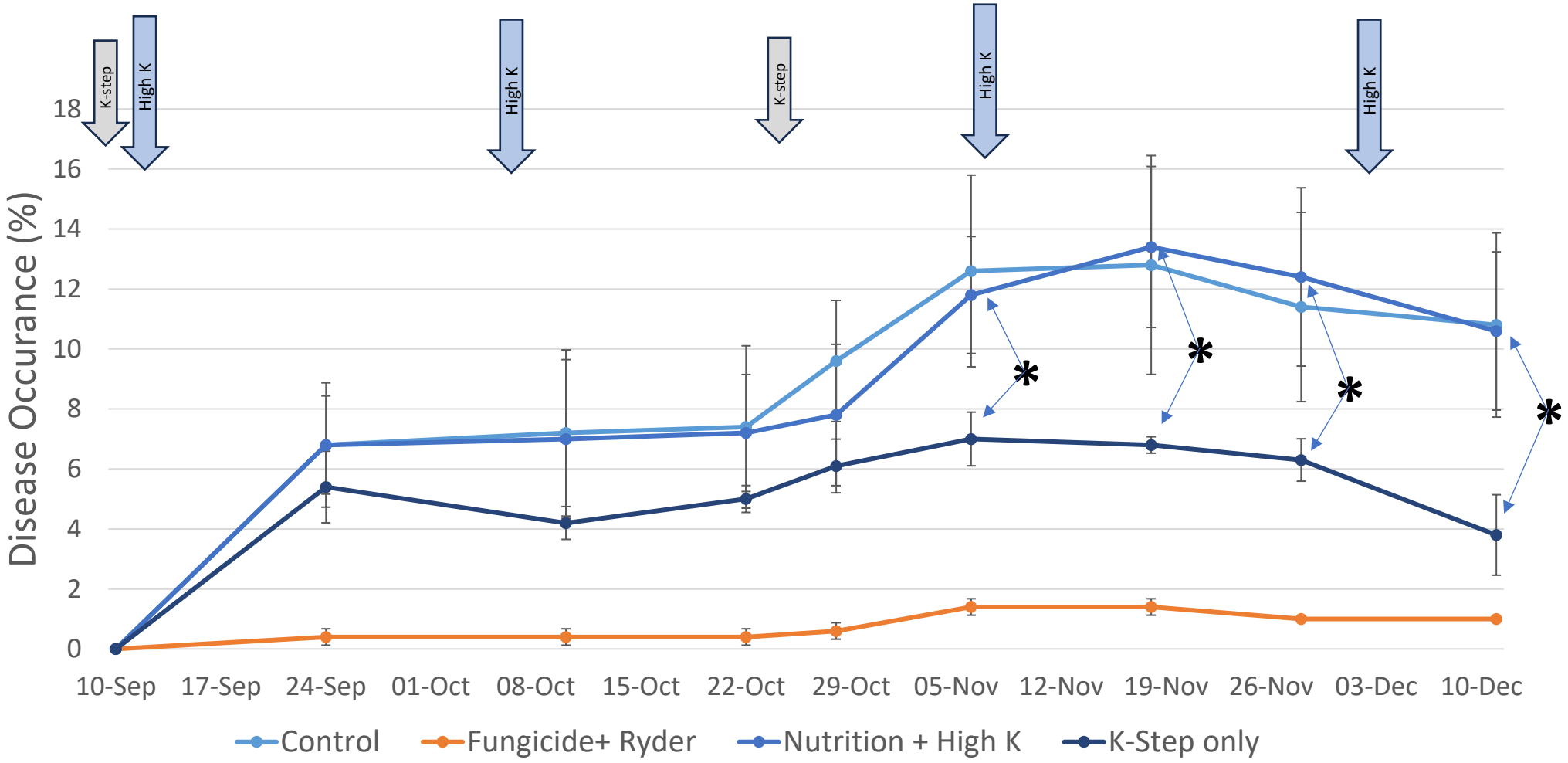


Nitrogen and Iron complex

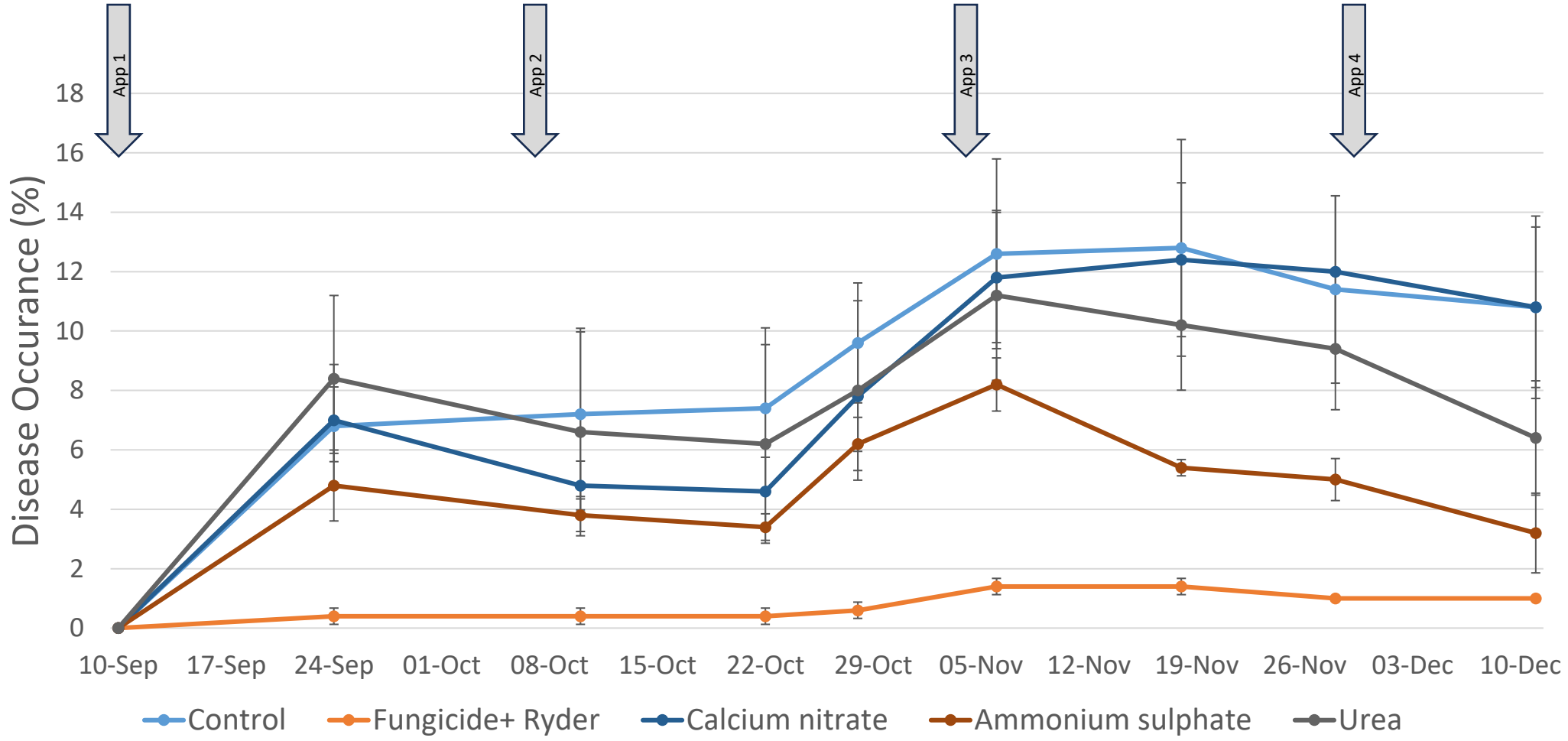


Potassium Story

K Step only 2 x 25g/m2 = 30-0-135 kg/ha
K Step and High K = 29-14-115 kg/ha



Liquid Nitrogen form makes a difference



Summary – Learnings from the trial

At roughly matched potassium inputs four applications of Liquid K significantly increased disease over two applications of granular K.

Summary – Learnings from the trial

Ammonium sulphate more useful than urea and calcium nitrate, all applied as liquids at matched N. **N-form choice does make a difference.**


ITM works to prevent problems not react to them

Technical values

- Products that **perform**
- All claims based on **research**
- To be **progressive** and **responsible** with our advice
- **Conscious** of our **impact**

Thank You and Questions

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

Linkedin.com/in/andy-owen-1259392b/