Narcissus update - Lincolnshire

31 January 2020

Springfields Events & Conference Centre, Camelgate, Spalding, PE12 6ET

HORTICULTURE

Horticulture: Knowledge Exchange update

Nathalie Key

Nathalie.key@ahdb.org.uk

Knowledge Exchange Manager, AHDB Horticulture

Horticulture Strategic Centres

- AHDB's Farm Excellence platform - improving industry performance and success by sharing knowledge and ideas through farmer-to-farmer learning.

- An established and developing framework of monitor farms and strategic centres
    - case studies
    - latest developments, innovations and technologies

- For Horticulture:
    - Strategic SmartHort Centres
    - Horticulture Strategic Centres for Field Vegetables

Strategic SmartHort Centres

- SmartHort campaign – getting the best out of the industry's workforce and operational management practice
- Strategic centres focus on increasing labour efficiency in you business – LEAN, labour management and labour efficiency
- Three host businesses were selected following an open call - Haygrove Ltd, Volmary Ltd and Thomas Thomson Ltd

    - 3 workshops per year, per site

    - online resources, including "how-to" guides

LEAN labour management, and labour efficiency

Key activities:

- Process mapping and waste identification
- Practical problem solving using a technique called Plan, Do, Check, Act
- How to encourage continuous improvement across the whole organisation
- Visual management boards and metrics to check improvements have worked

KE contact:
Grace.Emeny@ahdb.org.uk

Horticulture strategic centre for field vegetables

- Showcase the latest research and technology to improve integrated pest management (IPM) strategies.
- 4 new centres, with focus on brassicas, onions, carrots and legumes
- Research in practice
- Shared experience
- Grower to grower learning

KE contact:
Dawn.Teverson@ahdb.org.uk

Brassicas

Location: Lincolnshire and Cornwall

- Variety trials: autumn and winter cauliflower cultivars and spring cabbage
- Fungicide timing trial using spore trapping data and disease models for light leaf spot and ring spot
- Herbicide screening replicating SCEPTREplus plant protection trials on niche crops
- Aphid control insecticide screening
- Peat-free alternatives for propagation

Onions

Locations: Norfolk and Essex

- Variety trials: yield, quality and storage performance in controlled environment and ambient stores of 27 brown and 9 red varieties
- Establishing optimum plant population density to give higher percentage of class one bulbs

Legumes

Location: Lincolnshire

- Variety trials: 18 varieties tested at PGRO
- Evaluation of tolerance to pea downy mildew
- 13 treatments of biostimulant and nutritional products
- App for reporting bean seed fly populations to produce a UK map
- Bean seed fly control trials as part of AHDB's SCEPTREplus programme

Carrots

Location: Yorkshire

- Variety trials: 75 different varieties
- Carrot variety breakage testing
- Seed size and drill depth trials

Narcissus update - Lincolnshire

SCEPTREPLUS

SP 42: Control of White Mould and Smoulder in Narcissus

Dave Kaye, RSK ADAS Ltd.

January 2020

HORTICULTURE

ADAS

AHDB HORTICULTURE

Introducing SCEPTREPLUS

+ Develop solutions to emerging crop protection issues
+ Reduce adverse environmental impacts of crop protection products
+ Reduce supply chain vulnerability
+ Accelerate the testing process and bring new products to market

Trial overview

- Targets:
  - White Mould – *Ramularia vallisumbrosae*
  - Smoulder – *Botryotinia narcissicola*
- Number of available actives in decline
- Identify suitable crop safe alternatives

Smoulder (ADAS)

Trial site and design

- Narcissus var. *St. Patrick's Day*
- Second year down crop

Image: J. Parkers

- J H Richards & Sons, Hayle, Cornwall.
- Plot size: 7.5m^2
  - 10 treatments
  - 4 treatment applications (10 day intervals)
  - 4 replicates
- Reliant on naturally occuring sources of infection

Treatments

Treatment	Product / code	a.i / fungicide type	FRAC code
1	Untreated	-	-
2	Tracker	Boscalid & epoxiconazole	7 + 3
3	AHDB9873	Conventional	9
4	AHDB9914	Conventional	7 + 11
5	AHDB9913	Conventional	7
6	AHDB9926	Conventional	7
7	AHDB9927	Conventional	17
8	AHDB9863	Conventional	U8
9	AHDB9871	Biological	44
10	AHDB9862	Conventional	3

- Water volume – 200 L / ha
- Several modes of action included in the trial

Assessments

- White mould and Smoulder incidence and severity
- Crop safety

No.	Timing	Date
1	Treatment application 1 (set-up)	14/02/2019
2	Treatment application 2	28/02/2019
3	Treatment application 3	19/03/2019
4	Treatment application 4	03/04/2019
5	Treatment application 4 + 14 days	16/04/2019

Results

EFFICACY

- White Mould and Smoulder developed from naturally occurring sources of infection
- Average disease severity score at the final assessment (untreated):
  - White mould - 7.15%
  - Smoulder - 27.10%

Incidence – White Mould

SCEPTREPLUS

Average foliar white mould incidence per treatment at each assessment date

Date / Treatment	14-Feb	28-Feb	20-Mar	03-Apr	16-Apr
Untreated	20.00	45.00	35.00	65.00	No data
Tracker	5.00	25.00	15.00	30.00	No data
AHDB9873	15.00	25.00	10.00	60.00	No data
AHDB9914	15.00	10.00	10.00	5.00	No data
AHDB9913	25.00	25.00	10.00	5.00	No data
AHDB9926	15.00	25.00	0.00	15.00	No data
AHDB9927	25.00	35.00	20.00	45.00	No data
AHDB9863	20.00	40.00	5.00	25.00	No data
AHDB9871	10.00	25.00	25.00	35.00	No data
AHDB9862	20.00	5.00	10.00	40.00	No data
	Not significantly different from untreated control ($p>0.05$)				
	Significantly different from untreated control ($p<0.05$)				

- Natural senescence of the crop at the final assessment meant white mould incidence could not be assessed at this time

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Incidence – Smoulder

SCEPTREPLUS

Average foliar smoulder incidence per treatment at each assessment date

Date / Treatment	14-Feb	28-Feb	20-Mar	03-Apr	16-Apr
Untreated	50.00	95.00	100.00	100.00	100.00
Tracker	45.00	60.00	45.00	45.00	60.00
AHDB9873	60.00	55.00	60.00	85.00	100.00
AHDB9914	50.00	80.00	40.00	30.00	55.00
AHDB9913	25.00	70.00	65.00	50.00	55.00
AHDB9926	45.00	55.00	50.00	50.00	75.00
AHDB9927	50.00	70.00	65.00	90.00	95.00
AHDB9863	60.00	65.00	75.00	70.00	70.00
AHDB9871	45.00	70.00	85.00	100.00	100.00
AHDB9862	60.00	80.00	65.00	65.00	70.00
	Not significantly different from untreated control ($p>0.05$)				
	Significantly different from untreated control ($p<0.05$)				

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Severity – White Mould

SCEPTREPLUS

Average foliar white mould severity per treatment at each assessment date

Date / Treatment	14-Feb	28-Feb	20-Mar	03-Apr	16-Apr
Untreated	0.20	2.35	2.75	7.15	No data
Tracker	0.05	0.75	0.50	1.20	No data
AHDB9873	0.25	0.85	0.50	5.00	No data
AHDB9914	0.20	0.20	0.20	0.10	No data
AHDB9913	0.68	0.75	0.75	0.40	No data
AHDB9926	0.25	0.30	0.00	0.60	No data
AHDB9927	0.30	1.05	1.40	3.80	No data
AHDB9863	0.20	1.70	0.10	1.65	No data
AHDB9871	0.35	1.00	1.65	3.25	No data
AHDB9862	0.20	0.10	0.35	2.10	No data
	Not significantly different from untreated control (p>0.05)				
	Significantly different from untreated control (p<0.05)				

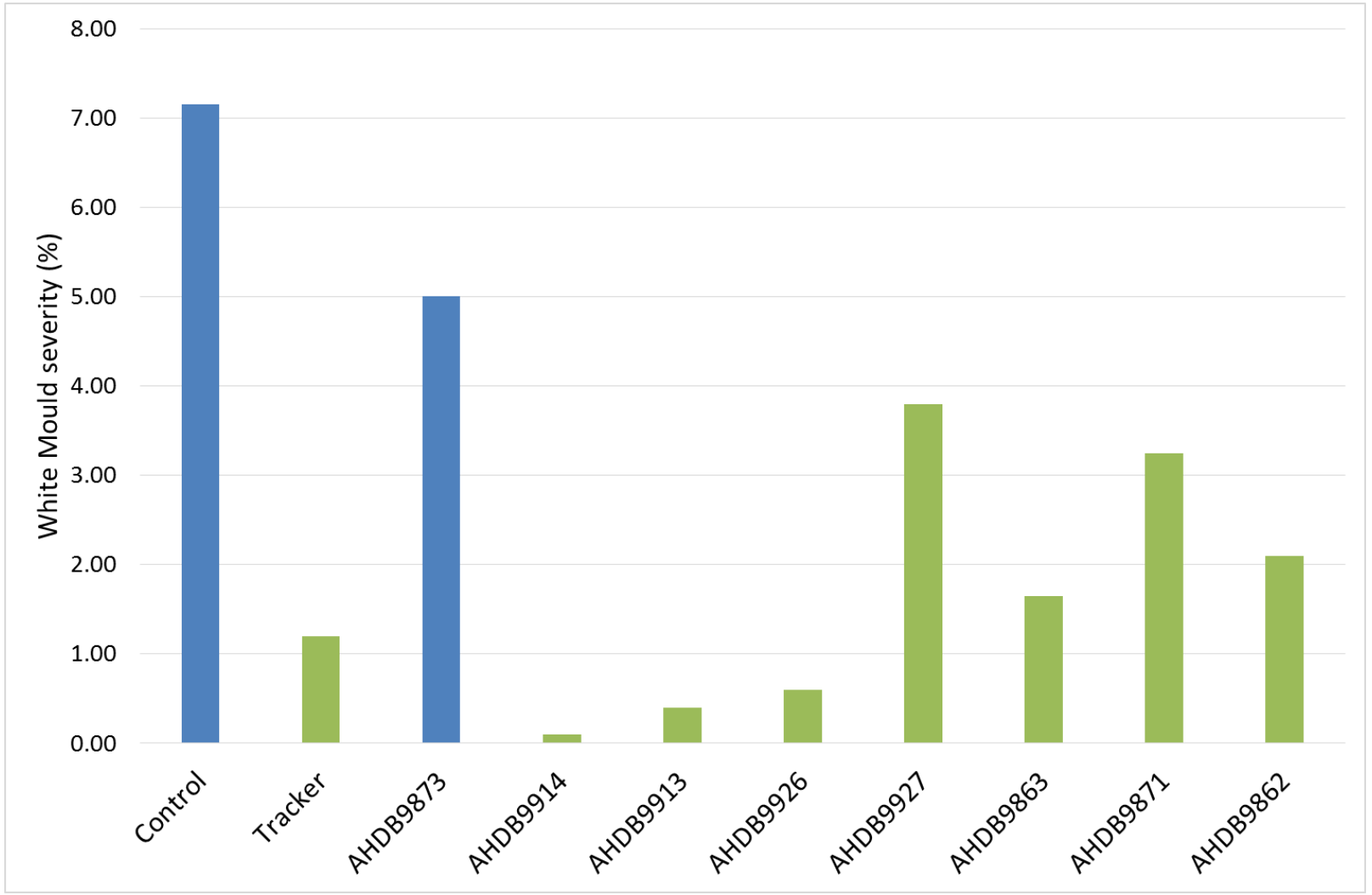
- Natural senescence of the crop at the final assessment meant white mould incidence could not be assessed at this time

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Severity – White Mould (assessment 4)

SCEPTREPLUS



- Green bars represent severity scores significantly lower than the untreated control ($p<0.05$)

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Severity – Smoulder

SCEPTREPLUS

Average foliar smoulder severity per treatment at each assessment date

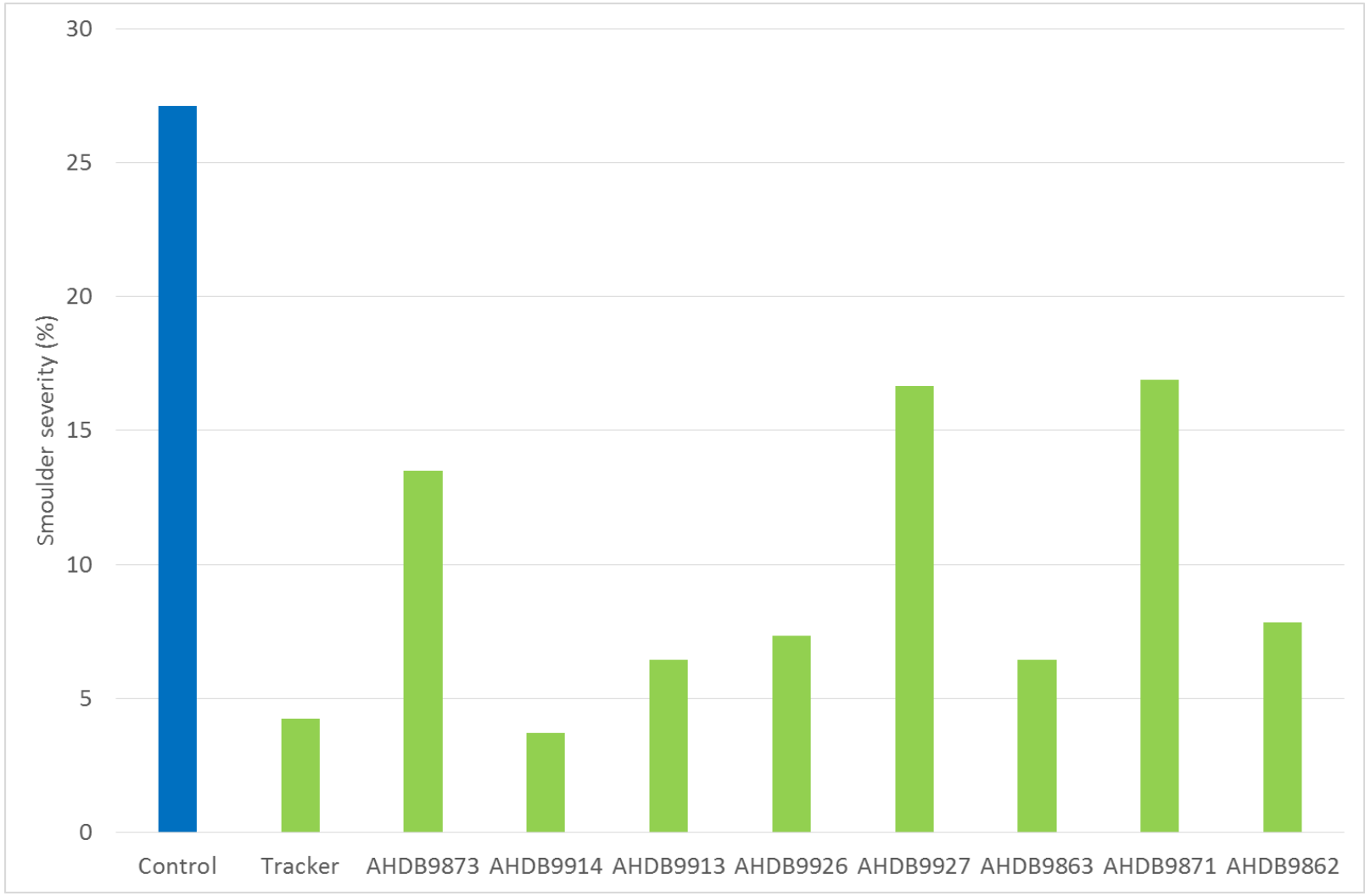
Date / Treatment	14-Feb	28-Feb	20-Mar	03-Apr	16-Apr
Untreated	1.03	6.95	18.30	24.30	27.10
Tracker	0.68	2.90	2.70	2.80	4.25
AHDB9873	1.35	3.05	3.55	11.15	13.50
AHDB9914	0.65	3.45	1.90	1.65	3.70
AHDB9913	0.45	4.45	5.80	4.25	6.45
AHDB9926	1.10	2.40	3.65	4.55	7.35
AHDB9927	0.58	4.55	7.45	9.90	16.65
AHDB9863	1.33	4.45	6.25	7.80	6.45
AHDB9871	0.71	4.05	12.00	19.90	16.90
AHDB9862	1.03	4.50	4.40	6.05	7.85
	Not significantly different from untreated control ($p>0.05$)				
	Significantly different from untreated control ($p<0.05$)				

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Severity – Smoulder (assessment 5)

SCEPTREPLUS



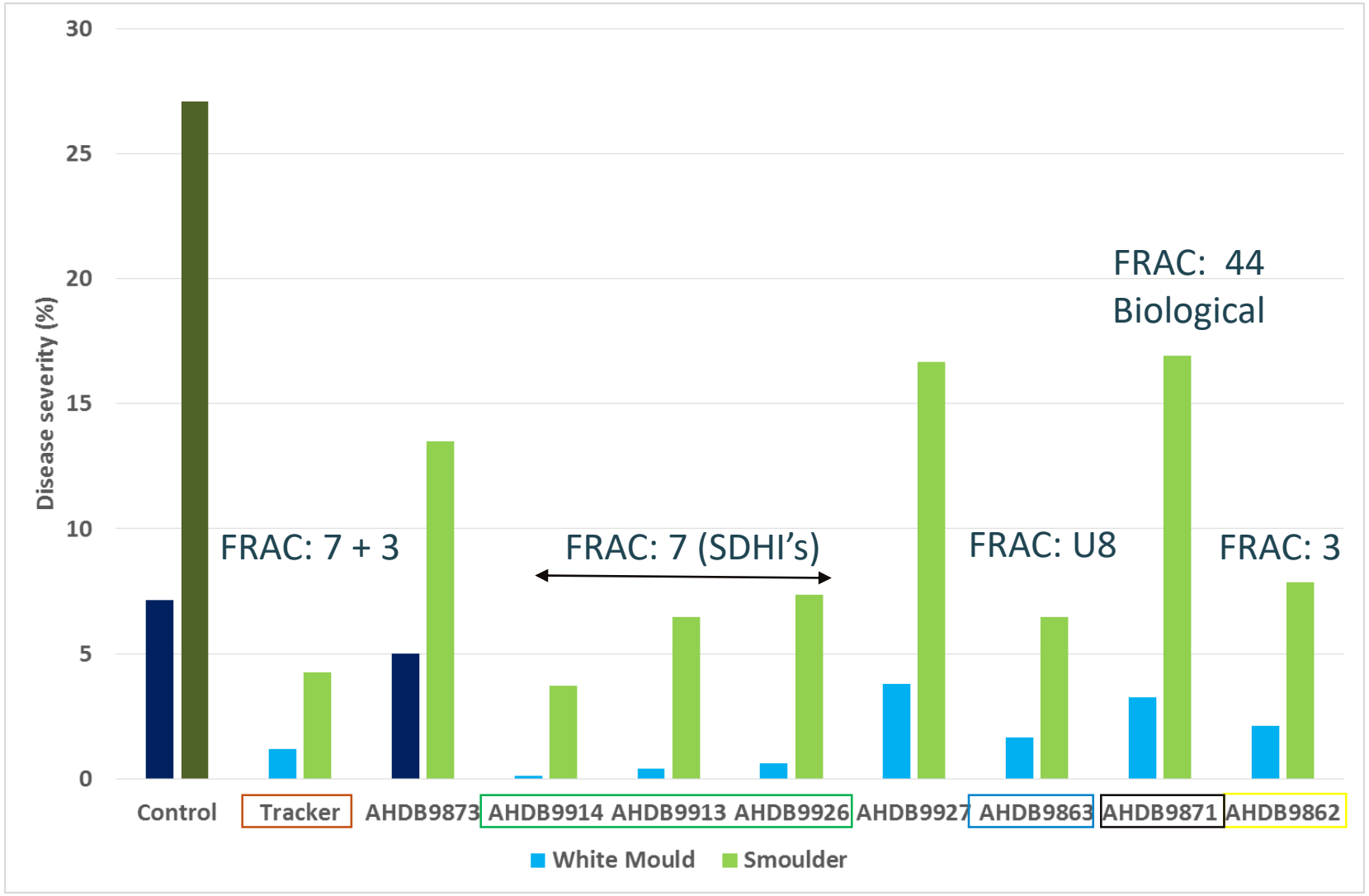
- Green bars represent severity scores significantly lower than the untreated control ($p<0.05$)

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Overview: Severity

SCEPTREPLUS

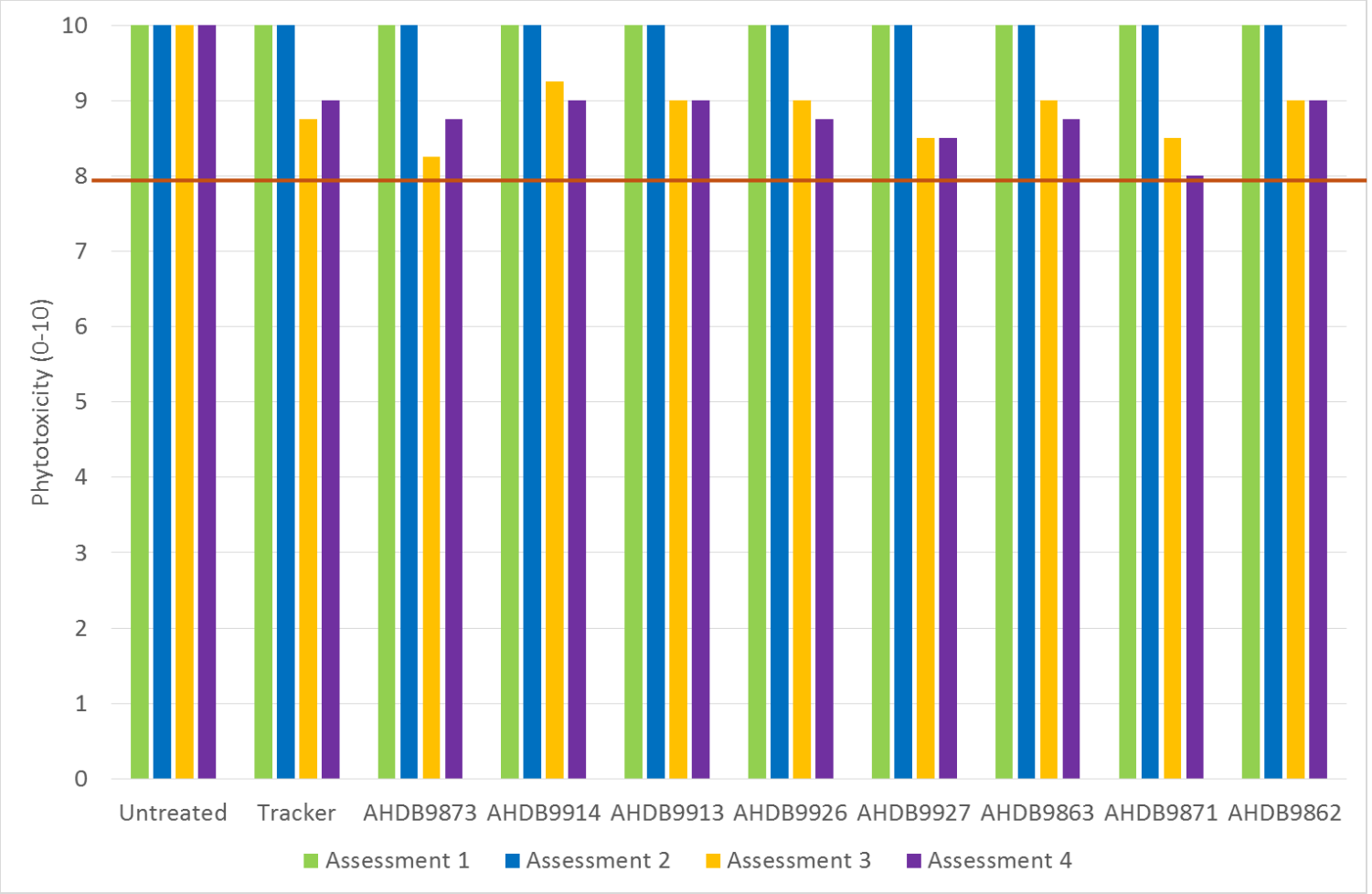


Note: data is for White Mould (assessment 4, 03/04/19) and Smoulder (assessment 5, 16/04/19).

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Crop safety

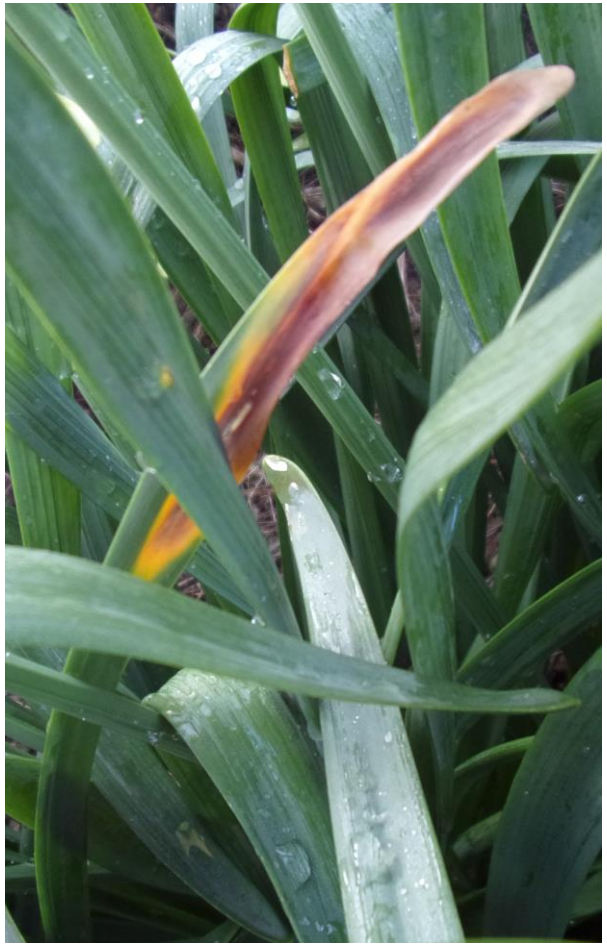


- Minor phytotoxic damage developed in all treatments
- Damage comparable to, or less than, the industry standard Tracker
- No damage of commercial significance, with all plots scoring 8 or above

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Conclusions

SCEPTREPLUS



- Products tested in SP 42 reduced the incidence and severity of both white mould and smoulder
- Three products, AHDB9913, AHDB9914 and AHDB9926 (all SDHI's) gave the best control against both diseases
- AHDB9862 and AHDB9863 also gave good control
- The biological product AHDB9871 significantly reduced white mould and smoulder incidence and could be a valuable addition to an IPM programme
- No phytoxicity of commercial concern developed following any treatment at any assessment date

HORTICULTURE

Acknowledgements

AHDB Horticulture

J H Richards and Sons

Agchem companies

Alice Shrosbree (ADAS)

AHDB HORTICULTURE

ADAS

Any questions?

Narcissus update - Lincolnshire

Narcissus day – Lincs 31st January 2020

SceptrePlus: Narcissus herbicide screens – Post-cropping screen – 2019/20 update

Angela Huckle and Emily Lawrence

HORTICULTURE

Outline

SCEPTREPLUS

- Post-cropping trial – 2018 (Recap and summary)
- Post-cropping trial update – 2019
- 2019/2020 trial update

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

2018 Post-cropping trial location and design

SCEPTREPLUS

- Spalding, Lincolnshire

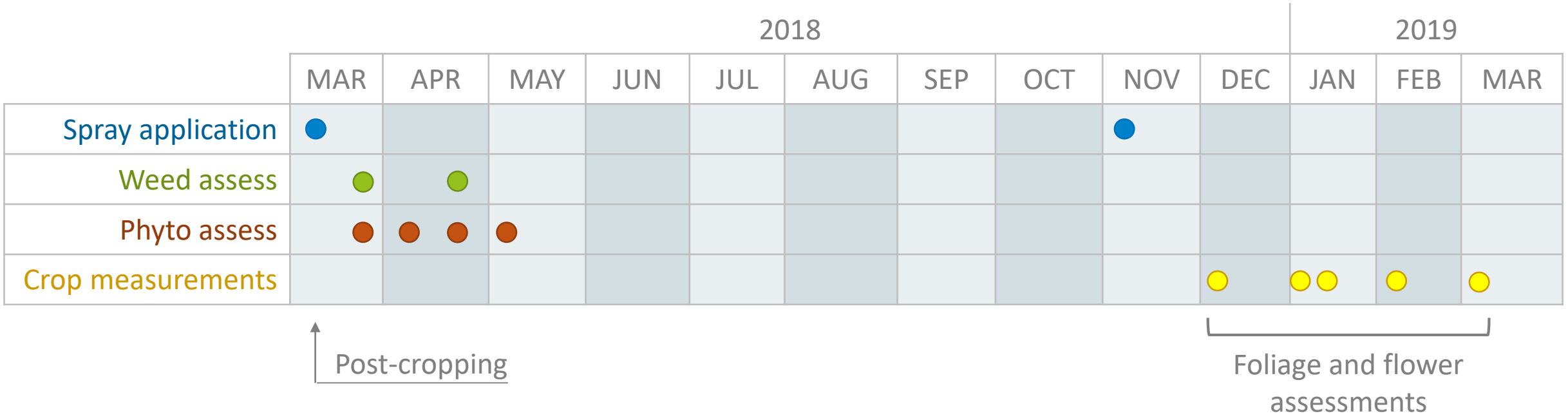
  (Jack Buck Farms)
- Sandy clay loam
- Thirty-two plots, 2m x 6m
  - 8 treatments
  - 4 replicates
- Variety: Tamsyn

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

SCEPTREPLUS

Post-cropping trial - timeline



HORTICULTURE

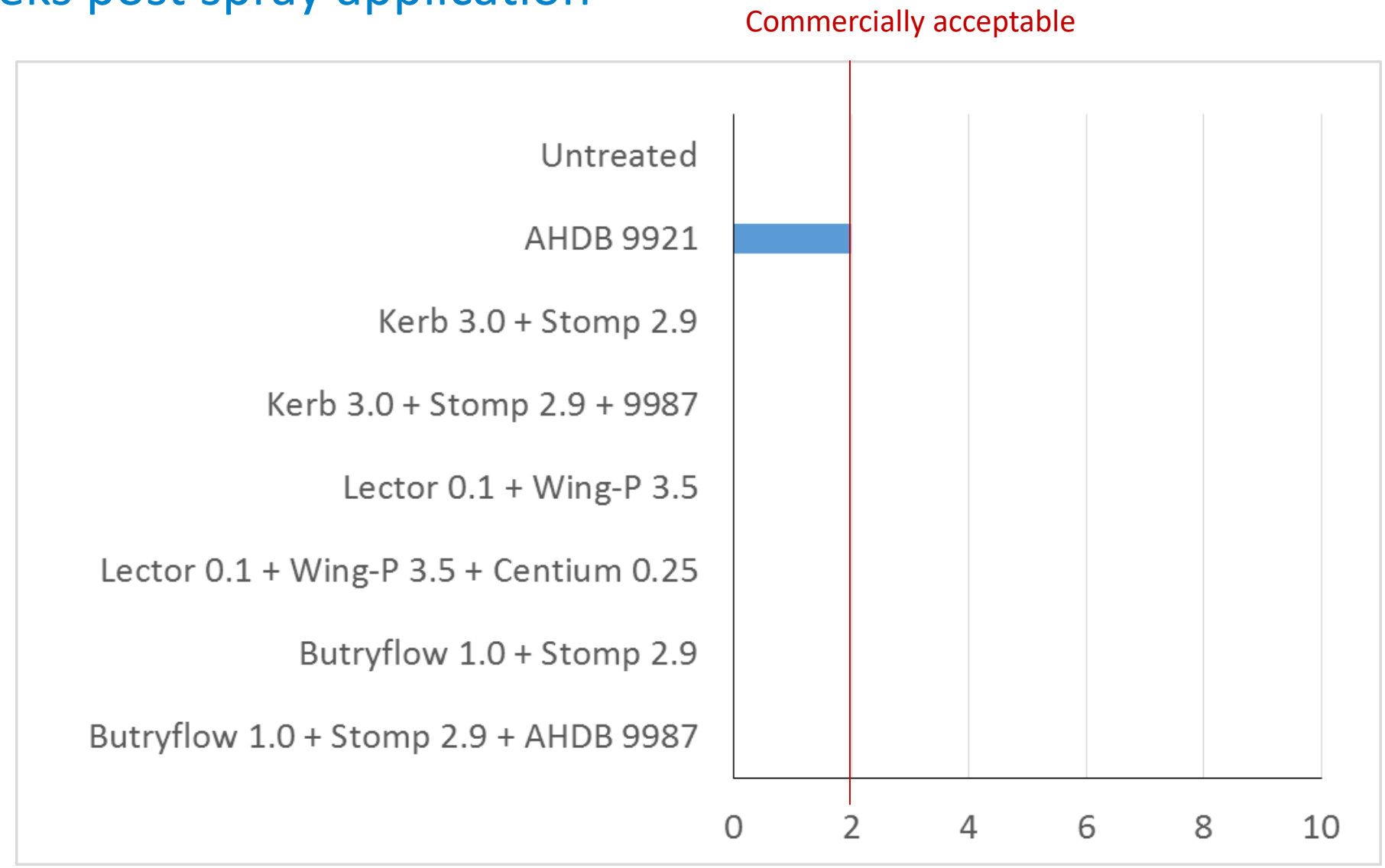
AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Treatments

Trt No.	Products
1	**Untreated**
2	**AHDB 9921**
3	**Kerb Flo** 3.0 L/ha + **Stomp Aqua** 2.9 L/ha
4	**Kerb Flo** 3.0 L/ha + **Stomp Aqua** 2.9 L/ha + **AHDB 9987**
5	**Lector** 0.1 L/ha + **Wing-P** 3.5 L/ha
6	**Lector** 0.1 L/ha + **Wing-P** 3.5 L/ha + **Centium 360 CS** 0.25 L/ha
7	**Butryflow** 1.0 L/ha + **Stomp Aqua** 2.9 L/ha
8	**Butryflow** 1.0 L/ha + **Stomp Aqua** 2.9 L/ha + **AHDB 9987**

8 weeks post spray application

SCEPTREPLUS



HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD


AHDB
AHDB 9921


AHDB 9921

Trial summary 2018

CROP SAFETY

- By harvest all products appear commercially acceptable
  - No significant differences in emergence date, leaf height, bud count or flower appearance at harvest in 2019
  - AHDB 9921 gave a striking but transient effect for up to 6 weeks after application

EFFICACY

- No data in 2018 as very few weeds, but in 2019 trials were repeated

Post-cropping screen – 2019 progress update

2019 Post-cropping trial design

SCEPTREPLUS

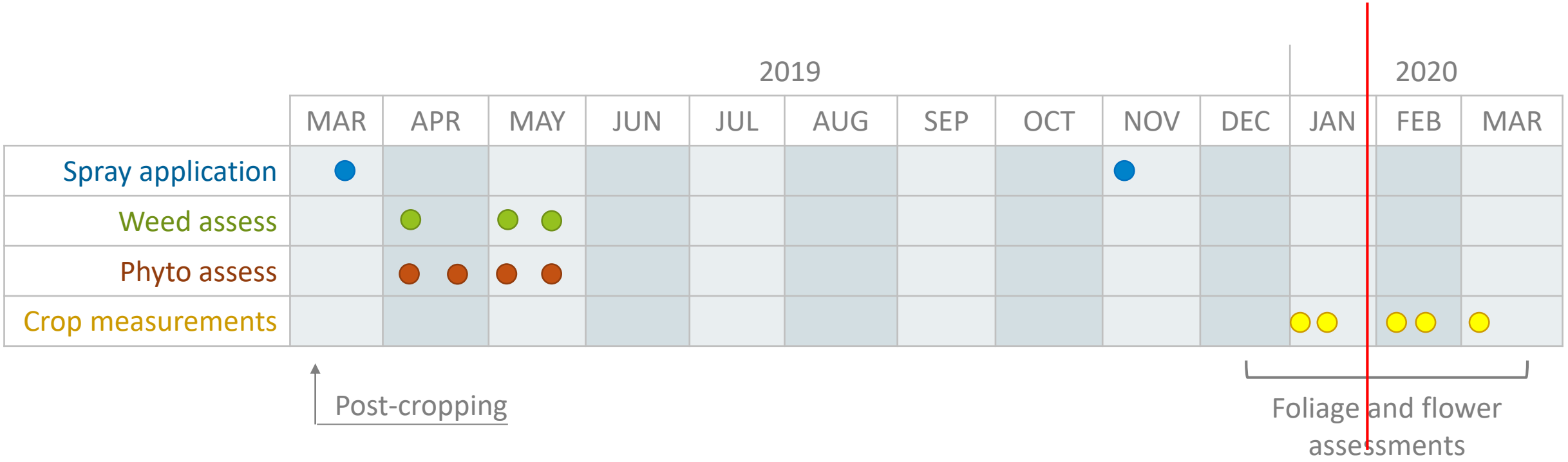
- Rose an Grouse, Cornwall (Greenyard Flowers)
- Sandy clay loam
- Sixty plots, 2m x 6m
  - 15 treatments
  - 4 replicates
- Variety: Lowan (first year crop)

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

SCEPTREPLUS

Post-cropping trial - timeline



HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

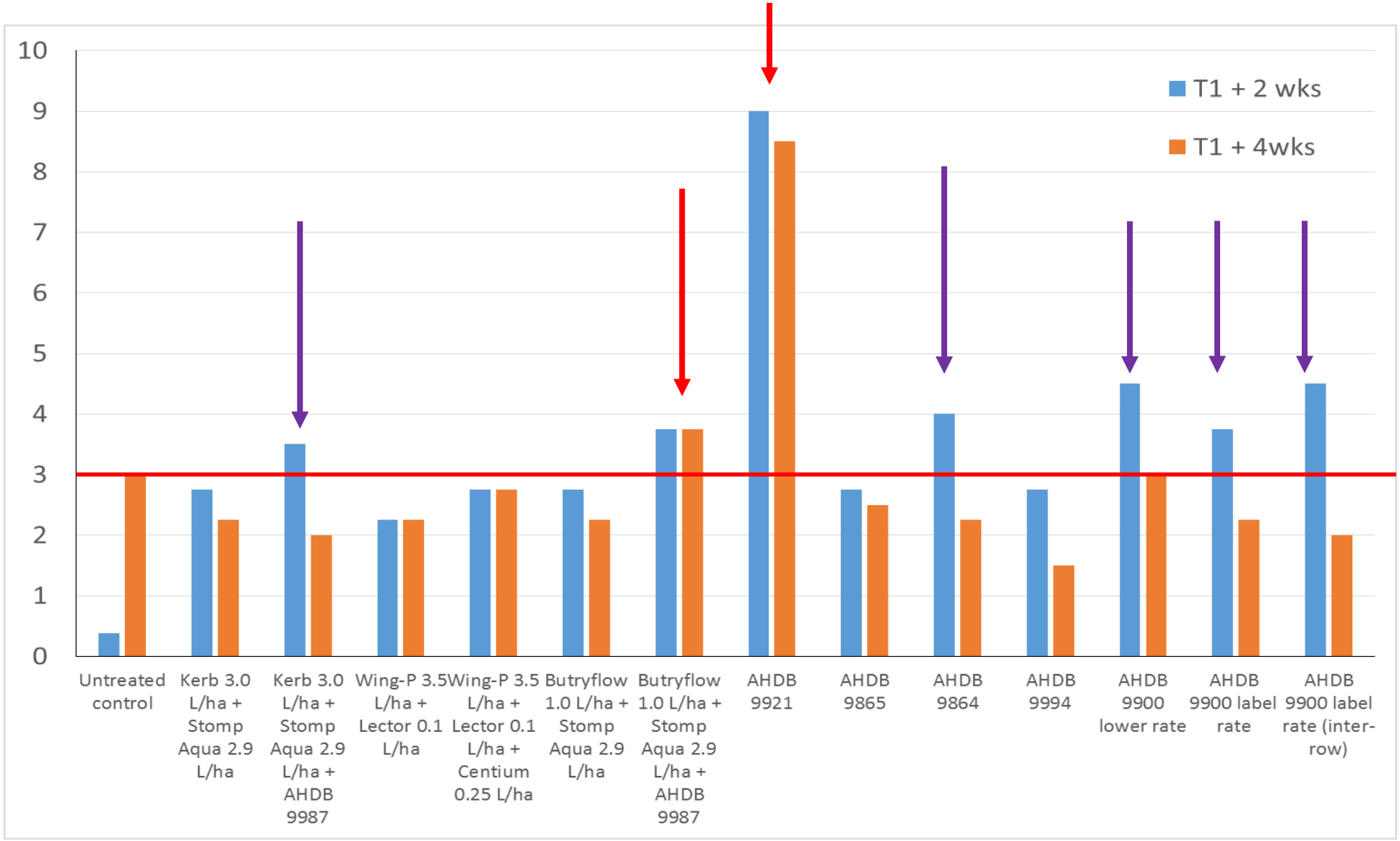
Treatments

SCEPTREPLUS

Trt No.	Products
1 and 2	**Untreated**
3	**Kerb Flo** 3.0 L/ha + **Stomp Aqua** 2.9 L/ha
4	**Kerb Flo** 3.0 L/ha + **Stomp Aqua** 2.9 L/ha + **AHDB 9987**
5	**Lector** 0.1 L/ha + **Wing-P** 3.5 L/ha
6	**Lector** 0.1 L/ha + **Wing-P** 3.5 L/ha + **Centium 360 CS** 0.25 L/ha
7	**Butryflow** 1.0 L/ha + **Stomp Aqua** 2.9 L/ha
8	**Butryflow** 1.0 L/ha + **Stomp Aqua** 2.9 L/ha + **AHDB 9987**
9	**AHDB 9921**
10	**AHDB 9865**
11	**AHDB 9864**
12	**AHDB 9994**
13	**AHDB 9900 lower rate**
14	**AHDB 9900 label rate**
15	**AHDB 9900 label rate (inter-row)**

AHDB

Crop safety scores – 2 and 4 weeks post application

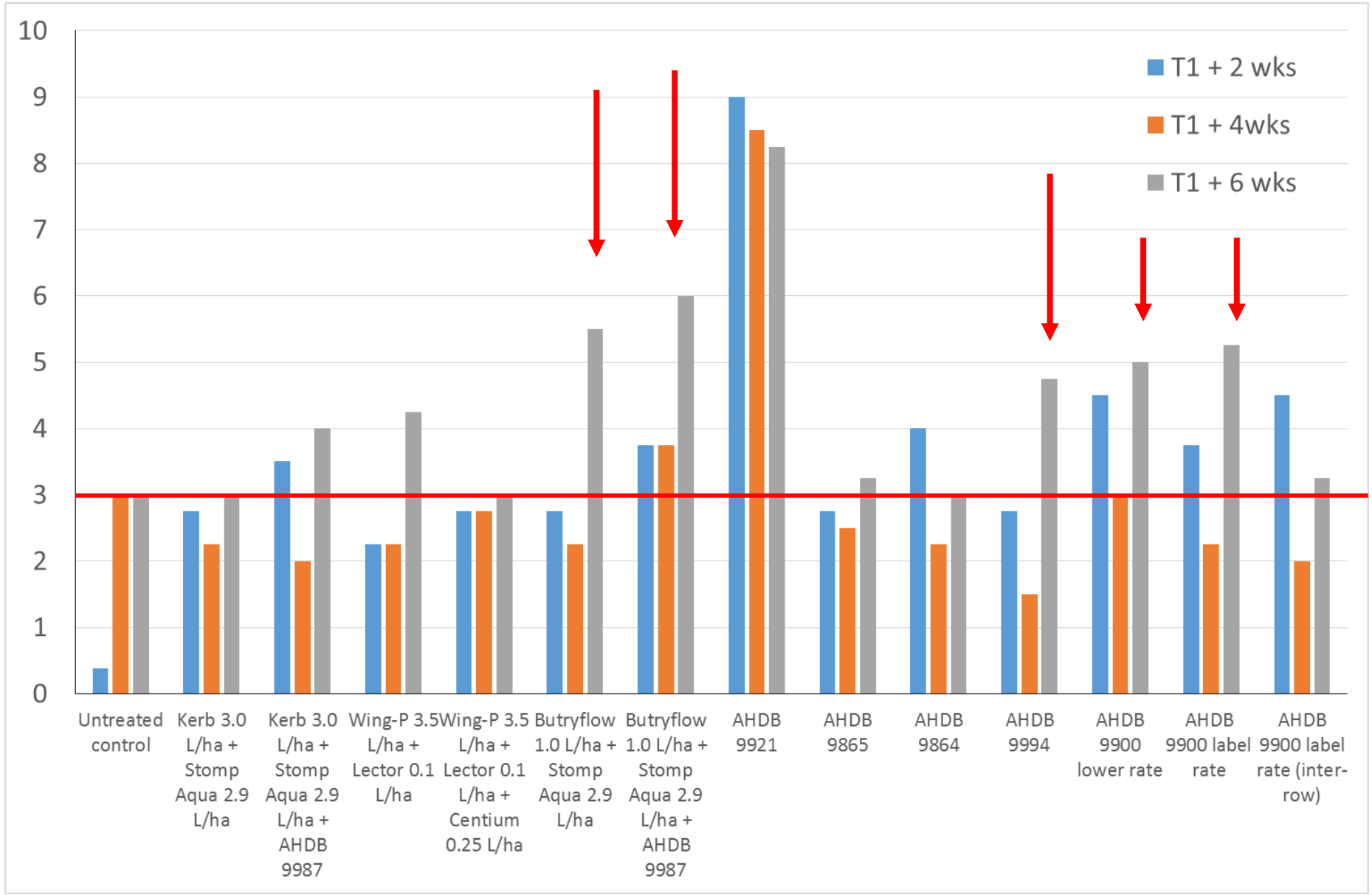


Scores below 3 are deemed acceptable crop safety

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Crop safety scores – including 6 weeks post application



At 6 weeks some yellowing and early senescence was seen, which confounded crop safety scores. But, there does appear to be a treatment effect, e.g. treatments with Butryflow and AHDB 9900

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Phyto effects 9921– loss of turgor

SCEPTREPLUS

2 weeks post application

4 weeks post application

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

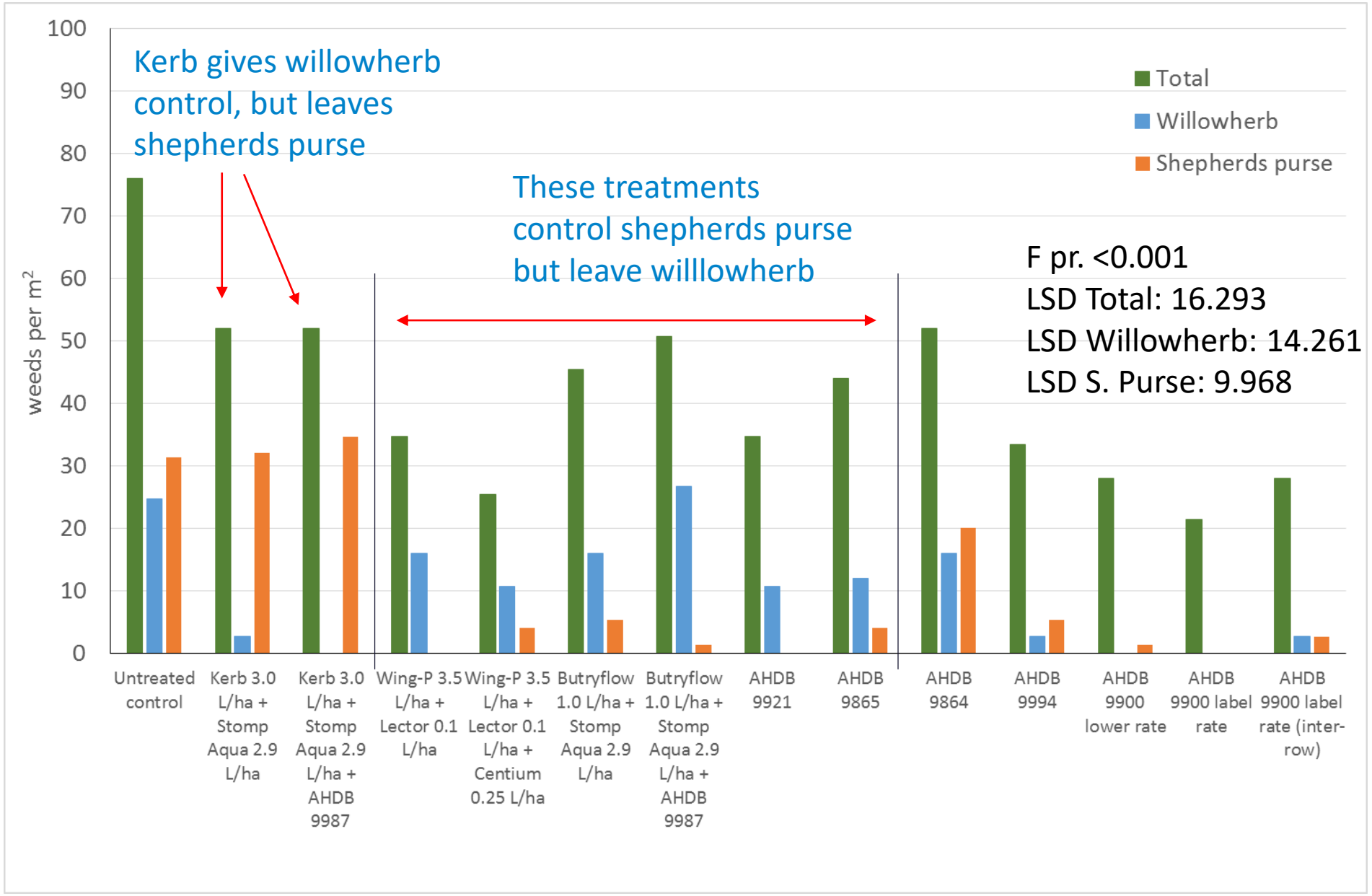
Phyto effects 9900 – drooping

SCEPTREPLUS

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

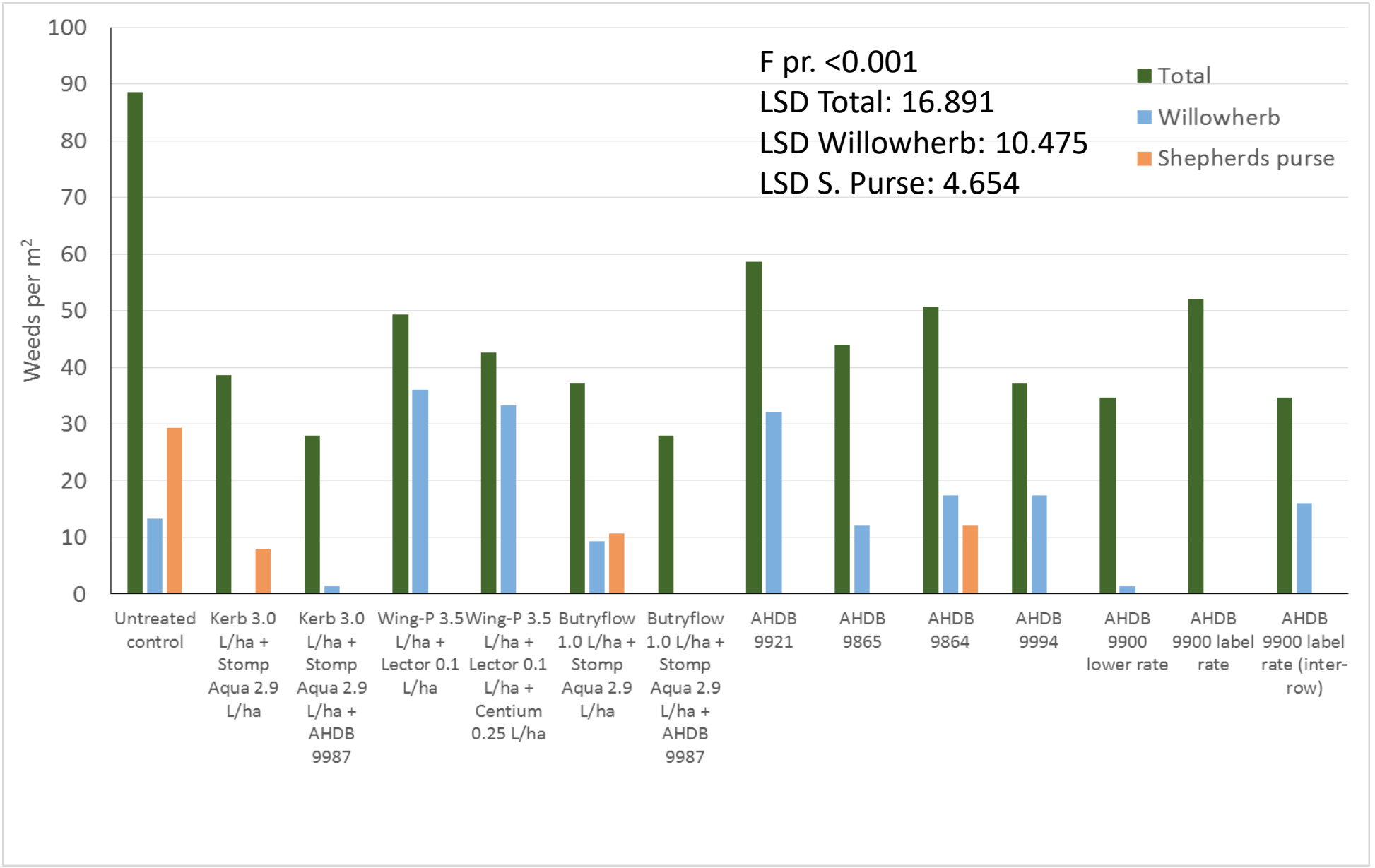
Weed count results at 6 weeks after application



HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

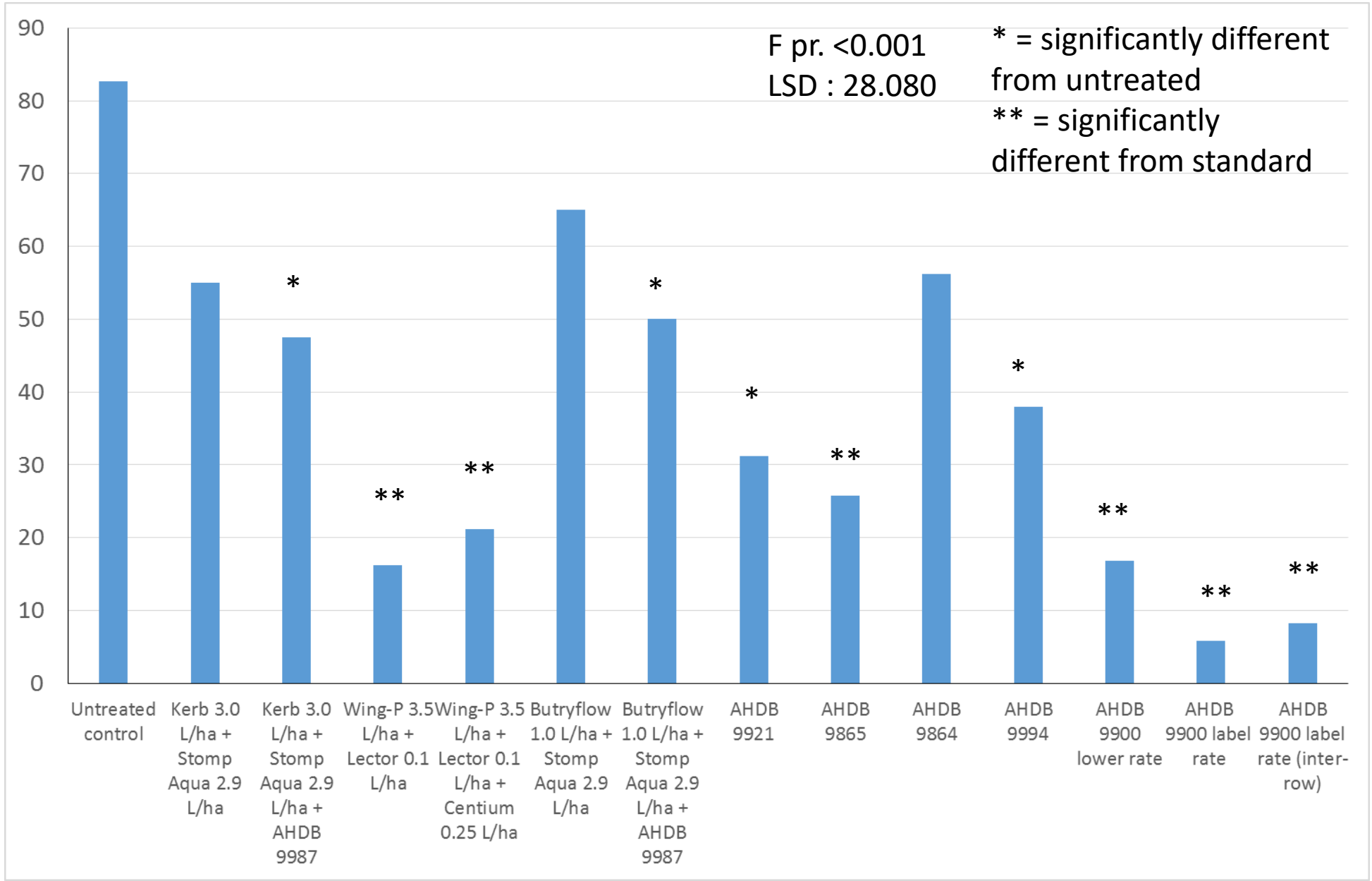
Weed count results at 10 weeks after application



HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

% Weed cover results at 10 weeks after application



HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD


Untreated


110
Kerb 3.0 L/ha + Stomp Aqua 2.9 L/ha


Lector 0.1 L/ha + Wing-P 3.5 L/ha + Centium 0.25 L/ha
108


AHDB 9900 label rate
101

Preliminary conclusions and remaining assessments

SCEPTREPLUS

- Crop safety
  - All treatments except AHDB 9921 appeared crop safe at 4 weeks post-application
  - Plots treated with Butryflow, AHDB 9994 or AHDB 9900 seemed to droop at 10 weeks, or senesce early
- Weed control
  - All treatments except Kerb Flo + Stomp Aqua, Butryflow + Stomp Aqua and AHDB 9864 significantly reduce % weed cover when compared to the untreated
  - Wing-P tank mixes, AHDB 9865 and AHDB 9900 significantly reduce % weed cover when compared to the standard (Kerb Flo + Stomp Aqua)
  - Tank mixes containing Kerb and AHDB 9900 significantly reduced numbers of willowherb in this trial, AHDB 9994 gave a reduction for the 1st 6 weeks after application.
- Assessments currently underway
  - Emergence, Bud counts and Flower quality

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

2019/20 Dormant crop herbicide screen

SCEPTREPLUS

- In Lincolnshire kindly hosted by O.A.Taylor and Sons
- Re-run metobromuron (Praxim) tank-mixes from 2017 trial
  - Revised with Belchim and grower experiences from 2018
  - Included AHDB 9987, AHDB 9997, AHDB 9994, AHDB 9900, AHDB 9917 and AHDB XXXX
- 1st applications 21st November – and Roundup applied to all plots except untreated due to size of weeds
- 2nd application in 2 treatments – 20th January over emerged crop
  - Trial to run from November until March/April

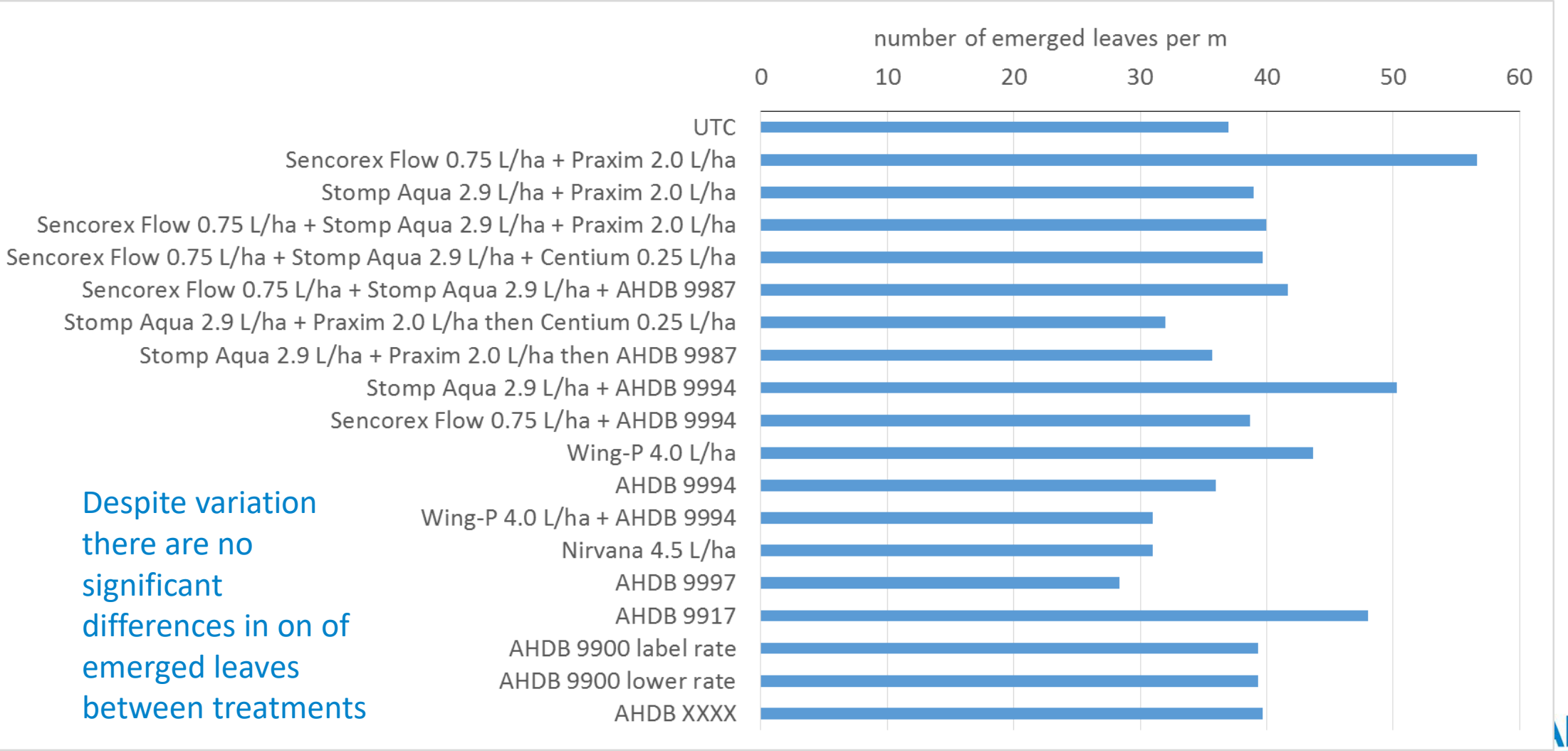
Pre herbicide application – October 2019

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

No of emerged leaves per metre – 15 Jan

SCEPTREPLUS

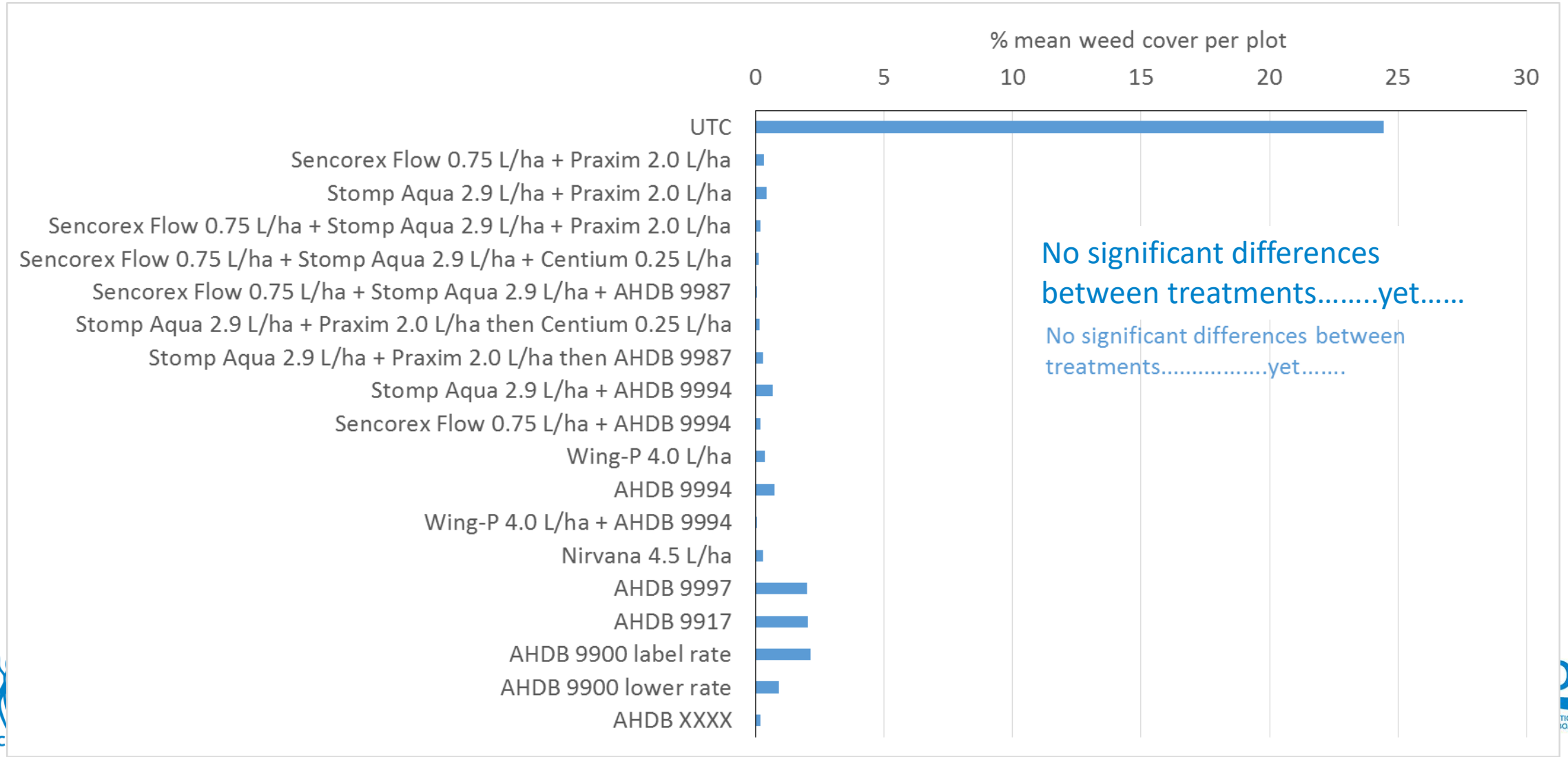


Despite variation there are no significant differences in on of emerged leaves between treatments

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

% weed cover at 6 weeks after application



Thanks!

- Greenyard Flowers
- Taylors bulbs
- Richard Daubney
- ADAS Scientific staff
  - Alice Shrosbree
- AHDB Horticulture Crop Protection Team
- Agchem companies

SCEPTREPLUS

#SCEPTREplus

Questions?

- Contact us
- Joe.martin@ahdb.org.uk
- Angela.huckle@adas.co.uk

horticulture.ahdb.org.uk/sceptreplus

Follow progress

HORTICULTURE

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD

Narcissus update - Lincolnshire

AHDB Narcissus Event

Optimising biofumigation for suppression of plant parasitic nematodes

Dr Matthew Back – Reader in Plant Nematology

Harper Adams University

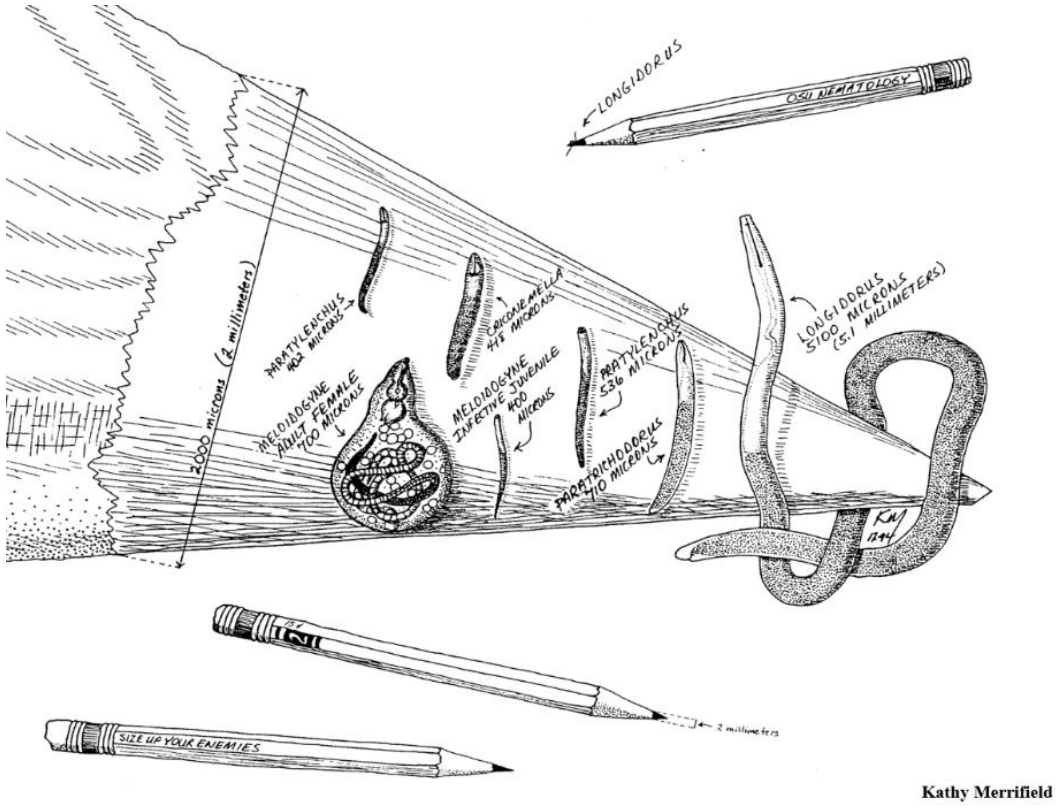
HORTICULTURE

Outline

- Plant parasitic nematodes
- Principles of biofumigation
- Evidence for biofumigation efficacy
- Factors affecting biofumigation success
- Conclusions

The world of nematodes!

Plant parasitic nematodes



Circa 27,000 nematode species described – range of trophic groups

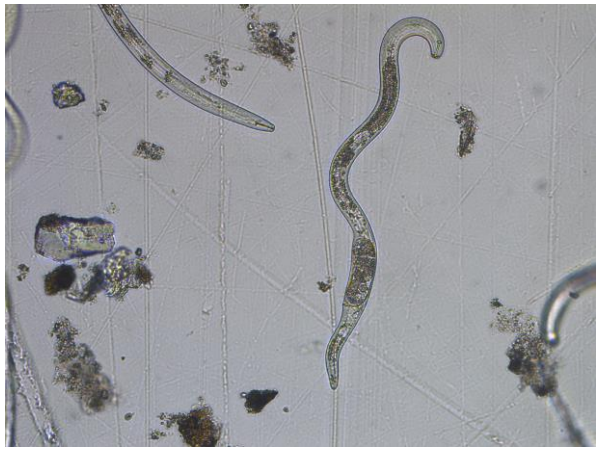
$4.4 \pm 0.64 \times 10^{20}$ nematodes inhabit the surface soils of the world (c. 0.3 gigatonnes)

Global losses attributed to PPNs is ca. £65.45 BN per annum

Sandy soils (60% + sand) have higher numbers of PPN

Plant parasitic nematodes infecting narcissus

Stem and bulb nematode
Ditylenchus dipsaci

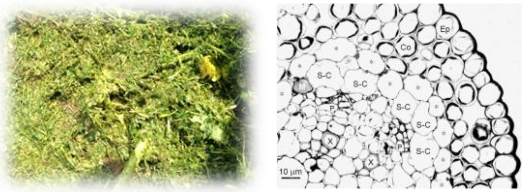


Root lesion nematodes
Pratylenchus spp.

Stubby root nematodes
Trichodorus and *Paratrichodorus* spp.

Biofumigation

Photograph taken by Bill Watts, AHDB



Glucosinolates + myrosinase + water

Volatile Organic Compounds:

Isothiocyantes
Thiocyanates
Nitriles and Epithionitriles
Oxazolidines

Motivation for using biofumigation

I. Loss of pesticides
II. ‘Soil health’ movement – cover crops
III. BPS Greening - EFA

EU member states support near-total neonicotinoids ban

BBC NEWS

By Matt McGrath
Environment correspondent

27 April 2018 | Share

Campaigners in Brussels celebrate the new ban

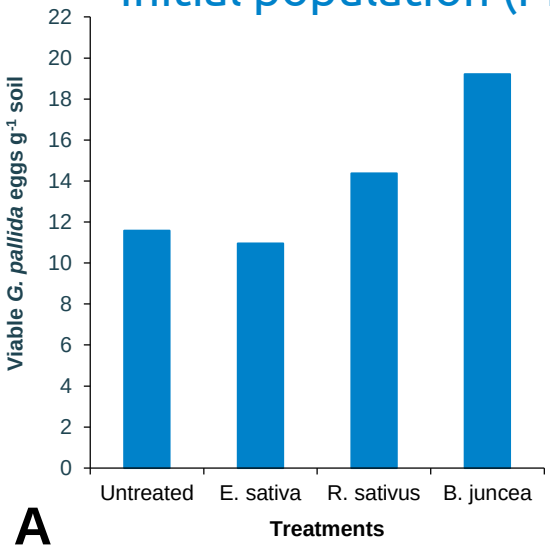
Diquat, thiram and pymetrozine banned by European Commission

EU bans UK's most-used pesticide over health and environment fears

Officials say chlorothalonil poses high risk to wildlife and may potentially harm humans

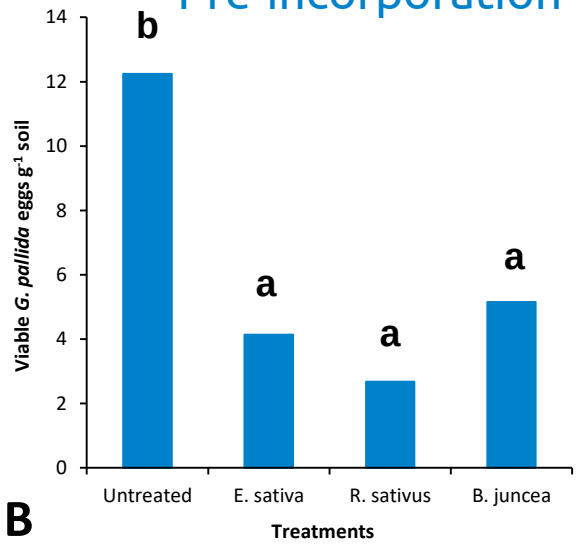
Preliminary observations of *G. pallida* suppression with biofumigation – Ngala et al. (2015)

Initial population (Pi)



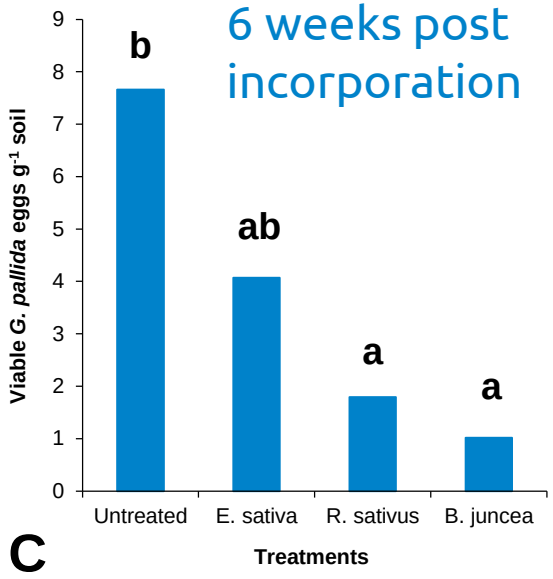
A

Pre-incorporation



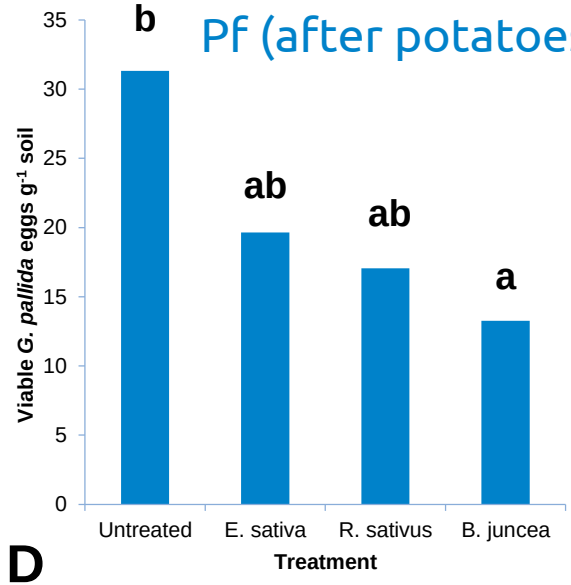
B

6 weeks post incorporation



C

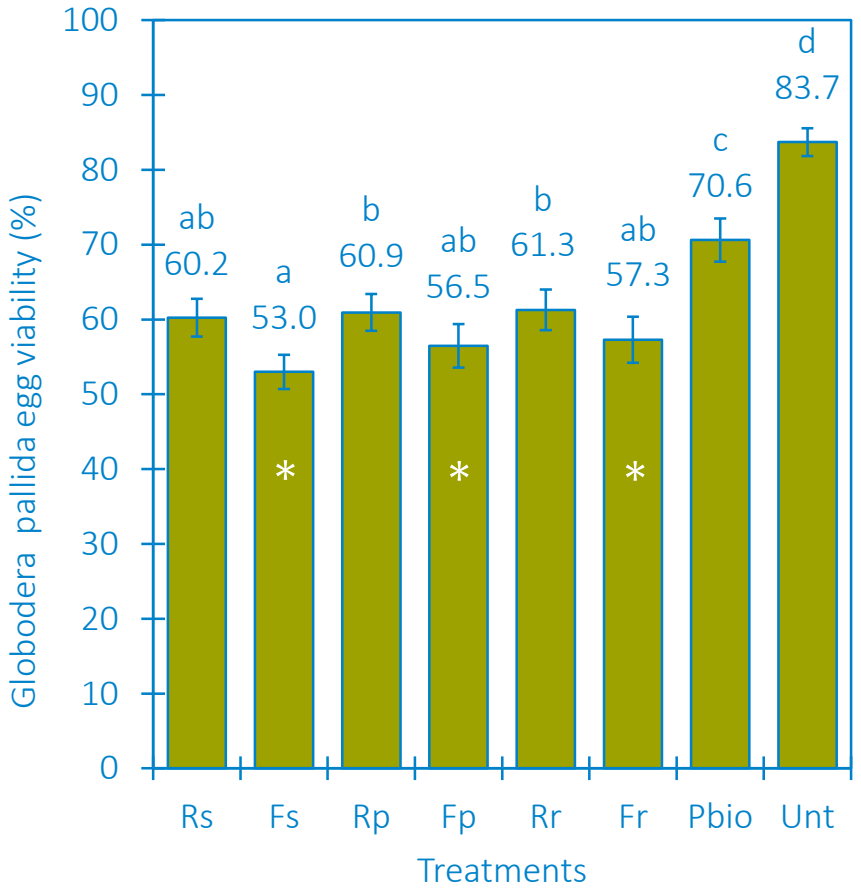
Pf (after potatoes)



D

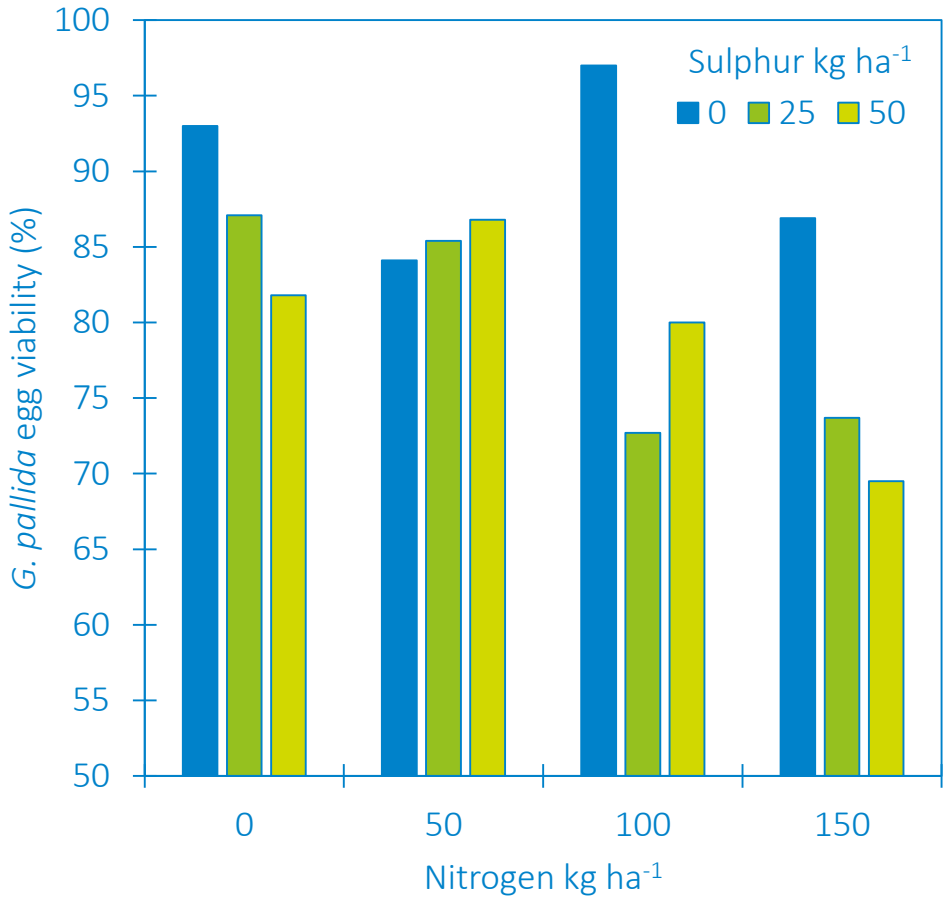
Agronomy matters!

Chopping/incorporation



Watts (2018)

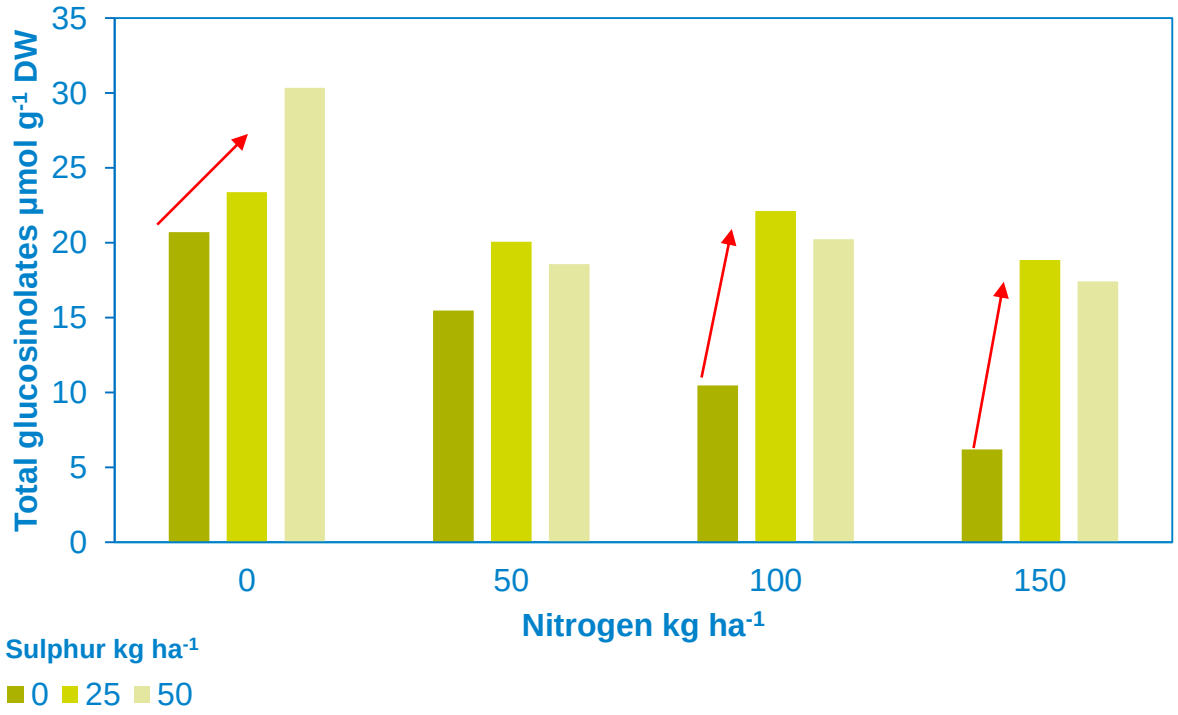
N & S inputs

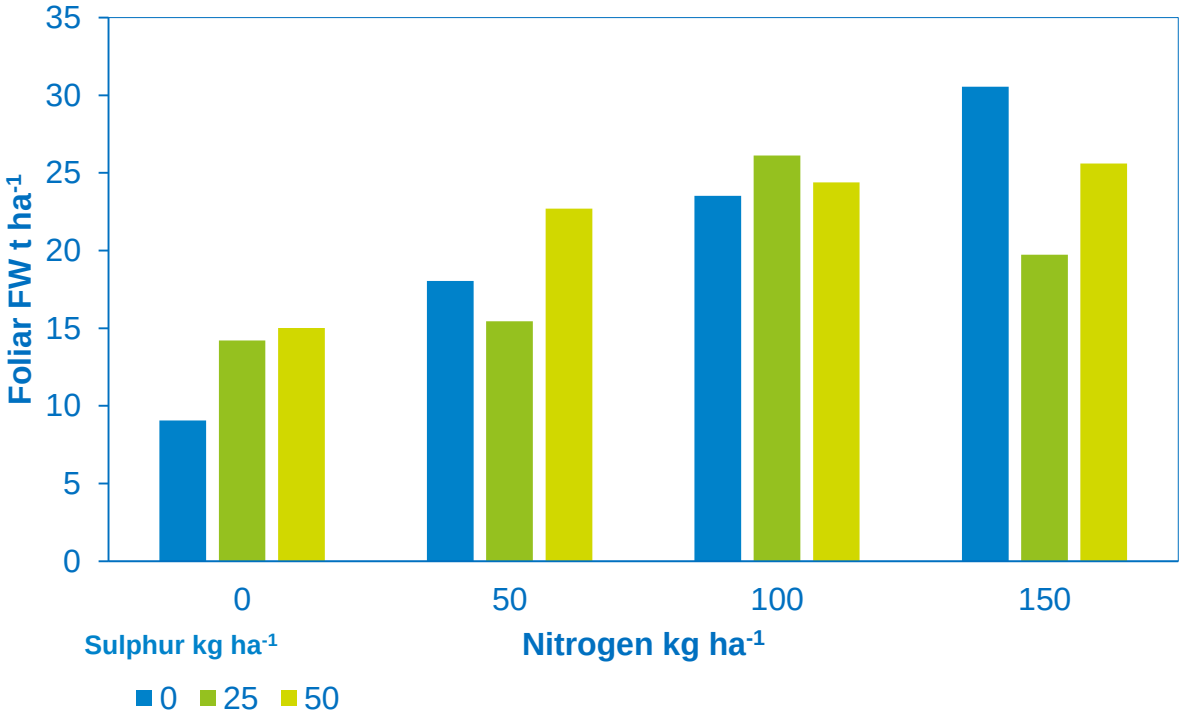


Back *et al*. (2019)

- ✓ Sowing date
- ✓ Species/ cultivar choice
- ✓ Irrigation
- ✓ Pest and pathogen considerations

Influence of nutrients on GSLs and brassica biomass



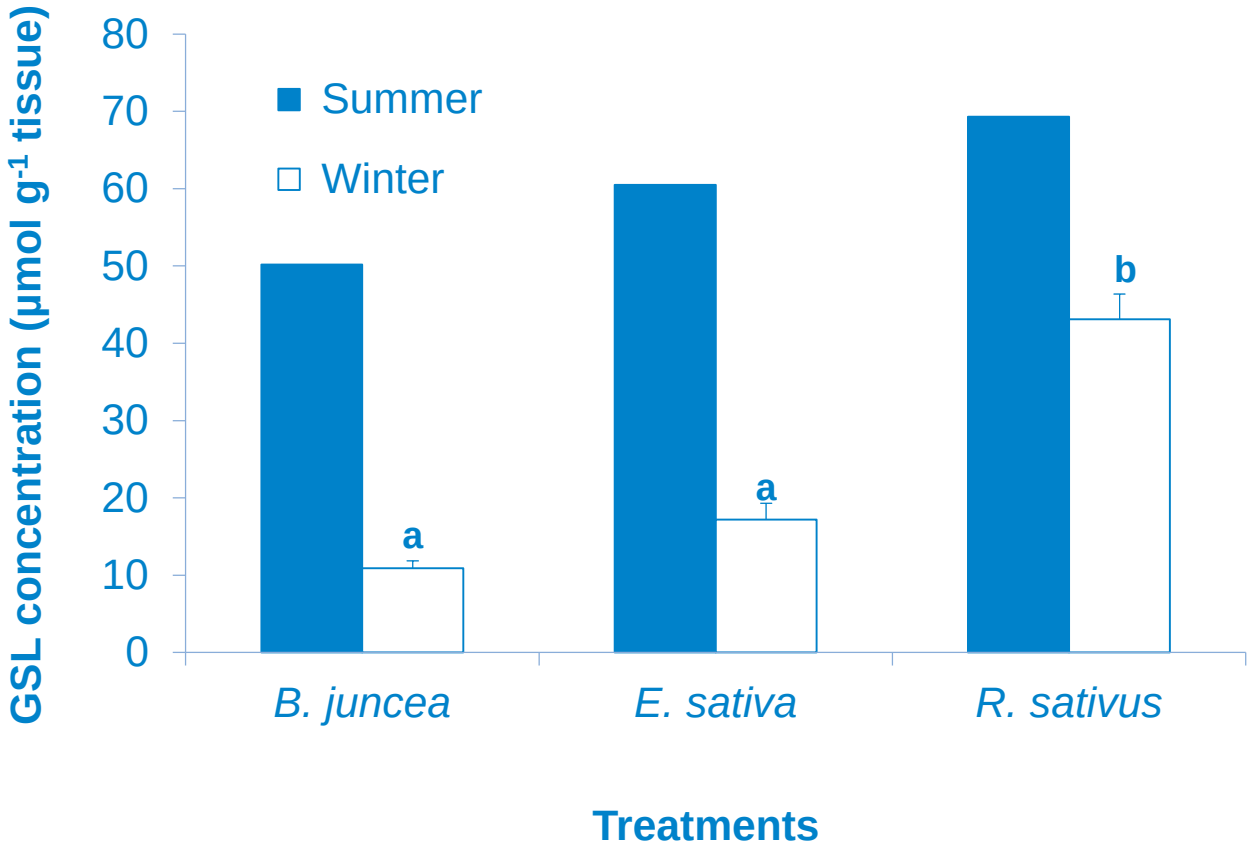


Influence of nutrients on brassica biomass

A) *B. juncea* – no N and no S: B) *B. juncea* – 150 kg ha^{-1} N + 25 kg ha^{-1} S

If restricted on N input in an NVZ apply the maximum possible.

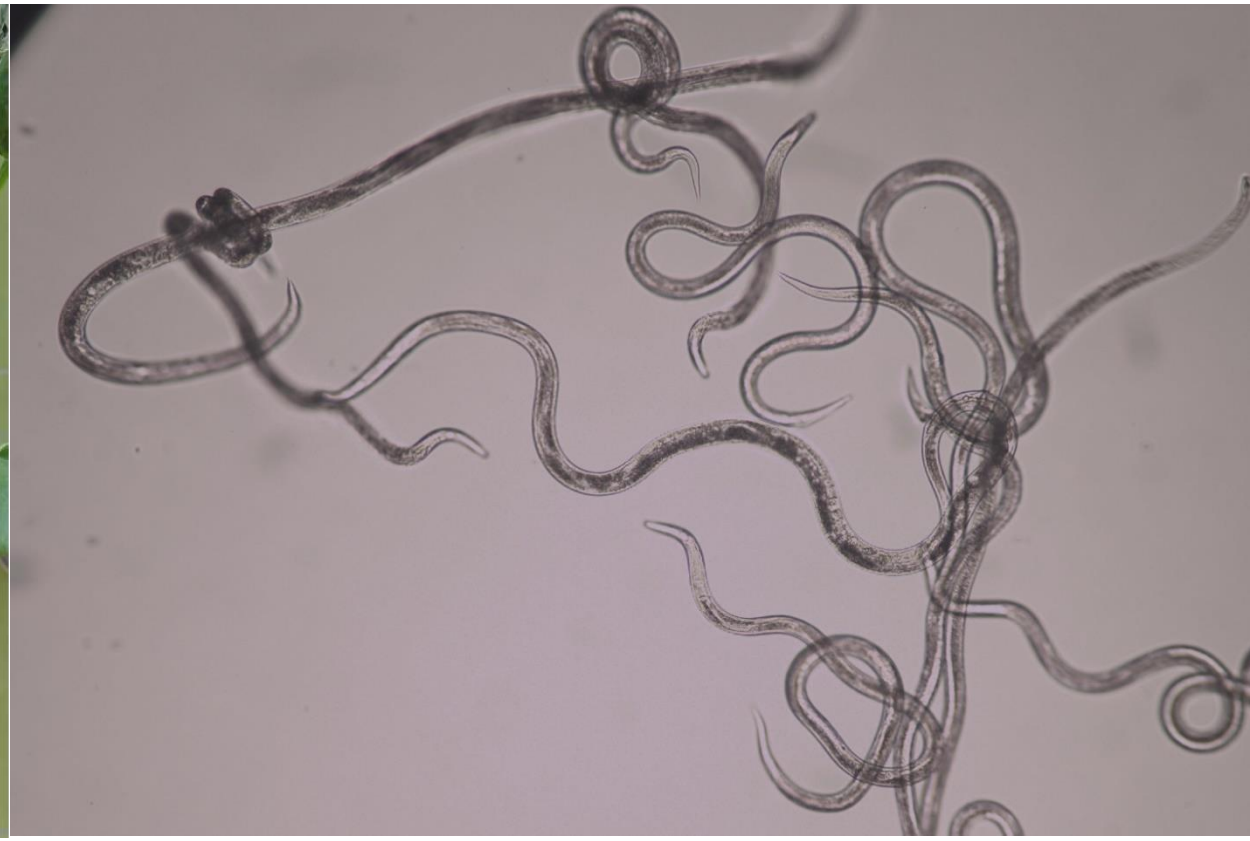
GSL accumulation in summer and winter grown biofumiants

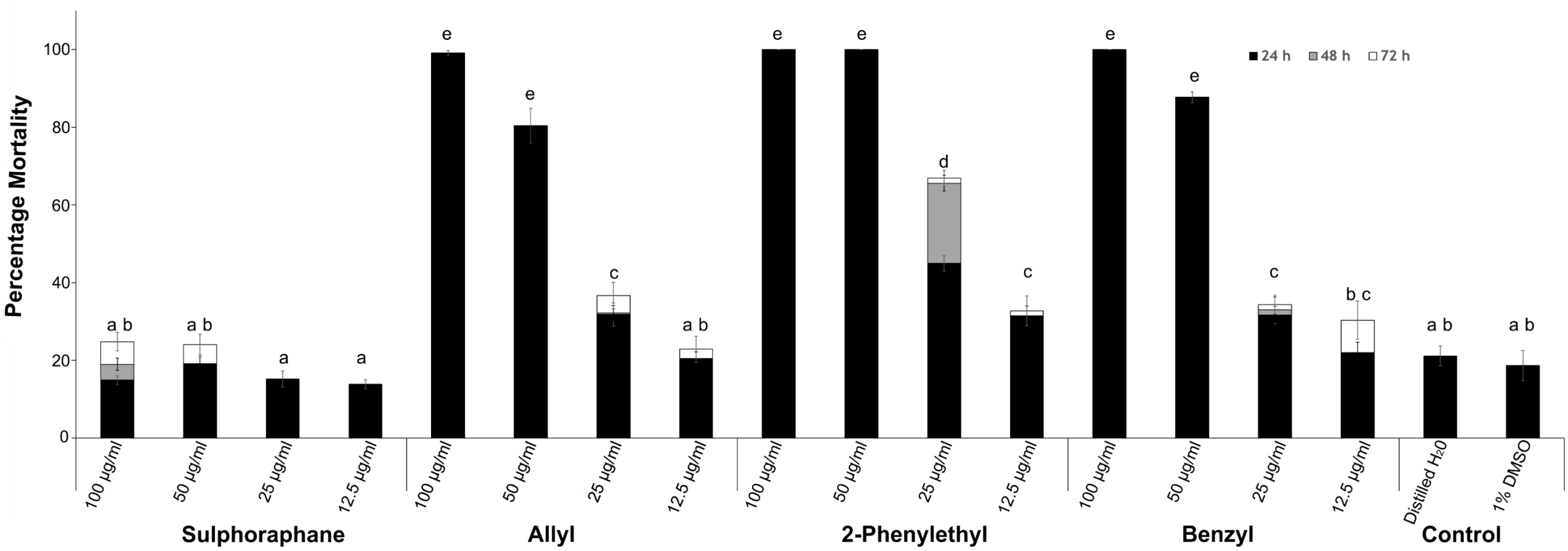


Biofumigation: practical considerations

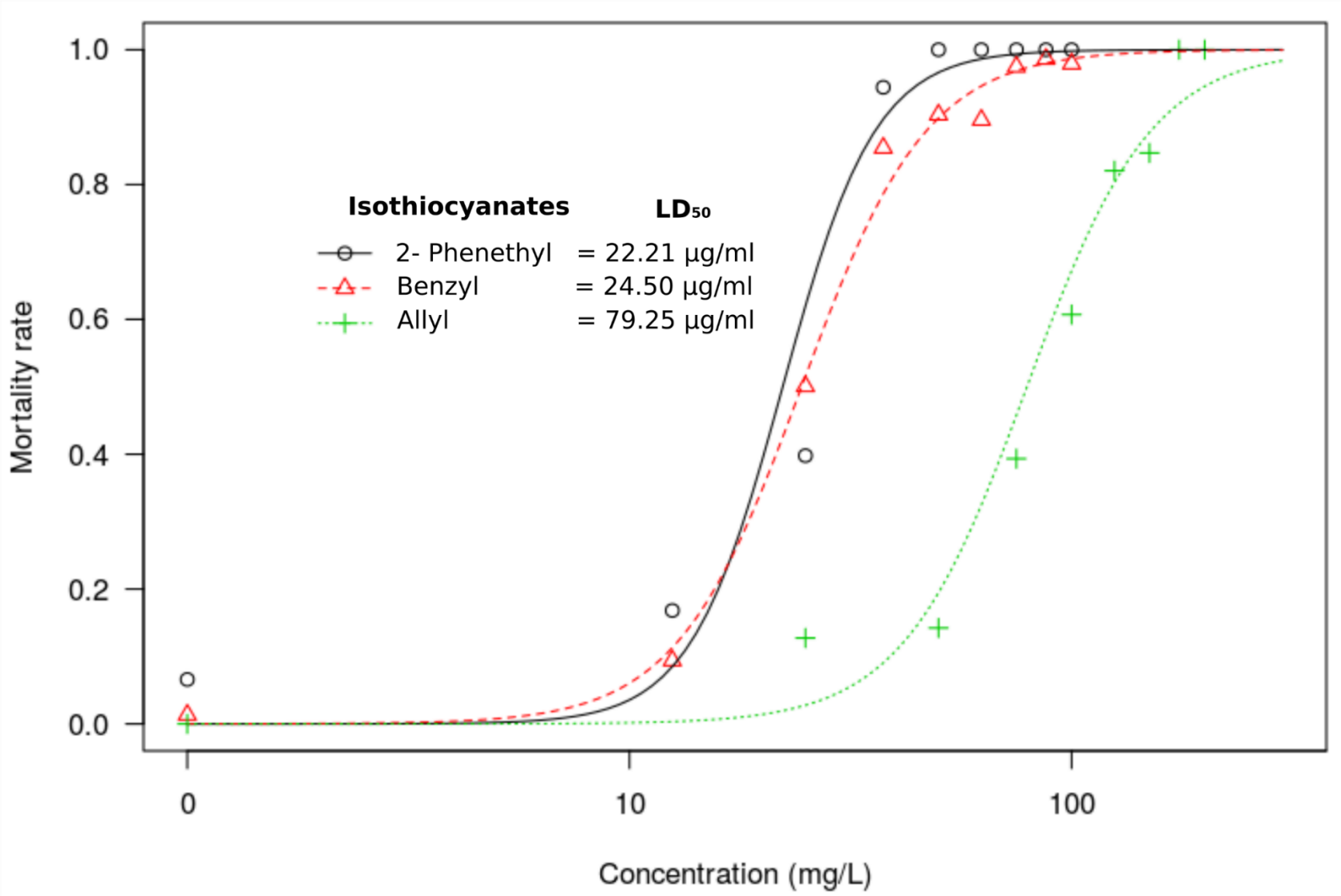
Photographs: Bruno Ngala and Bill Watts

Stem and bulb nematode (*Ditylenchus gigas* and *D. dipsaci*) – PhD Project – Nasamu Musa





- Mortality of *Ditylenchus gigas* after 24, 48 and 72 h exposure to Sulforaphane, Allyl, 2-Phenylethyl and Benzyl isothiocyante
- Error bars show the standard error of the mean
- Treatments labelled with same letters do not differ



LD50 Ratio of ITCs	p values
2-Phenethyl:Allyl	<0.001
Allyl:Benzyl	<0.001
2-Phenethyl:Benzyl	0.02562

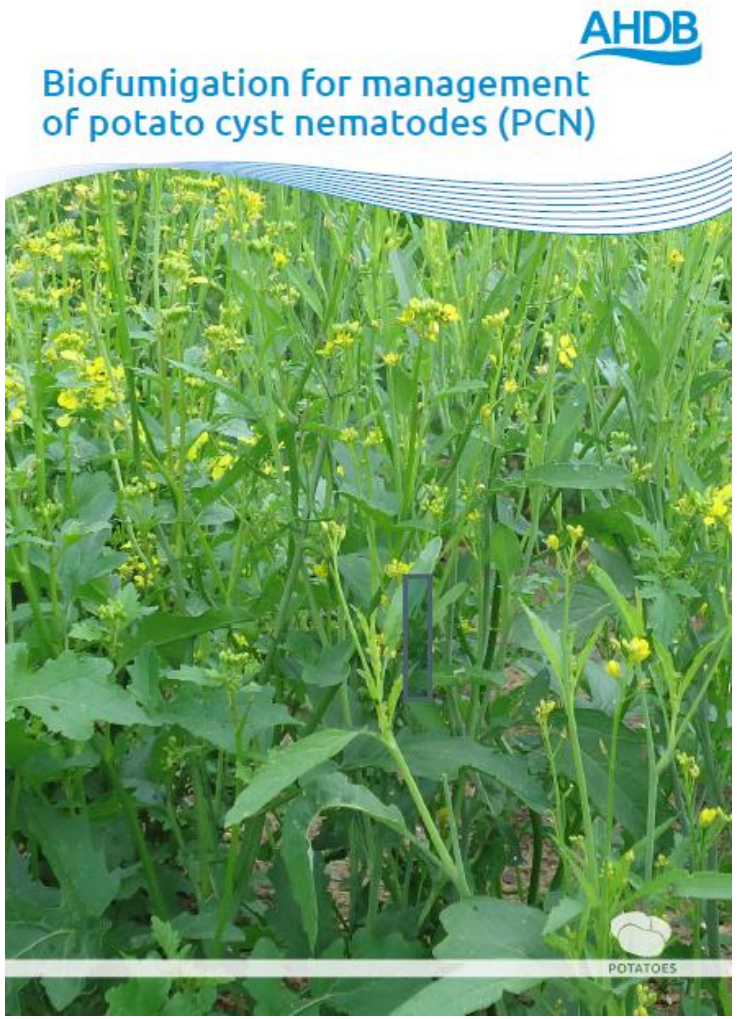
Some nematodes were paralyzed; in particular when exposed to allyl ITC

Lethal dose of *D. gigas* exposed to different Isothiocyanates concentrations

Conclusions

- Biofumigation can be a useful method of crop protection for a range of pests and pathogens
- However, efficacy can be variable…….knowledge is key
- Biofumigants need careful management to ensure optimal performance
- As with all crop protection approaches, biofumigation needs to be part of an integrated programme

Biofumigation guide



Contents

Acknowledgements

- **Our funders (past and present):** Agrovista, Barworth Agriculture, AHDB Potatoes, European Commission, Frontier Agriculture, Joordens-Zaden, PGRO, RAGT Seeds, Tozers Seeds

- **Local growers who have hosted our experiments**

- **Crop & Environment Research Centre (HAU)**

mback@harper-adams.ac.uk

Narcissus update - Lincolnshire

January 2020

Crop Protection Update - Narcissus

Dr Joanna McTigue - Crop Protection Scientific Officer

Joanna McTigue

- Started with AHDB Autumn 2019
- My background:
  - Contract Research
    - Efficacy trials / Biological Assessment Dossiers
  - Pathogen Population Biologist
    - Biological control – viruses, fungal pathogens
    - Population monitoring – farmland / woodland
  - Garden Centre upbringing
- My role – Ornamentals */ Protected Veg / Mushrooms*
  - EAMU applications
  - Liaison with growers, industry, researchers, regulator (CRD)
  - Risk register management

Content

- EAMUs & Emergency Derogations
- Herbicides
- Fungicides
- Insecticides
- Risk of loss of actives
- SCEPTREplus projects

HORTICULTURE

EAMUs

Extension of Authorisation for Minor Use

- Product must be authorised on a UK crop
- No Crop Safety or efficacy data (SCEPTRE+ trials)
- Edible crops must be supported by residues data – to demonstrate consumer safety
- Letter of access from manufacturer

£1,786

Note: All use is at the risk of the user with NO manufacturer liability

- Since 2012 AHDB have submitted approximately 500 applications for EAMUs and Emergency derogations
- Around 350 of these have been successful

Emergency Derogations

- Emergency extension of authorisation, for minor use
- Short term authorisation, max. 120 days
- Product should be authorised on a UK crop if possible
- There must be a strong case that there are no alternatives for control of the problem
- Edible crops must still be supported by residues data – to demonstrate consumer safety
- Letter from manufacturer
- Review by Expert Committee and signed by Minister

HORTICULTURE

Submissions

- Since 2012 AHDB have submitted approximately 500 applications for EAMUs and Emergency derogations
- Around 350 of these have been successful

Herbicide EAMUs 2019

Product (active)	Crop	Approval	Comments
Praxim (metobromuron)	Outdoor ornamental plant production (bulb)	EAMU 3073/19	Pre-emergence and between 1 September and 1 December Including products Inigo, Lianto, Soleto
Spinnaker (prosulfocarb)	Ornamental	EAMU 1746/19	EAMU on new product identical to Defy
Devrinol	Ornamental	EAMU 0168/20	Application between 1st November and end February. Clothing covering whole body plus gloves for worker re-entry for 13 weeks

In discussion:
Oblix 500 (Ethofumesate) - Weeds
Barton WG (Florasulam) - Weeds
Emerger (Aclonifen) - Weeds

Fungicide EAMUs 2019

Product (active)	Crop	Approval	Comments
Frupica (mepanipyrim)	Ornamental plant production	EAMU 1294/19	Control of botrytis, powdery mildew (white mould*)
Prolectus (Fenpyrazamine)	Ornamental plant production	EAMU 0784/19	Control of botrytis (white mould*)
Amylo X WG (Bacillus amyloliquefaciens)	Ornamental plant production	EAMU 0428/19	Biological pesticide
Topas (penconazole)		EAMU 0169/19	Control powdery mildew
Karma (Potassium hydrogen carbonate)	Ornamental plant production	EAMU 3338/19	Control of powdery mildew
Sercadis (Fluxapyroxad)	Ornamental plant production	EAMU 4348/19	Control of botrytis & powdery mildew

* Control shown in Sceptre+ trials at levels not significantly different to control

Fungicide EAMU applications

Product (active)	Crop	Comments
Mirage 40EC (Prochloraz)	Narcissus	Fusarium control
Ranman Top (Cyzofamid)	Ornamental plant production	Downy mildew & blight control
Systhane (Myclobutanil)	Ornamental plant production	Powdery mildew, rust. Gloves and full body coverage mitigation

In discussion:

Prolectus (Fenpyrazamine) - Use from Jan instead of March

Sercadis (Fluxapyroxad) - Use from Jan instead of April

Luna Privilege (Fluopyram) - Powdery mildew, sclerotinia, botrytis

Storite Excel (Thiabendazole) - Fusarium

Property 180SC (Pyriofenone) - Powdery mildew & botrytis

Teldor (Fenhexamid) - Botrytis

Kenja (Isofetamid) - Powdery mildew & botrytis

Folpet?

HORTICULTURE

Insecticide EAMUs 2019

Product (active)	Crop	Approval	Comments
Batavia (spirotetramat)	Outdoor ornamental plant production	EAMU 1058/19	Sucking insect pests
Pitcher (Garlic extract)	Ornamental plant production	EAMU 3744/19	Control of leaf and bud nematodes and vine weevil

Insecticide EAMU applications

Product (active)	Crop	Comments
Flipper (fatty acids)	Outdoor and temporary protected ornamentals	Aphid, spidermite, whitefly control

Risk of loss

Active	Risk of loss	Expiry date	Classifications	Comments on renewal	Endocrine Distruptor	Candidate for substitution
cypermethrin	3	31/10/2019	Acute Tox. 4 - H302,Acute Tox. 4 - H332,STOT SE 3 - H335,Aquatic Acute 1 - H400,Aquatic Chronic 1 - H410	0	ED	
lambda-cyhalothrin	2	31/03/2023	Acute Tox. 3 - H301,Acute Tox. 4 - H312,Acute Tox. 2 - H330,Aquatic Acute 1 - H400,Aquatic Chronic 1 - H410	0	0	low ADI / ARfD / AOEL two PBT criteria
deltamethrin	2	31/10/2019	Acute Tox. 3 - H301,Acute Tox. 3 - H331,Aquatic Acute 1 - H400,Aquatic Chronic 1 - H410	Expected consultation 06/04/18	0	
Dazomet	2	31/05/2023	Acute Tox. 4 - H302,Eye Irrit. 2 - H319,Aquatic Acute 1 - H400,Aquatic Chronic 1 - H410	0	0	
spirotetramat	2	30/04/2024	Skin Sens. 1A - H317,Eye Irrit. 2 - H319,STOT SE 3 - H335,Repr. 2 - H361fd,Aquatic Acute 1 - H400,Aquatic Chronic 1 - H410	0	0	
fosthiazate	2	31/10/2019	Acute Tox. 3 - H301,Acute Tox. 4 - H312,Skin Sens. 1 - H317,Acute Tox. 3 - H331,Aquatic Acute 1 - H400,Aquatic Chronic 1 - H410	No information regarding renewal	0	
dimethoate	3		Acute Tox. 4 - H302,Acute Tox. 4 - H312	Non-renewal	0	low ADI / ARfD / AOEL
spirodiclofen	3	31/07/2020		0	ED	
pyrethrins	1	31/08/2022	Acute Tox. 4 - H302,Acute Tox. 4 - H312,Acute Tox. 4 - H332,Aquatic Acute 1 - H400,Aquatic Chronic 1 - H410	0	0	
metaldehyde	3	31/05/2023		All outdoor uses banned in UK.	0	

AHDB

HORTICULTURE

Active ingredient renewal 1107/2009

- Actives - risk of loss.
  - Active supported by industry
  - Cut off hazard criteria – PBT (persistent, bioaccumulative, toxic)
  - Endocrine disruptor
  - Priority substances / water framework directive
  - Candidate for Substitution
  - Political pressure (glyphosate)

AHDB Register - Traffic light system

1 – Low risk

2 – Medium risk

3 – High risk

HORTICULTURE

Actives withdrawn 2019/20

Active	Withdrawal date	Use by Date	Target	Current risk (with mitigation)
Chlorothalonil	30/06/2019	20/05/2020	Fusarium neck & basal rot Leaf scorch Fire (Sclerotinia)	25 20 6
Chlorpropham	08/01/2020	08/10/2020	Weeds – small nettle	20
Chlorpyrifos	16/02/2020	15/04/2020	Large narcissus fly	10
Dimethoate	24/10/2019	24/01/2020	Bulb scale mite	10
Propiconazole	19/06/2019	19/03/2020	Rust	9
Metaldehyde	*31/12/2020*	*31/12/2021*	*Slugs*	*4.5*
Thiacloprid	*03/08/2020*	*03/02/2021*	*For information*	-

Actives at risk 2020

Active	Expiration of approval	Concern	Target	Current risk (with mitigation)
Cypermethrin	31/10/2020	Bees – Use restrictions: non-flowering inc. weeds Endocrine disruptor	Large narcissus fly	10
Epoxiconazole	30/04/2020	Endocrine disruptor 2x PBT*	White mould Smoulder Leaf scorch Rust	20 25 15 9
Metribuzin	31/07/2020	Endocrine disruptor	Weeds	15
Tebuconazole	31/08/2020	Endocrine disruptor	White mould Smoulder	20 25

Other renewals of note 2020:

- Deltamethrin
- Mancozeb expiration of approval extended to 31/01/2021 (was 31/01/2020)
  - Use against rust,
  - Ecotoxicology and Endocrine disruptor concerns,
  - Possible use restrictions: permanent protection only

HORTICULTURE

SCEPTREplus

Trial results indicate which products to take forward as an EAMU

2020 Trials:

- Herbicide Trials
  - Cut flowers (ongoing)
- Fungicide trials
  - Smoulder / white mould (ongoing)
  - Powdery mildew (ongoing)
- Bulb dip trials (ongoing)

HORTICULTURE

Thank you for your attention

Please email with any questions regarding EAMUs

Joanna.McTigue@AHDB.org.uk

Dr Jo McTigue
Crop Health and Protection

Narcissus update - Lincolnshire

Risk Register 2020

Risk Register - Pests

				Likelihood	Crop Loss	
Large Narcissus Fly	*Merodon equestris*	Narcissus	hippeastrum, hyacinth, nerine, snowdrop, vallota, iris, scilla	5	2	10
Nematodes	*Ditylenchus dipsaci (stem & bulb).*	Narcissus	Broad, including: garlic, onion, carrot, fava bean, alfalfa, oats, and strawberry, hyacinth, tulip, narcissus	5	3	15
Bulb scale mite	*Steneotarsonemus laticeps*	Narcissus	narcissus	5	2	10
Slugs	*Various*	Narcissus	Wide	3	1.5	4.5

Risk Register - Diseases

				Likelihood	Crop Loss	
Narcissus Smoulder		*Botrytis narcissicola*	Narcissus	5	5	25
Fusarium neck and basal rot		*Fusarium oxysporum f.sp. narcisi*	Narcissus	5	5	25
Leaf scorch		*Stagonospora curtisii*	Narcissus	5	3	15
Fire		*Sclerotinia polyblastis*	Narcissus	3	2	6
Rust		*Aecidium narcissi*	Narcissus	3	3	9

Risk Register - Weeds

				Likelihood	Crop Loss	
Small nettle	*Urtica urens*	Various	various	5	4	20
Broad leaf weeds	*Various*	Various	various	5	3	15

Chlorine Dioxide Case Studies 2019

Cathryn Lambourne

Aim of the work

- To carry out additional testing via case studies with growers in Lincolnshire and Cornwall.

- To gain first hand information from participating growers on the ease of having the equipment installed and their perceptions as to the potential value of using chlorine dioxide during dipping.

Scotmas work

- Commission Ewan Cameron (Scotmas Ltd) to visit 4 sites during the 2019 bulb dipping season.
- At each site,
  - retro fit chlorine dioxide dosing equipment
  - Collect tank water samples before and after the addition of chlorine dioxide
  - Collect bulb samples following dipping with and without the addition of chlorine dioxide
  - Transport water and bulb samples to Rob Lillywhite (WCC)

Warwick Crop Centre work

- Bulb and water samples from each site transported to Rob Lillywhite for lab tests
  - Test tank water samples for total number of organisms
  - Check 1/3 of treated and untreated bulbs for severity of rots (0-10)
  - Incubate 1/3 of treated and untreated bulbs for 30 days at 25°C and record severity of rots (0-10)
  - Plant 1/3 of treated and untreated bulbs in field location to monitor for crop safety over the next 2 flowering seasons

Grower work

- Collect samples of treated and untreated bulbs for planting in own fields in labelled plots

- Monitor bulbs for any beneficial or adverse effects over next 2 growing seasons.

Case study information and views – the grower perspective

What challenges are you hoping to solve with this treatment?

"We're hoping this treatment reduces or eliminates fusarium basal rot in bulbs for planting, with the secondary effect of reducing nematodes in bulbs.

By using this as an alternative, we're also hoping to reduce the cost, energy inefficiencies and time taken for hot water treatment."

If the treatment is effective and becomes widely available to use, what impact could it have on your business?

"A reduction in fusarium and nematodes would improve the health of our stock and hopefully flower yield. With less waste and better quality bulbs this could have significant benefits to our sales."

Do you think the equipment and methods are easy to use?

"The principle of application seems to be straightforward and easy to apply to a commercial setting, but the equipment will need to be adapted for each business."

Case study information and views – Ewan Cameron, Scotmas

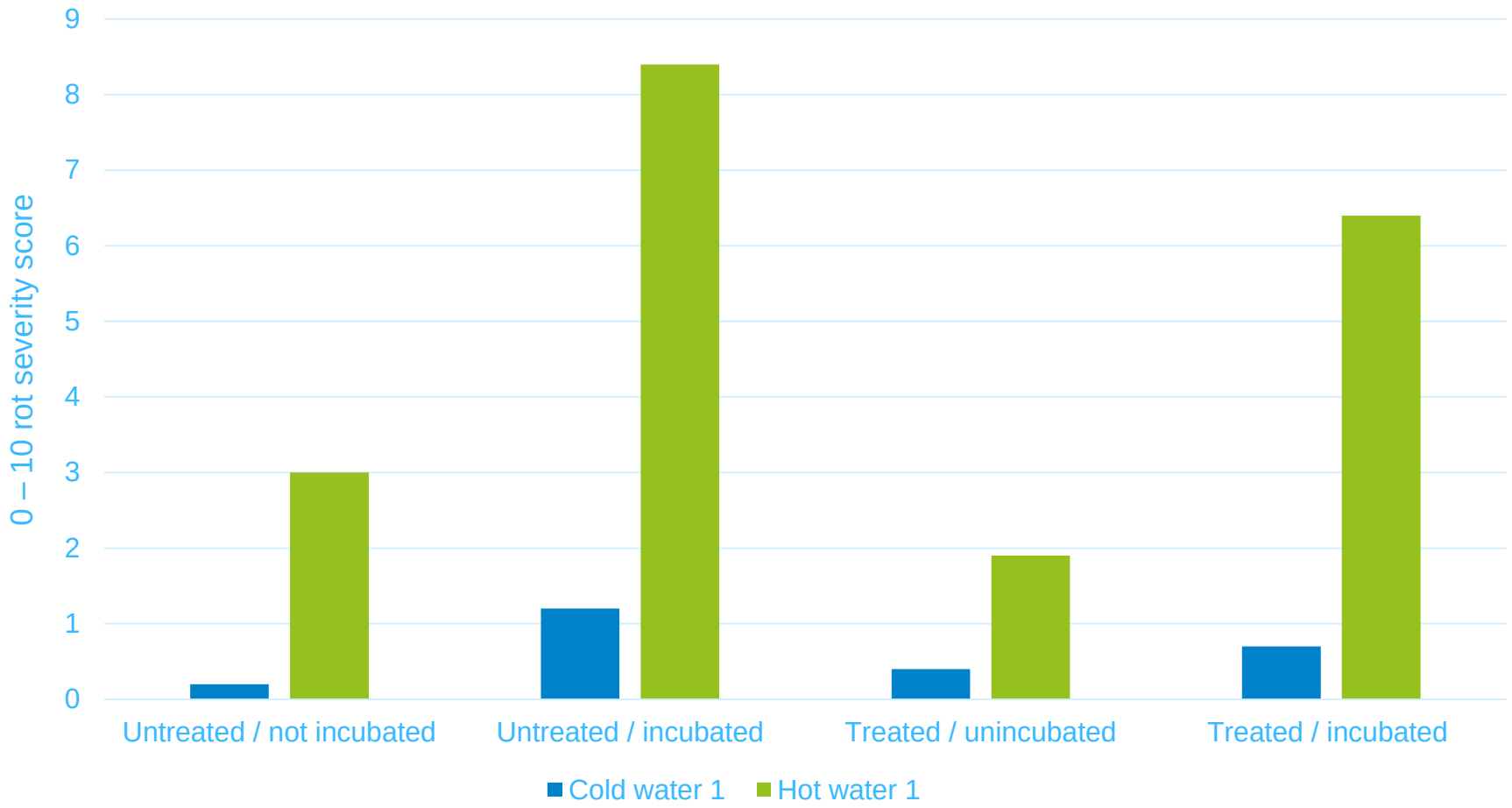
“The main objective of this operation has been to supply the growers with an environmentally safe practice while achieving the objectives of fungal control and maintaining the viability of the plant.

Work needed to be done to reassure the industry that these methods are effective and can be applied to different growing systems and requirements.

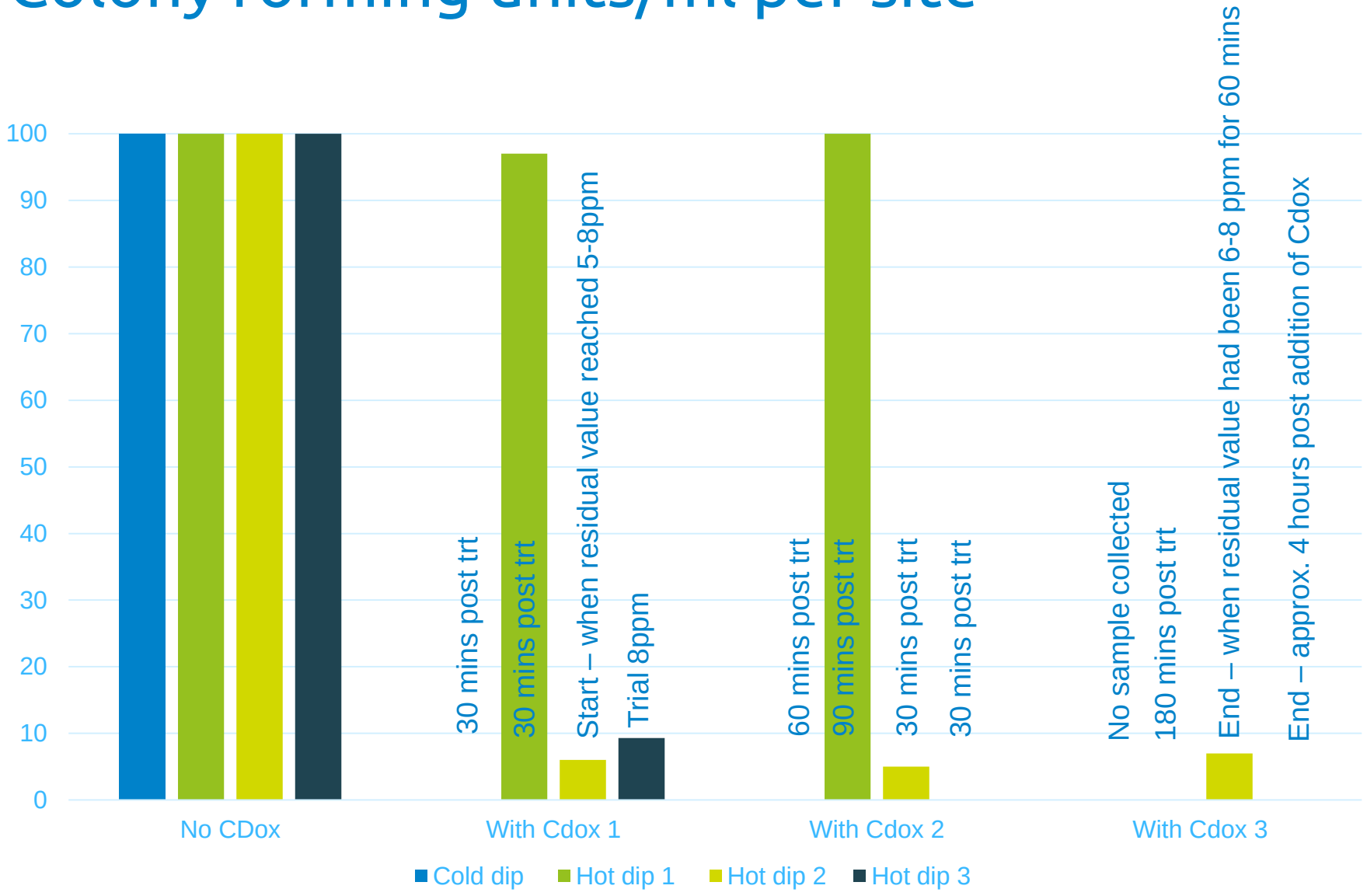
Following the results of the trial work, the units can be standardised for the industry.”

Results from 2019 dipping

Severity of rots in bulbs post-dipping



Colony forming units/ml per site



Fusarium Basal Rot

Outcomes of Phase 1 of the project

- 30 isolates of Fusarium oxysporum spp. were collected from bulbs and soil and molecular tests have been developed to confirm the presence of F. oxysporum f.sp narcisi

- Tests have been developed that will specifically detect Fusarium in soil samples. This test could provide a measure of the risk of infection from field sites.

- Initial steps have been taken to determine the threshold of spores in soil that are needed to result in infection.

Plans for Phase 2 of the project

1. Define a relationship between the amount of Fusarium DNA and how this might relate to the amount of (spore) inoculum in field soil
2. Assess the risk of Fusarium disease development in onion, stocks, Narcissus and lettuce and identify how the amount of Fusarium changes over time and space in relation to the whole microbial community
3. Determine the presence of Fusarium in symptomless onion and narcissus to assess risk of disease development in store or pre-planting
4. Determine whether pathogenic Fusarium can grow on the roots of non-host rotation crops


‘Inspiring our farmers, growers
and industry to succeed in a
rapidly changing world’