



National Cut Flower Centre

Open Day

17 July 2019

National Cut Flower Centre, Rookery Farm, Holbeach St Johns, Spalding, Lincolnshire PE12 8SG





Event programme

Time	Presentation	Speaker
17.15	Coffee, refreshments and registration at CFC site (F	Rookery Farm)
17.30	Update on glasshouse environmental control	Tim Pratt, NFU Energy
18.00	Managing the plant microclimate with new sensing technology	Ant Surrage, Fargro
18.20	Weed control in field-grown gladioli and larkspur	Chloe Whiteside, ADAS
18.30	An overview of 2019 CFC trials programme (plus other associated projects including downy mildew control in column stocks and post-harvest treatments)	Lyndon Mason, CFC project leader
18.50	Tour of the various CFC trials at Rookery Farm, led Mason	by Lyndon
19.40	Hog roast, refreshments, demonstrations, discussion	ons and depart

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grow save	save energy	Unders	stand hu	midity
 Low RH High HD High VPD Avoid Dewpoin 	nt	er is in the	Temperature	Pressure Contract
Description	Shortened	Units	Range	
Relative Humidity	RH	%	0- 100	
Humidity Deficit	HD	g/m ³	0 - 6	
Dew Point	DP	Deg C	5 - 25	
Absolute Humidity	AH	g/m ³		
Vapour Pressure Deficit	VPD	kPa	0 - 4	
© 2019 NFU Energy				AIDD











Understanding the growing environment

- Single point sensors
- Stationary Difficult to analyse
- Gives a general idea of the growing environment
- · Easy to use
- "What we have always done"

🖉 fargro



Understanding the growing environment

"What's the problem?"

- Issues
- · Gives a single value
- Not in real-timeData often not well displayed
- A low resolution picture of an environmentIs the growing environment truly uniform?

🕏 fargro



























































Treatm	Treatment list 2019					
	Trt No.	Product	Rate kg/ha or L/ha			
	1	Untreated	Untreated			
	2	AHDB9974	Х			
	3	AHDB9994	Х			
	4	Sencorex Flow	0.75			
	5	Wing-P	3.5			
	6	Sunfire	0.48			
	7	AHDB9987	Х			
	8	Springbok	2.5			
	9	AHDB9900	x			
	10	AHDB9900 inter-row	X (higher rate than T9)			
HORTICULTURE				AHDB		







• To test a range

• To test a range of herbicide products, alone or in combination, for crop safety on field-grown larkspur.

AHDE

Previous work in 2015

- Emergence was patchy across the whole trial, including in the untreated, with plants taking a long time to germinate – difficult to draw firm conclusions.
- Phytotoxicity was seen throughout the trial in the form of stunting and distortion to foliage.
- Stomp 2.0 L/ha + Dual Gold 0.78 L/ha, Wing-P 1.75 L/ha and HDC H22 all appeared to be particularly phytotoxic.
- Stomp Aqua 2.0 L/ha + Defy 4.0 L/ha was less phytotoxic but also reduced emergence.
- Stomp 2.0 L/ha + Gamit 0.25 L/ha and Wing-P 1.75 L/ha gave the best weed control but Wing-P appeared to be phytotoxic.
- Treatments and rates refined for 2018.



The National Cut

ADAS

lower Association

Trt	reatment	Rate kg/ha	8 Post-drilling	Rate kg/ha	
no.		or L/ha		or L/ha	
1	Untreated	-	Untreated	-	
2	HDC H23 (incorp)	х	Dety	4.0	
3	HDC H23 (incorp)	Х	Defy	3.0	
4	HDC H23 (incorp)	Х	Gamit 36 CS	0.25	
5	Untreated	-	Dual Gold + Gamit 36 CS	0.78 + 0.25	
6	Untreated	-	Stomp Aqua + Gamit 36 CS	2.0 + 0.25	
7	Untreated	-	Stomp Aqua + Gamit 36 CS	1.5 + 0.15	
8	Untreated	-	Stomp Aqua + Defy	2.0 + 4.0	
9	Untreated	-	Stomp Aqua + Defy	1.5 + 3.0	
10	Untreated	-	metobromuron	3.0	
• Treatments applied in 200 L/ha water Action Difference Control Cut Cut Control Cut Cut Control Cut					

Methods 2018

Date	Action					
28.05.18	Trial area cultivated and plots marked out.					
30.05.18	Pre-drilling treatments applied and incorporated into seed bed. Trial hand- sown at a higher rate of 2g/m.					
31.05.18	Post-drilling treatments applied.					
09.07.18	Crop emergence was slow, weed assessment completed 6WAT.					
15.07.18	Plots weeded. No sign of phytotoxicity on the crop in any of the plots.					
06.08.18	Crop emergence assessed 10WAT.					
	AHDB Commerce Cut					
	Association ADA					

















Summary

- Emergence was slow, but better than 2015. Results were variable, but similar to the untreated 10WAT.
- A flush of weeds 1 week after sowing meant that in some plots, including the untreated, the weeds out-competed the crop, resulting in lower than expected emergence.
- Weed control was not significant, although HDC H23 pre-sowing followed by Defy 4.0 L/ha (T2) gave better weed control (8.3% weed cover).
- No phytotoxicity was seen during the trial but due to slow emergence this
 must be treated with caution.
- HDC H23 pre-drilling followed by Defy 4 L/ha (T2), Dual Gold 0.78 L/ha + Gamit 36 CS 0.25 L/ha (T5) and Stomp Aqua 2 L/ha + Gamit 36 CS 0.25 L/ha (T6) gave the best weed control.



The National Cut	AHDB	
Cut Flower Centre		
An overview of the 2019 trials		
programme		
Lyndon Mason		
Project Manager		
Project Manager		
July 2019		
	HORTICULTURE	
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AHDB

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General comments

- Second year of a new five year programme of work funded by AHDB Horticulture.
- This year there is an heavy emphasis on column stocks hence the earlier Open Evening.
- This year's herbicide trials are focusing on Peony.

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- Ongoing work with stock downy mildew in conjunction with James Hutton Institute.
- On-going trials in the *Fusarium* inoculated polythene tunnel.
- Yet again the weather has been challenging but not so much as in 2018.

, Trials in 2019 – Haygrove Tunnel

- Investigating column stock varietal susceptibility to *Fusarium* including new range of 'Japanese' stocks via replicated trial.
- Planted in week 18 with most of the commercial range of varieties available from Florensis as well as a wide range of 'Japanese' varieties.
- Planted through white polythene to reduce weed issues.
- This year we have obtained excellent results with some varieties showing good 'resilience' to *Fusarium*.
- Also looking at the use of T34 inoculated at the seeding stage. Blocks planted in week 22.















T34 trials in the Haygrove Tunnel

- AHDB funded trials in 2018 showed that T34 Biocontrol gave a degree of control of *Fusarium* in lettuce.
- T34 is *Trichoderma asperellum* strain T34, which is a biopesticide for the control of *Fusarium*.
- Seeds sown into lettuce blocks and drenched with T34 at seeding. Then top up drenches at planting and 10 days later.
- Seeded in week 16 and planted out in week 22.

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• At the time of preparing this presentation *Fusarium* was starting to show up but not enough to make any assessments.



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Trials in 2019 – first Triple Span

• One half of the tunnel was planted with Scabious 'Scoop' including the new range of 'Focal Scoop'.

Flower

- Had allocated a bed to HilverdaKooij varieties, but these were not supplied.
- Other NPD in this tunnel include Didiscus, Gomphrena and Lepidium.
- The Bulrush growing media trial has just been stood down in this tunnel, but too early for any results yet.



- 'Blackberry', 'Candy', 'Lavender Hoop', 'Lollipop', 'Milky', 'Red Velvet', 'Tutti Frutti' and 'Bicolour Pink' + 'Purple Focal Scoop'.
- Also week 22 planting of 'Focal Scoop Hot Pink', 'Purple Lace' and 'Lilac' that were not available earlier.
- HilverdaKooij did not provide their varieties this year.
- First stems cropped in week 26 and now in full flush.
- What is the potential for this product in the UK market??



Trials in 2019 – other NPD

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- This tunnel has also been planted with NPD trials of Asclepias, Didiscus, Gomphrena and Lepidium.
- Gomphrena was examined in 2016 and showed potential as a seed raised filler and further work has now been requested by packers.
- Asclepias 'Apollo Orange' did not overwinter from 2018 so a new planting has been made.
- Didiscus is another potential umbelliferous seed raised filler.
- Lepidium 'Green Dragon' is being assessed as a potential filler. Looking a different propagation regimes, planting dates and densities.
- Bulrush funded crate grown lily growing media trial.





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- One bed of overwintered Scabious Scoop.
- Overwintered Veronica trial.
- Overwintered corm and seed raised varieties of Eucomis.

Trials in 2019 – second Triple Span

- Overwintered *Lysimachia fortunei* 'Jumbo' and 'Mambo' variety trial.
- Overwintered Asclepias variety trial.
- Monarda demonstration plots.
- New varieties of overwintered Astrantia for cut flowers.
- Overwintered Echinacea variety trial.
- New planting of pinks and Eryngium.
- Powdery mildew fungicide phytotoxicity trial.



Trials in 2018 - Veronica

Trial to further investigate Veronica as UK grown cut flower including vase life testing.

- Crop planted last year and overwintered into 2019.
- Produced a very strong and long stemmed flush starting in week 25, but very dense and hard to control powdery mildew.
- Also issues with fasciation especially in the pink variety.
- \bullet Crop now been cut back and thinned from 25 to 12 plants/m^2.
- · Second flush will be used for vase life testing.



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• Overwintered plantings of a wide range of Asclepias including *A. incarnata* 'Soulmate', *A. syriaca* (Silkweed), *A. tuberosa* (Butterflyweed) and 'Gay Butterflies Mixed'.

Trials in 2019 - Asclepias

- All of these overwintered successfully except 'Apollo Orange'.
- Most overwintered plantings flowered in week 25.

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flower,

- New planting of 'Apollo Orange' planted this year but not yet flowering.
- Further vase life work will be undertaken this season.



Trials in 2019 - Astrantia

- Two new varieties overwintered from 2018 i.e. 'Sparkling Pink' and 'Red Stars'.
- Short stems produced from week 20 but from week 23 to 25
 produced a flush of long strong stems in excess of 70cm.
- From week 26 onwards just a small number of flowers produced.
- Vase life work being undertaken.

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- Crop looks encouraging, but need to assess the economics of production.
- However, it is a crop which I am reliably informed to be "on trend"!

AHDB











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Trial in 2019 – third Multi-span

- Trial to look at the performance of new 'Japanese' column stock varieties.
- Plantings made in week 19, 21, 23 and 25.

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- The varieties planted are 'Arrow', 'Avalon', 'Iron', 'Venus' and 'Vintage Brown' plus standard Florensis varieties as a comparison.
- The doubles in the 'Japanese' varieties cannot be selected by reducing the temperature and has to be done manually by eye hence the cost of the plugs.
- The week 19 planting flowered in week 26 and some of the week 21 planting is flowering now.



Downy mildew on column stocks

- Issue in 2018 with the control of downy mildew on column stocks, both in UK and the Netherlands.
- Impossible to identify the actual strain of DM but no doubt that it was more 'aggressive' than what we are used to.
- UK growers very proactive and onto the problem very quickly.
- With the invaluable help of Semo, the CFC was able to react quickly and allocate funds to the problem.
- Able to facilitate more appropriate spray programmes and undertake sensitivity testing at Fera.

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for the 2019 season

- The 'new Dutch strain' of DM was totally resistant to metalaxyl.
- The control achieved by Fubol Gold was from the mancozeb element, therefore use Manzate 75 (straight product).
- Need to start spraying early in the season using a wide range of fungicides.
- Need to amend programme and timing according to the prevailing weather conditions.
- Get hold of the CFC / AHDB information sheet on the subject i.e....





So where are we now?

AHDB

- Almost at the end of the 2019 stock season, so a good time to review the situation.
- Certainly not been anywhere near the same issues experienced as last year, but not totally trouble free.
- Problem also seen on imported stems.
- Where I have seen the disease it has been when the spray programme in the information sheet has not been followed.
- One Irish grower told me that he only had problems when he got complacent and did not stick to the programme.
- This year, samples are being tested for fungicide tolerance by James Hutton institute as part of AHDB project CP 184.
- · So far no results, but will be available next year.

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Post-harvest treatments

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- Later in the year CFC/AHDB will be producing an information sheet summarising the current post-harvest products available.
- However, the main thing to note is that STS is now approved for use on cut flowers in the form of Chrysal AVB.
- BUT all waste solutions must be disposed of as chemical waste and no other disposal route is permitted.
- Because of this, neutralisation kits are not supplied with Chrysal AVB.
- Chrysal provide guidelines for minimising waste amounts of ready to use solution via a product information sheet.

How to be involved with the CFC

- \bullet Go to $\underline{www.thecutflowercentre.co.uk}$ for updates and topical items.
- Discuss topics/issues with any CFC Management Group member.
- Attend open events and attend study tours.
- Obtain copies of CFC reports/technical notes via the AHDB or the CFC website.
- Read the AHDB Horticulture Grower magazine.
- LET US KNOW WHAT TRIALS YOU WANT DOING!

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The National Cut Lower Centre	Thank you's	AHDE
 David and Elai 	ine Robinson.	
 Verban and the 	e Rookery Team.	
 CFC Managen ONGOING ten 	nent Group especially Sue Lamb fo nacity with developing NPD!	r her
 All of our supp 	liers.	
• The AHDB of a	course.	
 Selchuk Kurter 	v (Semo) for his invaluable guidanc	e over the
years.		
 Neil Bragg and 	d David Smith at Bulrush.	
 Anyone that I h 	have forgotten!	

CFC trials summary 2019

Introduction

The CFC is now in the second year of its current five year funding programme and as usual there is much to see at the open evening. There are two tunnels dedicated to new product development (NPD) and there is a wide product range to view including new varieties of Astrantia, Didiscus, Echinacea, Eucomis, Gomphrena, Lepidium, pinks and Scabious, to name but a few.

Column stocks have featured heavily in this year's programme (hence the reason for the earlier open evening) with one tunnel dedicated to work on controlling *Fusarium* in the form of plant varietal susceptibility screening trials and disease control trials using the biological control agent T34. Another tunnel contains four late plantings of a new range of 'Japanese' column stocks varieties which are being compared with some of the currently available ones. One of these plantings has already finished flowering, but others will be available to view on the day.

As part of the new project funding agreement, the CFC is now able to react to important topical issues, which last year enabled the team to examine the issue of downy mildew control on crops of column stocks. This year it is proposed that the topics to be investigated will be *Botrytis* control in peony and further work on the petal spotting issue previously seen on sunflowers.

As more and more plant protection products are revoked, other factors will become more significant in an effort to control the range of pests and diseases encountered on nurseries. One of these factors is the optimisation of the growing environment, especially the microclimate immediately around plants, as demonstrated during last year's column stock downy mildew problem. To this end we have included presentations from two specialists at the open evening who will give an overview of the environmental parameters to consider in the production of protected crops, as well as an insight into the new technology available to accurately measure such parameters.

Finally following feedback from the 2018 open evening, an herbicide work package will focus on peony. An area has been planted up with four varieties to allow replicated trials in future years, work will be guided by a review of current practice to be completed later this year.

The CFC Management Group are now in the process of developing the 2020 trials programme and as always we would welcome input from the wider industry. Therefore please take this opportunity to let us have your views on what trials you would like to see the CFC undertake in the future.

Lyndon Mason

CFC Project Manager

ONGOING FUSARIUM TRIALS IN THE HAYGROVE TUNNEL

Trial 1 – Replicated variety susceptibility screening trial

Purpose of trial - to determine the susceptibility of the main commercial varieties and new 'Japanese varieties' of column stocks to *Fusarium oxysporum*. The tunnel was inoculated with *Fusarium* in 2017 and tests showed a good distribution of the pathogen throughout the soil.

Plant supplier - Florensis Cut Flowers and Globe Plants.

Varieties – 'Aida' (apricot, blue, purple and white), 'Anytime' (sea blue and white), 'Arrow' (white), 'Avalon'(white and yellow), 'Centum' (deep rose, pink, red, white and yellow), 'Debora', 'Fedora' (deep rose), 'Figaro' (lavender and rose light), 'Iron' (apricot, cherry blossom, marine, pink, purple, rose, white and yellow), 'Mathilda' (blue, pink, rose, white and yellow), 'Venus' (cherry blossom and pink) and 'Vintage Brown', (also three plots of lisianthus).

Planting density - 64 plants/m² (planted through porous white plastic mulch to prevent weeds).

Planting date - week 18.

Harvesting date - marketable stems in some plots from week 26 onwards.

Results/observations to date - the trial has shown some very significant differences in terms of varietal susceptibly to *Fusarium oxysporum*. As can be seen in the images on the next page, some of the varieties actually produced marketable stems while plots of others had totally succumbed to the disease.

The first graph is a summary of the assessment made on the 19 June 2019 and shows the varietal differences in terms of susceptibility (high score - poor, low score - good). 'Mathilda White' and 'Yellow' and some of the Japanese varieties such as 'Iron Cherry Blossom' and 'Purple' expressed a high degree of resilience to the disease. As in previous years, not a single lisianthus plant succumbed to the disease, again demonstrating the plant species specificity of *Fusarium oxysporum*.

The second graph shows the number of marketable stems/m² generated by each variety, at 1 July 2019.



















Trial 2 – Examination of Fusarium control by the use of T34

Purpose of trial - a recent AHDB funded trial investigating *Fusarium* control in lettuce indicated that T34 Biocontrol (*Trichoderma asperellum* – strain T34, a biopesticide for the control of *Fusarium*) applied to the peat blocks at seeding gave a degree of control of the disease. The CFC trial has replicated this technique with column stocks to assess its potential. T34 was applied to the blocks at seeding, immediately after planting into the tunnel, and then again 10 days later.

Seed supplier - Florensis Cut Flowers and Sakata

Varieties – 'Iron purple', 'Iron blue', 'Fedora deep rose' and 'Debora'.

Planting density - 64 plants/m² (planted through porous white plastic mulch to prevent weeds).

Planting date - week 22.

Harvesting date - the two 'Iron' varieties were flowering in week 26 but at the time of writing, the 'Fedora' and 'Debora' were not in full flower.

Results/observations to date - at the time of writing none of the plots were showing any serious signs of *Fusarium* so currently it is not possible to give any indication of the efficacy of T34 on column stocks. It is hoped that some results will be visible by the open evening.







COLUMN STOCK VARIETY TRIAL

Purpose of trial - to investigate the performance of new 'Japanese' varieties alongside traditional varieties of column stocks when planted towards the end of the normal stocks production season.

Plant supplier - Florensis Cut Flowers, Globe Plants and Newey Plants.

Varieties – 'Anytime' (deep purple, sea blue and white), 'Arrow' (white), 'Avalon' (white and yellow), 'Centum' (yellow), 'Mathilda' (rose and yellow), 'Figaro' (lavender and rose light), 'Iron' (apricot, cherry blossom, deep pink, marine, pink, purple, rose, rose pink, white and yellow), 'Venus' (cherry blossom and pink) and 'Vintage Brown'.

Planting density - 64 plants/m².

Planting dates - weeks 19, 21, 23 and 25.

Harvesting date - week 19 planting flowered in week 26, but at the time of writing the other plantings were not ready yet.

Results/observations to date - all plantings have grown away well, although flea beetle and downy mildew have proved challenging. The new 'Japanese' varieties have some interesting and strong colours, but the issue of manual selection of doubles and the associated higher cost of plugs does need to be addressed. It will be interesting to see if the later plantings produce a higher percentage of marketable stems than the traditional varieties as this could make the more expensive planting material more viable. Assessments of stem length and weight will be made for all plantings.







ASTRANTIA

Purpose of trial - to investigate new varieties of Astrantia for cut flower use.

Plug supplier - Walter Blom Plants.

Varieties – 'Sparkling pink' and Sparkling red stars'.

Planting density - 6 plants/m².

Planting date - week 33, 2018 then overwintered.

Harvesting date - a few short stems were produced from week 20, but the main flush was from weeks 23 to 25.

Results/observations to date - the crop produced a flush of very long (70cm plus), strong stems over a period of around two weeks and since then has continued to produce a small number of stems each week. Vase life tests are being undertaken.









SCABIOUS

Purpose of trial - to further investigate a range of cutting raised Scabious including the new 'Focal Scoop'.

Plant supplier - Danziger (via Kolster BV). HilverdaKooij did not provide their range for trial.

Varieties – 'Scoop' series from Danziger – 'Blackberry', 'Candy', 'Focal Bicolour Pink', 'Focal Hot Pink', 'Focal Lilac', 'Focal Purple', 'Focal Purple Lace', 'Lavender', 'Lollipop', 'Milky', 'Red Velvet', 'Soft' and 'Tutti Frutti'.

Planting density - 8 plants/m² in two rows per bed.

Planting dates - delivered in week 11, potted into 9cm pots, pinched in the pots and then planted out in week 20. Also three further varieties of 'Focal Scoop' planted in week 22 and pinched in week 26.

Harvesting date - first flowers in week 26.

Results/observations to date - the potted crop has succeeded in producing an earlier crop which was the aim in order to have the trial in flower by the earlier open evening. At the time of writing, the crop is looking strong and vigorous, but the first flowers have only just been harvested.









VERONICA

Purpose of trial - investigate vase life and commercial potential of cut flower Veronica.

Plant supplier - Danziger (via Kolster BV).

Varieties - 'Skyler blue', 'white' and 'pink'.

Planting densities - 25 plants/m² then thinned to 12/m² after first flush in 2019.

Planting dates - Planted in weeks 18 and 25, 2018.

Harvesting day - week 24.

Results/observations to date - the crop flowered from week 24 onwards and produced very tall (in excess of 1m), strong stems. However, powdery mildew was an issue and a decision was made to reduce the density from 25/m² to 12/m² by removing every other plant after cutting back the first flush. It was hoped that this will aid better air movement through the crop and permit enhanced penetration of fungicides throughout the crop canopy. Another issue in 2019 was fasciation (see top right hand image) which caused distortion of the flowers buds and was worse in the pink variety. This does seem to be a known issue with Veronica, but at this stage it is not known if 'Skyler' is more or less prone than any other variety.









LEPIDIUM

Purpose of trial - to look at the potential of a new variety of cut flower Lepidium.

Plant supplier - home propagated at Rookery and plugs supplied by Florensis Cut Flowers and Danziger.

Variety – 'Green Dragon'.

Planting densities - 25 and 64 plants/m².

Planting dates - weeks 23 and 25.

Harvesting date - not yet harvested at the time of writing.

Results/observations to date - too early to give an accurate assessment. The plugs have grown away vigorously, but do now seem to have produced premature buds.







LILY ALTERNATIVE GROWING MEDIA TRIAL

Purpose of trial - Bulrush funded trial to investigate the use of peat-free and peat-reduced mixes for the production of boxed lilies.

Variety - 'Dynamite' (14/16)

Planting density - 12 per crate.

Treatments - three peat-free and or peat-reduced mixes from Bulrush plus a standard grower mix as a control.

Planting date - week 25 and cold stored with a view to stand out in the tunnel in week 29.

Harvesting date - not yet harvested.

Results/observations to date - too early to make any firm observations.









INVESTIGATING THE CROP SAFETY OF NEW PLANT PROTECTION PRODUCTS

Purpose of trial - a new element of the CFC project intended to investigate the potential safety over cut flowers of plant protection products that have recently obtained new EAMUs. This year Frupica SC (mepanipyrim) is being investigated when used for powdery mildew control.

Varieties - Delphinium, Veronica 'Skyler pink' and pink, Solidago 'Solar' and 'Moonlight Glory' and Phlox white and pink.

Treatments - Frupica will be part of the applied spray programme in one area and will be excluded in the other area.

Planting date - week 26. Two identical areas have been planted to allow Frupica to be applied to one area but not the other.

Harvesting date - not yet harvested.

Results/observations to date - too early to make any firm observations.



OTHERS

Other NPD trials included Asclepias, Echinacea, Eucomis, and *Lysimachia fortunei* 'Jumbo' and 'Mamba'.



Asclepias



Eucomis



Echinacea



Lysimachia fortunei 'Jumbo' and 'Mambo'

Fedora plus T34	Iron Purple	Fedora	Debora	Iron Purple plus T34	Debora plus T34	Iron Blue plus T34	Debora plus T34 Iron Blue	Iron Purple		Fedora	Fedora plus T34	Iron Purple plus T34	Debora Iron Blue	Iron Blue plus T34	Iron Purple plus T34	Fedora plus T34	Debora	Fedora	Iron Purple	Debora plus T34	Iron Blue plus T34	Iron Blue	T34 Trial
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HAYGROVE TUNNEL

Variety Trial Rep 1
Iron Apricot
Venus Cherry Blossom
Centum White
Iron Cherry Blossom
Debora
Iron Rose
Anytime White
Venus Pink
Mathilda Rose
Aida Blue
Mathilda Blue
Iron White
Aida Apricot
Centum Deep Rose
Aida Purple
Fedora Deep Rose
Figaro Rose Light
Mathilda White
Arrow White
Centum Pink
Vintage Brown
Mathilda Pink
Centum Yellow
Anytime Sea Blue
Aida White
Figaro Lavender
Avalon White
Iron Marine
Iron Pink
Mathilda Yellow
Iron Yellow
Lisianthus
Iron Purple
Avaion yellow

Aida Purple Avalon White Centum White **Mathilda Blue** Variety Trial Rep 2 **Centum Yellow Mathilda Rose Arrow White** Venus Pink Anytime Sea Blue **Mathilda Yellow** Aida White Iron Pink Mathilda White Aida Blue Iron Rose Iron Yellow Iron White Venus Cherry Blossom Centum Red **Figaro Rose Light** Fedora Deep Rose **Avalon Yellow** Aida Apricot Debora Centum Deep Rose **Mathilda Pink** Vintage Brown **Figaro Lavender Centum Pink Anytime White** Iron Apricot Iron Cherry Blossom Lisianthus Iron Marine Iron Purple Debora Variety Trial Rep 3

Centum Deep Rose Arrow White Aida Purple **Centum Red Anytime White Mathilda Rose** Fedora Deep Rose Venus Cherry Blossom Venus Pink **Mathilda Yellow Centum Pink** Aida White **Avalon Yellow Mathilda Blue Centum White** Figaro Lavender Aida Blue Vintage Brown **Figaro Rose Light** Lisianthus **Anytime Sea Blue Mathilda Pink** Iron Yellow Iron Purple Mathilda White **Avalon White Centum Yellow** Aida Apricot Iron Apricot Iron Rose Iron White Iron Marine Iron Cherry Blossom Iron Pink

MULTISPAN TUNNEL 1

·		1	
Global Plants Arrow White 6 sq/m	Global Iron Rose 4 sq/m	Florensis Mathilda Rose 4.5 sq/m	
Florensis Anytime Yellow	Global Iron Purple 4 sq/m Global	Florensis Mathilda Pink 5.5 sq/m	
7.5 sq/m	4 sq/m	Florensis Mathilda Blue	
Florensis Anytime White	Florensis Cheerful Yellow 7 sq/m	7 sq/m	
7.5 sq/m Florensis	Florensis Cheerful White 8 sq/m	Florensis Noble Yellow 5.5 sq/m	Global Venus Pink 4 sq/m Global Venus Cherry
7 sq/m	Global Avalar Vallavi	Florensis Noble White	4 sq/m
	4 sq/m	7 sq/m	Mathilda Yellow 7 sq/m
Florensis Anytime Rose	Global Arrow White	Global Iron White	Florensis

MULTISPAN TUNNEL 2

	Phlox White	Eryngium	
	Phlox PassionZ	White Fall	
2018 Scabious	Solidago		
Lavender Hoop	Moonlight Glory		
Scoop	Solidago	Eryngium	
2018 Scabious	Solar Glory	Blue Fall	
Vanilla Scoop	Veronica Blue		2018 Asclepias incarnata
2018 Scabious	Veronica Pink	Eryngium Green Globe	Carmine Rose
Tutti Frutti Scoop	Delphinium Blue		
	Phlox White	Pinks	
2018 Scabious	Phlox PassionZ	Bridal Star	2018 Asclepias
Candy Scoop	Solidago Moonlight Glory		<i>incarnata</i> White
	Solidago	Pinks	
2018 Scabious	Solar Glory	Red Carpet	
Strawberry Scoop	Veronica Blue		2018 Asclepias
2018 Scabious	Veronica Pink	Pinks Pink Raffles	Apollo Orange
Cherry Vanilla	Delphinium Blue		
Scoop			
2018 Veronica		Eucomis	
Skyler Pink	Lysimachia	autumnalis	
	Mambo	Eucomis	Astrantia
2018 Veronica		Sparkling Burgundy	Sparkling Red Star
Skyler Blue		Eucomis	
2040 Marcata		Playa Blanka	
2018 Veronica	lucimachia	Eucomis	
Skylet Pilik	Lysiniachia	bicolor Eucomic	
2018 Voronica	Julibo	comosa	
Skylor Dink		Eucomic	
Skyler i lik	Monardia	comosa (plugs)	
2018 Veronica	Panama	Fucomis	
Skyler Blue	Monardia	bicolor (plug)	Astrantia
	Lambarda	Echinacea	Sparkling Pink Star
2018 Veronica	Asclepias	Green Jewel	
Skyler Pink	Apollo Orange	Echinacea	
	Asclepias	Summer Cocktail	
Phlox PassionZ	tuberosa	Echinacea	
Phlox BlushZ	Asclepias	Marmalade	
Phlox InnocenZ	Gay Butterflies	Echinacea	
	Asclepias	Sombrero	
	Silkweed	Echinacea	

MULTISPAN TUNNEL 3

Iron PurpleVintage BrownIron PinkVintage BrownIron PinkVenus PinkIron MarineVenus PinkIron MarineVenus Cherry BlossomFigaro Rose LightVenus Cherry BlossomIron Cherry BlossomFigaro LavenderIron Cherry BlossomIron ApricotIron ApricotFigaro Light Avalon YellowIron ApricotIron Rose PinkAvalon YellowIron YellowAvalon WhiteIron RoseAvalon WhiteIron RoseArrow WhiteIron PurpleWEEK 23WEEK 23WEEK 25WEEK 25Iron PinkVenus PinkIron MarineVenus PinkIron PinkVenus Cherry BlossomIron MarineVenus PinkIron PinkVenus PinkIron MarineVenus PinkIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron YellowAnytime Deep PurpleIron YellowIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron WhiteIron WhiteIron WhiteIron ApricotFigaro Light RoseIron ApricotIron WhiteAvalon YellowIron WhiteAvalon YellowAvalon YellowAvalon YellowArrow WhiteIron RoseIron WhiteIron WhiteIron WhiteAvalon YellowIron Rose	WEEK 19	WEEK 19	WEEK 21	WEEK 21
Iron PinkVenus PinkIron MarineVenus Cherry BlossomIron MarineVenus Cherry BlossomFigaro Rose LightVenus Cherry BlossomIron Cherry BlossomFigaro LavenderIron Deep PinkIron WhiteIron ApricotFigaro LavenderIron ApricotIron Rose PinkCentum YellowMathilda PinkIron ApricotIron Rose PinkAvalon YellowIron YellowAvalon YellowMathilda BlueAvalon WhiteIron RoseArrow WhiteIron PurpleWEEK 23WEEK 23WEEK 25WEEK 25Iron PurpleVintage BrownIron PinkVintage BrownIron ApricotFigaro Light RoseIron MarineVenus Cherry BlossomIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowMathilda BlueIron Cherry BlossomNeus Cherry BlossomIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron YellowAnytime Deep PurpleIron WhiteIron YellowArrow WhiteIron WhiteIron White	Iron Purple	Vintage Brown	Iron Pink	Vintage Brown
Iron MarineVenus Cherry BlossomFigaro Rose LightVenus Cherry BlossomIron Cherry BlossomFigaro LavenderIron Deep PinkIron WhiteIron ApricotFigaro LavenderIron Cherry BlossomIron YellowCentum YellowMathilda PinkIron ApricotIron Rose PinkAvalon YellowIron YellowAvalon YellowMathilda BlueAvalon WhiteIron RoseArrow WhiteIron RoseArrow WhiteIron RoseArrow WhiteIron PurpleWEEK 23WEEK 23WEEK 25WEEK 25Iron PurpleVintage BrownIron PinkVenus Cherry BlossomIron ApricotFigaro Light RoseIron ApricotIron SesomIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowArrow WhiteIron ApricotIron YellowAvalon YellowAnytime Deep PurpleIron WhiteIron WhiteIron ApricotFigaro Light RoseIron ApricotIron WhiteAvalon YellowArrow WhiteIron WhiteIron RoseAvalon YellowArrow WhiteAvalon YellowIron Rose	Iron Pink	Venus Pink	Iron Marine	Venus Pink
Iron Cherry BlossomFigaro LavenderIron Deep PinkIron WhiteIron ApricotFigaro LavenderIron Cherry BlossomIron YellowCentum YellowMathilda PinkIron ApricotIron Rose PinkAvalon YellowIron YellowAvalon YellowMathilda BlueAvalon WhiteIron WhiteIron RoseAvalon WhiteIron RoseArrow WhiteIron RoseArrow WhiteIron PurpleIron PurpleWEEK 23WEEK 23WEEK 25WEEK 25WEEK 25Iron PinkVenus PinkIron PinkVintage BrownVintage BrownIron PinkVenus PinkIron MarineVenus Cherry BlossomIron MarineVenus Cherry BlossomIron ApricotFigaro Light RoseIron ApricotIron YellowAnytime Deep PurpleIron WhiteAvalon WhiteIron WhiteAvalon WhiteIron RoseIron WhiteAvalon WhiteIron WhiteAvalon YellowIron RoseIron Yellow	Iron Marine	Venus Cherry Blossom	Figaro Rose Light	Venus Cherry Blossom
Iron ApricotFigaro LavenderIron Cherry BlossomIron YellowCentum YellowMathilda PinkIron ApricotIron Rose PinkAvalon YellowIron YellowAvalon YellowMathilda BlueAvalon WhiteIron WhiteAvalon WhiteIron RoseArrow WhiteIron RoseArrow WhiteIron PurpleWEEK 23WEEK 23WEEK 25WEEK 25Iron PurpleVintage BrownIron PinkVintage BrownIron MarineVenus PinkAnytime Sea BlueVenus PinkIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron YellowAnytime Deep PurpleIron WhiteArrow WhiteIron WhiteAvalon YellowIron RoseAvalon YellowArrow WhiteIron NarineIron YellowIron ApricotFigaro Light RoseIron ApricotIron WhiteArrow WhiteIron WhiteAvalon YellowIron Rose	Iron Cherry Blossom		Iron Deep Pink	Iron White
Centum YellowMathilda PinkIron ApricotIron Rose PinkAvalon YellowIron YellowAvalon YellowMathilda BlueAvalon WhiteIron WhiteIron RoseIron RoseArrow WhiteIron RoseArrow WhiteIron PurpleWEEK 23WEEK 23WEEK 25WEEK 25Iron PurpleVintage BrownIron PinkVintage BrownIron MarineVenus PinkIron MarineVenus Cherry BlossomIron MarineIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron WhiteIron YellowIron YellowAvalon YellowIron WhiteIron WhiteIron YellowAvalon YellowArrow WhiteIron WhiteIron Rose	Iron Apricot	Figaro Lavender	Iron Cherry Blossom	Iron Yellow
Avalon YellowIron YellowAvalon YellowMathilda BlueAvalon WhiteIron WhiteIron RoseAvalon WhiteIron RoseArrow WhiteIron RoseArrow WhiteIron PurpleWEEK 23WEEK 23WEEK 25WEEK 25Iron PurpleVintage BrownIron PinkVenus PinkIron MarineVenus Cherry BlossomIron ApricotVenus Cherry BlossomIron ApricotIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon WhiteIron WhiteAnytime Deep PurpleIron WhiteAvalon WhiteArrow WhiteAvalon WhiteIron Rose	Centum Yellow	Mathilda Pink	Iron Apricot	Iron Rose Pink
Avalon WhiteIron WhiteAvalon WhiteIron RoseArrow WhiteIron RoseArrow WhiteIron PurpleWEEK 23WEEK 23WEEK 25WEEK 25Iron PurpleVintage BrownIron PinkVintage BrownIron PinkVenus PinkAnytime Sea BlueVenus PinkIron MarineVenus Cherry BlossomIron MarineVenus Cherry BlossomIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon WhiteIron WhiteAnytime Deep PurpleIron WhiteArrow WhiteIron WhiteAvalon YellowIron Rose	Avalon Yellow	Iron Yellow	Avalon Yellow	Mathilda Blue
Arrow WhiteIron RoseArrow WhiteIron PurpleWEEK 23WEEK 23WEEK 25WEEK 25Iron PurpleVintage BrownIron PinkVintage BrownIron PinkVenus PinkAnytime Sea BlueVenus PinkIron MarineVenus Cherry BlossomIron MarineVenus Cherry BlossomIron MarineIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron WhiteAnytime Deep PurpleIron WhiteArrow WhiteArrow WhiteIron Rose	Avalon White	Iron White	Avalon White	Iron Rose
WEEK 23WEEK 23WEEK 25WEEK 25Iron PurpleVintage BrownIron PinkVintage BrownIron PinkVenus PinkAnytime Sea BlueVenus PinkIron MarineVenus Cherry BlossomIron MarineVenus Cherry BlossomIron Cherry BlossomMathilda BlueIron Cherry BlossomIron ApricotIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron WhiteAnytime Deep PurpleIron WhiteArrow WhiteIron WhiteArrow WhiteIron Rose	Arrow White	Iron Rose	Arrow White	Iron Purple
WEEK 23WEEK 23WEEK 23WEEK 23Iron PurpleVintage BrownIron PinkVintage BrownIron PinkVenus PinkAnytime Sea BlueVenus PinkIron MarineVenus Cherry BlossomIron MarineVenus Cherry BlossomIron MarineIron Cherry BlossomMathilda BlueIron Cherry BlossomAnytime WhiteIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron YellowAnytime Deep PurpleIron WhiteArrow WhiteArrow WhiteAvalon WhiteIron RoseIron PurpleArrow WhiteIron PurpleIron Purple	WEEK 22	WEEK 22	WEEK 25	WEEK 25
Iron PurpleVintage BrownIron PinkVintage BrownIron PinkVenus PinkAnytime Sea BlueVenus PinkIron MarineVenus Cherry BlossomIron MarineVenus Cherry BlossomIron Cherry BlossomMathilda BlueIron Cherry BlossomAnytime WhiteIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron YellowAnytime Deep PurpleIron WhiteArrow WhiteArrow WhiteIron RoseIron PurpleArrow WhiteIron Purple	WEER 25	WEEK 25	WEER 25	WEEK 25
Iron PinkVenus PinkAnytime Sea BlueVenus PinkIron MarineVenus Cherry BlossomIron MarineVenus Cherry BlossomVenus Cherry BlossomIron Cherry BlossomMathilda BlueIron Cherry BlossomAnytime WhiteIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron YellowAnytime Deep PurpleIron WhiteArrow WhiteArrow WhiteAvalon YellowIron RoseArrow WhiteArrow WhiteIron PurpleIron Purple	Iron Purple	vintage Brown		vintage Brown
Iron MarineVenus Cherry BlossomIron MarineVenus Cherry BlossomIron Cherry BlossomMathilda BlueIron Cherry BlossomAnytime WhiteIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron YellowAnytime Deep PurpleIron WhiteArrow WhiteArrow WhiteAvalon YellowIron RoseArrow WhiteArrow WhiteIron PurpleIron Purple	Iron Pink	Venus Pink	Anytime Sea Blue	Venus Pink
Iron Cherry BlossomMathilda BlueIron Cherry BlossomAnytime WhiteIron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron YellowAnytime Deep PurpleIron WhiteAvalon WhiteIron WhiteAvalon YellowIron RoseArrow WhiteArrow WhiteIron RoseIron Purple	Iron Marine	Venus Cherry Blossom	Iron Marine	Venus Cherry Blossom
Iron ApricotFigaro Light RoseIron ApricotIron YellowAvalon YellowIron YellowAnytime Deep PurpleIron WhiteAvalon WhiteIron WhiteAvalon YellowIron RoseArrow WhiteArrow WhiteArrow WhiteIron Purple	Iron Cherry Blossom	Mathilda Blue	Iron Cherry Blossom	Anytime White
Avalon Yellow Iron Yellow Anytime Deep Iron White Avalon White Iron White Avalon Yellow Iron White Arrow White Arrow White Avalon White Iron Rose Iron Purple Iron Rose Iron Purple	Iron Apricot	Figaro Light Rose	Iron Apricot	Iron Yellow
Avalon White Iron White Avalon Yellow Arrow White Arrow White Iron Rose Arrow White Iron Purple	Avalon Yellow	Iron Yellow	Anytime Deep Purple	Iron White
Arrow White Arrow White Iron Rose Arrow White Iron Purple	Avalon White	Iron White	Avalon Yellow	
Arrow White Iron Purple	Arrow White	Arrow White	Avalon White	Iron Rose
			Arrow White	Iron Purple

OUTDOOR AREA



OUTDOOR FOLIAGE AREA

M u t s p a	Calicarpa Profusion	Forsythia int. Spectabilis	Philadelphus Snow White Fantasy
n T u n n e	Calicarpa Magical Snowstar		
I T h r e e	Calicarpa Magical Purple Giant	Forsythia Golden Fantasy	Philadelphus Snowbelle
	Calicarpa Magical Amethia		

Notes			