

September 2022

Fusarium in narcissus (SP45)

Dr Joanna McTigue

AHDB Update

New Crop Protection team structure

CP Scientist

Joanna McTigue

Ornamental crops
Protected fruiting veg
Mushrooms

Actives risk register
Operator & Worker exposure

CP Scientist

Kim Parker

Field Veg
Leafy salads

Residues
Emergency Authorisations

CP Scientist

Carlos Duarte

Fruit

CP Scientist

Grace Emeny

Legumes, asparagus, cucurbits,
sweetcorn, Rhubarb

EAMUs, Emergency Authorisations, Residue trials, Efficacy trials, Risk registers

Senior Research & KE Manager: Debbie Wilson

Research & KE Manager: Rachel McGauley / Nat Key

Fusarium in narcissus

Fusarium oxysporum f. sp. *narcissi* (FON)

Basal rot – roots / basal plates – soft, rotting bulbs, leaves & flowers affected

Hot water treatment

3 hrs at ~44°C

Nematodes+Fungicide treatment

~~Chlorothalonil (Bravo)~~

~~Thiabendazole (Storite Clear)~~

~~Formaldehyde (Formalin)~~

FAM30



1. HWT facility with 2 x 4 tonne tanks and overhead holding tank

AHDB Factsheet 10/13– Hot water treatment of daffodil bulbs

Basal rot, nematodes and dipping treatments

- [!\[\]\(13b6bdd0ca077c333d50231f1443cb1d_img.jpg\) Hot-water Treatment of Daffodil Bulbs](#)
- [!\[\]\(5dbedd4e1e8871e3a0e67053ad2f9701_img.jpg\) Video page : Use of chlorine dioxide in bulb water treatment](#)
- [!\[\]\(d4749465acb9b53e115af1f9ce82539c_img.jpg\) Narcissus: Investigation into the effects of a range of potential biocides in hot water treatment](#)
- [!\[\]\(3e3001313d495ec87b5a6a5de6205728_img.jpg\) Research project BOF 060 : An on-line low-cost non-invasive sensor of basal rot in narcissus bulbs](#)
- [!\[\]\(e26df985e6d3e053d2593dc7b93b41cf_img.jpg\) Research project 061 : Alternatives to the use of formaldehyde in hot water treatment tanks for the control of stem nematode and Fusarium basal rot](#)
- [!\[\]\(2d8989e35a5d1c61f2b9b0307dee0da4_img.jpg\) Research project BOF 061a : Alternatives to the use of formaldehyde in hot water treatment tanks for the control of stem nematode and Fusarium basal rot](#)
- [!\[\]\(10225a66c9f99322b84a7fc32767a3b8_img.jpg\) Research project BOF 061b : Alternatives to the use of formaldehyde in hot water treatment tanks for the control of stem nematode and Fusarium basal rot](#)
- [!\[\]\(e628152647eaf2a5b8bfa082bbb75081_img.jpg\) Research project BOF 061c : developing alternatives to formalin. The concentration of chlorothalonil fungicide and iodophore biocide in hot water tanks and cold dips](#)
- [!\[\]\(322137fe39b9b64ec6280cbae636a504_img.jpg\) Research project BOF 069 : Suppression of Fusarium basal rot using composts with biocontrol agents](#)
- [!\[\]\(c7b4c0f4f14640e9a5f8748e3c49f893_img.jpg\) Research project BOF 070 : Chlorine dioxide - potential disinfectant in hot water treatment tanks and other bulb dips](#)
- [!\[\]\(983d55426a5421081cd9eaf8830e7192_img.jpg\) Research project BOF 070a Chlorine dioxide – daffodils treated in hot water treatment](#)
- [!\[\]\(0265fc2a1f3b606d78de384d8ebca901_img.jpg\) Research project BOF 071 : FAM 30 disinfectant as a cold dip treatment for Fusarium basal rot](#)
- [!\[\]\(60f08d4be84d697251258af68db7f264_img.jpg\) Research project BOF 071a : FAM 30 disinfectant as a cold dip treatment for Fusarium basal rot](#)
- [!\[\]\(e0a4f36696eaf68f18fcba0321218c0e_img.jpg\) Research project BOF 074: In vitro screening of fungicides to control basal rot of narcissus](#)
- [!\[\]\(4d15393fc2c10be98a56a95b7e2ea3f3_img.jpg\) Research project BOF 074a : Evaluating potential new fungicides for the control of Narcissus basal rot](#)
- [!\[\]\(e15dabadb063dccee91c42caa8ad0dc7_img.jpg\) Research project BOF 077 : Investigation into the benefits of using water disinfection options during hot water treatment](#)

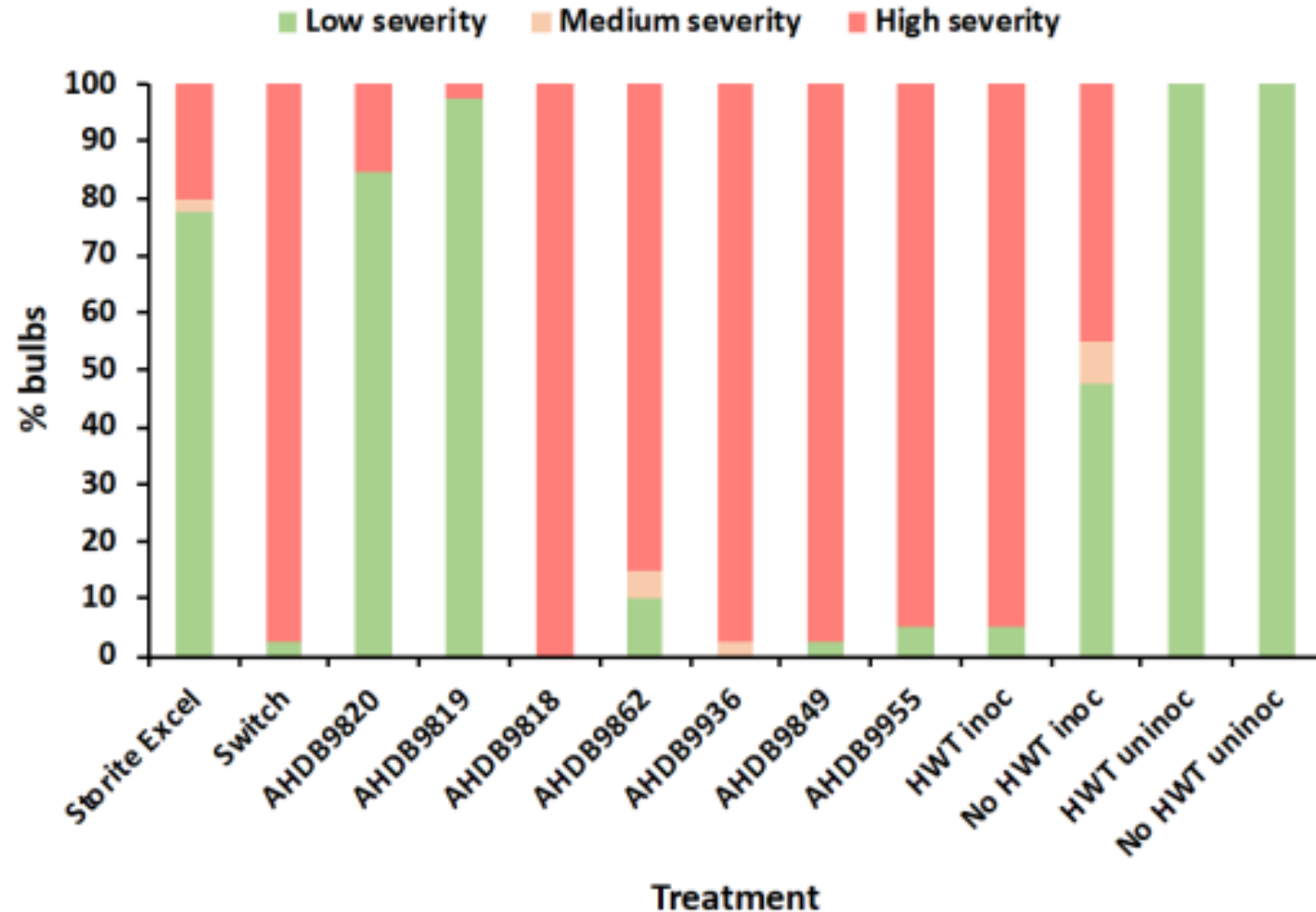
Fusarium - HWT

SP45 Conducted in 2019/2020 by Dr John Clarkson at Warwick Crop Centre

Nine products

- 6 conventional
- 3 microbiological

Inoculated compost



Fusarium - HWT

3 products identified in SP45 – Hot water treatment bulb products

Mirage (Prochloraz): 33.3% incidence / 84.6% bulbs with low severity

- Trialled at NL authorised rate, Mutual Recognition no longer possible in GB
- EAMU application denied – soil loading too high
- Authorised GB use in cereals from BBCH 30 > 50% foliar interception / bulbs in soil > 0% interception.
- Bulb uptake data and submission at ½ tested rate – EAMU application denied
- Prochloraz at risk of non-renewal – no submission of supplementary dossiers for EU approval, EU expiry date extension retracted to December 2021. Products being withdrawn.

Storite Excel (Thiabendazole): 35.0% incidence / 77.5% bulbs with low severity

- Trialled rates too high to fall within risk envelope (as per Storite Clear)
- Current authorisation spray to crate application for seed potatoes (1/10th rate).
- Product frozen for reauthorisation
- Possible spray to crate use?

Fusarium - HWT

AHDB 9819: 10% incidence / 97.5% bulbs low severity

- Trialled rates slightly higher than **total** on-label rate (NL)
- Authorised use = individual rate x3, interception value of 25%

Switch- cyprodinil + fludioxinil: 97.5% incidence / 2.5% bulbs with low severity

- EAMU in place for use

HWT no fungicides: 97.5% incidence / 5% bulbs with low severity

Not using HWT: 62.5.5% incidence / 47.5% bulbs with low severity



Fusarium – Alternatives chlorine dioxide study

BOF 77: Commercial field testing (Lillywhite & Clarkson, 2020)

- Proceeded by lab and small scale tank trials BOF 70 (Hanks, 2010) / BOF 70a (Hanks, 2013)
- Chlorine dioxide dosing is effective against Fusarium spores and development of basal rots
- High bioload can reduce efficacy so system needs to be kept as clean as possible
- Field trials have shown chlorine dioxide to have no adverse effects on flower production
- Installation of automated chlorine dioxide delivery system

Fusarium – Alternatives Straight to soil products

Seed potato products (for blight)

Roller table products

- Maxim (fludioxonil)
- Gavel (imazalil)
- Honesty (fluxapyroxad)

Spray to crate

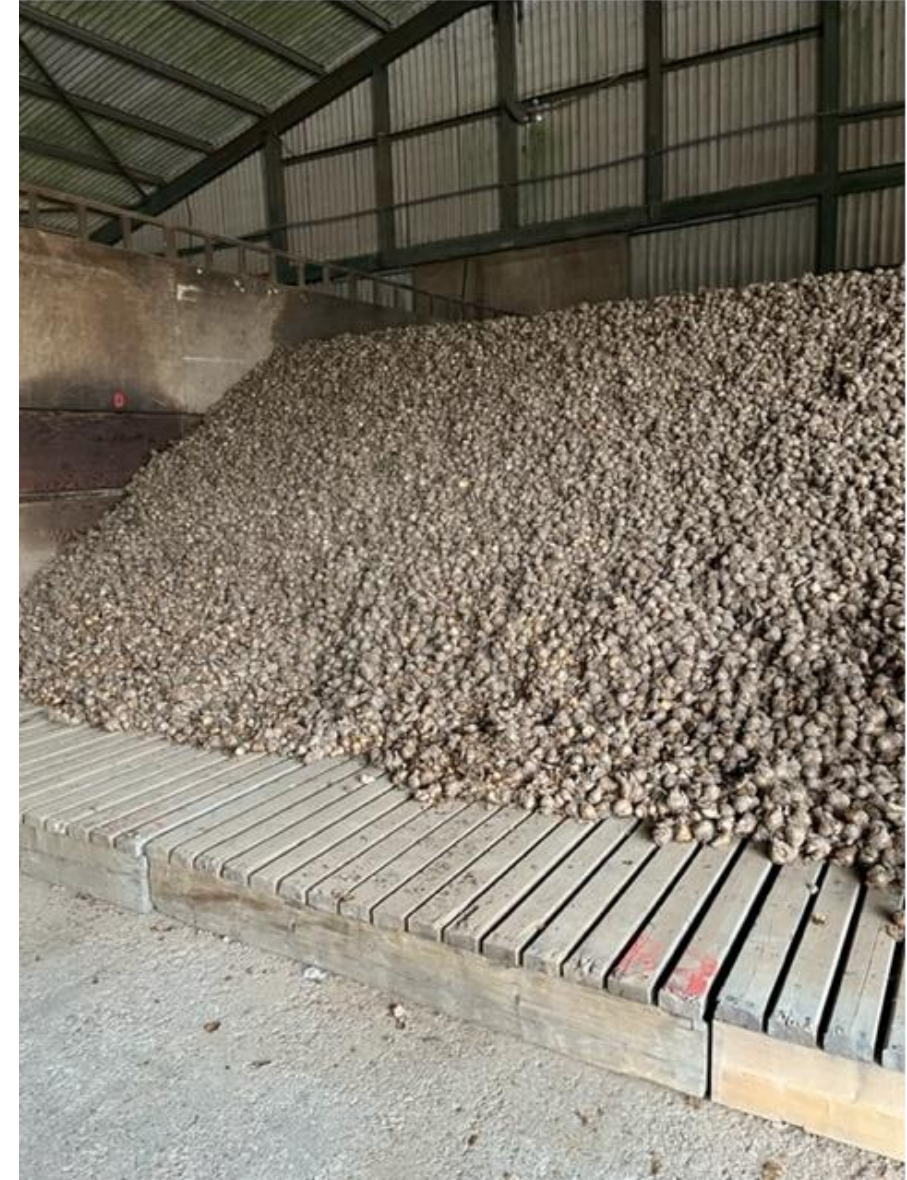
- Storite Excel (thiabendazole) – possible EAMU?

In furrow

- Rhino (flutolanil)
- Honesty (fluxapyroxad)

Biologicals

- Pro-radix WP (*Pseudomonas* sp. DSMZ 13134)



WP16 – Fusarium trial 2022

Alternative in-furrow efficacy trial

University of Warwick & Hutchinson's

Lab study (ends 2023) and field trial (ends 2024)

- 7 products
- Product similar to AHDB 9819
- 2 biologicals

Hot water treated bulbs add on:

- 3 rates
- Analytical phase to evaluate bulb uptake of product



Thanks to John Clarkson and his team

Please contact me by phone or email with any questions, comments, or requests regarding EAMUs or crop protection

Joanna.McTigue@AHDB.org.uk

07425 522345

Dr Joanna McTigue
Crop Protection Scientist
Crop Health and IPM

AHDB secures
70% approx.
of all EAMUs



...that's 560 across 200+ crops since 2013

A vibrant landscape of a green field at sunset. A path leads from the foreground towards the horizon where the sun is setting, casting a warm glow over the scene. The sky is filled with colorful clouds, and the field is lush and green. The text is overlaid in the center of the image.

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