



Grower Summary

**The National Cut-flower Trials Centre Programme
for 2018 - 2023**

PO/BOF 002b

Final report

Project title: The National Cut-flower Trials Centre Programme for
2018 - 2023

Project number: PO/BOF 002b

Project leader: Lyndon Mason
(Director, The Cut Flower Centre Ltd)

Report: Final Report (2023)

Previous report: Annual Report (2022)

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Location of project: Mainly office based but also field based trials at:-

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[The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations.]

GROWER SUMMARY

Headline

- Eight peony herbicide trials spanning 2018 to 2024 have facilitated the production of a detailed web note on the topic entitled *Weed control in outdoor peony crops for cut flower production*.
- Five column stock downy mildew fungicide susceptibility trials undertaken by FERA spanning 2018 to 2024 has facilitated the production of the original and updated version of AHDB/CFC Information Sheet 11, *Maintaining successful control of downy mildew in protected crops of cut flower column stocks*.
- Further webpages have been written in 2023 including, *A summary of minor crops trialled at the CFC*, *Management of botrytis in cut flower peony crops* and *Tanacetum as a cut flower for the UK market*.
- This is in addition to those prepared throughout the life of the project ie [CFC/AHDB Information Sheet 9. 'Sunflowers \(*Helianthus annuus* cultivars as a field and tunnel grown cut flower crop](#), [CFC/AHDB Information Sheet 10. 'Alstroemerias \(*Alstroemeria* hybrids\) as tunnel grown cut flower crop](#), [CFC/AHDB Information Sheet 11. 'Maintaining successful control of downy mildew in protected crops of cut flower column stocks](#) (now updated as the webpage [Downy mildew control in protected crops of cut flower column stocks](#)), [Management of botrytis in cut flower peony crops](#), [New webpage. Ornamental grasses suitable for use as 'fillers' in mixed bouquets](#) and [seed raised species suitable for "fillers" in mixed bouquets](#).
- A cut flower group has been developed with the BPOA to enable contributions to be collected by the industry on behalf of the Horticultural Crop Protection Ltd (HCP).
- Growers are now contributing to the HCP to enable the provision of cut flower EAMU's to continue.

- Over the life of the project, 20 New Product Development (NPD) trials have been undertaken which has resulted in the commercial scale production of *Eryngium* and *Tanacetum*.
- A number of other products are also produced on a smaller scale especially by specialist and artisan growers including *Ammi*, *Aster ericoides*, *Astrantia*, *Craspedia*, *Limonium*, Scoop Scabious and Veronica.
- Variety trials have been undertaken with column stocks especially the lines that are more heat tolerant such as Stox leading to these being produced commercially.
- Further investigations into the ongoing sunflower spotting issue has isolated *Itersonilia* leading to the postulation that it could be the primary cause of the problem.

Background

The National Cut Flower Trials Centre (CFC) was proposed by industry representatives and subsequently funded by the HDC (now AHDB Horticulture), starting in 2007. Its short-term aim was to provide information on new product development, novel or alternative cut flowers for production outdoors or in tunnels to stimulate UK production.

2018 was the first year of a new funded project at the CFC and after taking guidance from industry, a new five year programme of work (2018 to 2022) was agreed to broaden the remit of the CFC, addressing a wider range of issues beyond new product development (NPD). Topics addressed in the first three years included: ongoing trials examining *Fusarium* control in column stocks production in conjunction with Warwick University, evaluation of new herbicide products for field-grown crops and reactive trials examining current important industry issues. During 2018 the latter enabled the CFC to quickly investigate the downy mildew outbreak in column stocks, commission sensitivity testing by FERA and recommend a revised spray programme to address the issue of poor control on some nurseries. The spray programme developed as a result of this work continues to be the mainstay of the industry and has avoided any additional major outbreaks of the disease on UK grown column stocks.

The Covid 19 pandemic prevented CFC trials from going ahead in 2020

extending the end date of the project to 2023. Due to the sale of the CFC trials site at Rookery Farm the final trials in 2023 were undertaken on growers holding. Other work in 2023 has concentrated on updating and producing new web pages and technical notes and facilitating the cut flower industry input into the new Horticultural Crop Protection (HCP) Ltd which has taken on the role of providing EAMUS for the Horticultural Industry

Summary

Additional Web Pages

New technical notes and webpages have been produced or updated in 2023 include

A summary of trials not included in previous technical notes

Maintaining successful control of downy mildew in protected crops of cut flower column stocks

Management of botrytis in cut flower peony crops

Tanacetum as a cut flower for the UK market

Weed control in outdoor peony crops for cut flower production

These supplement the 5 pieces of technical information produced for growers and advisors through the life of this current project (2018-2023)

Column stocks (Matthiola) – Additional downy mildew fungicide sensitivity trials and updating of technical note.

Downy mildew continues to be a threat to the column stock industry especially with the potential withdrawal of some of the key active ingredients of some of the fungicides used for its control. In order to identify any new actives that could be introduced to a revised spray programme, the CFC commissioned further fungicide sensitivity trials at FERA using samples of DM collected from growers holdings in 2023. The purpose of the trial was to investigate potential new products for stocks DM control and because these are not currently approved for this usage they can only appear as coded products at this stage. However, as can be

seen from the results of the trial copied at appendix I of the main report, some achieved very good control of the disease and EAMU's are now being actively pursued. The 2019 technical note, [*Downy mildew control in protected crops of cut flower column stocks*](#) is now available from the AHDB archive website.

Horticultural Crop Protection (HCP) Ltd

The demise of AHDB Horticulture left the industry without a viable route to obtain and update EAMU's relating to the specific horticultural sectors including cut flowers. In order to fill this gap, Horticultural Crop Protection Ltd (HCP) was established under the British Growers umbrella of Crop Associations and Companies. HCP is funded from voluntary contributions from growers which are collected through the Grower Associations (GA) for the different sectors. As the cut flower sector does not have a specific GA a solution was required to enable cut flower growers to be able to contribute to HCP. Rather than to try and set up a new GA, after discussions with the British Protected Ornamental Association (BPOA) it was agreed that a cut flower sub group would be established. This will enable the BPOA to collect HCP contributions on behalf of the cut flowers sector. This system is now in place and cut flower growers are already contributing to the HCP but in order to make the system sustainable it will require additional growers to be involved.

Peony herbicide trial

The area of UK grown peony has increased over the past decade and one of the main issues that growers face is weed control. This was highlighted at the 2019 CFC Open Day where it was identified as the top priority for future trials conducted by the CFC. In order to address this need, the CFC has instigated a number of trials to investigate both pre and post weed emergence control. The 2022 trial investigated the use of contact and systemic herbicides applied after the crop has been cut down in the Autumn. In 2023 these herbicides were applied again in July, after harvesting but before the crop had been cut back in order to

determine the level of damage to the foliage. These and previous CFC trials have facilitated the production of the new web page [Weed control in outdoor peony crops for cut flower production | AHDB](#) .

Sunflower petal spotting issue.

The CFC has for some years investigated the petal spotting issues that occur on UK grown sunflowers for cutting, but no conclusive cause of the problem has so far been identified. In previous years the disease *Itersonilia perplexans* was isolated from some samples, but not from all, meaning that it could not be categorically identified as the cause of the problem. Unfortunately, the methodology required to identify *Itersonilia* was notoriously difficult but has recently been revised for the investigation of parsnip canker which can be caused by *Itersonilia spp.* Some of this work on parsnips has been undertaken by Lauren Chappell from Warwick Life Sciences who was contacted by the CFC with a view to develop a joint project to further investigate the sunflower issue. During the 2022 season, Lauren and other colleagues from Warwick visited sunflower fields in Lincolnshire to better understand the production process and also collected samples to return to the labs in order to refine their technique for testing for sunflower *Itersonilia*.

The 2022 work in conjunction with Warwick Life Sciences has indicated that *Itersonilia* could be the primary cause of the ongoing sunflower spotting issue because it has been regularly isolated from samples showing the symptom. However, it was not isolated from every sample and further samples were needed to confirm that it was the main pathogen involved with the problem. Unfortunately, the industry did not provide any additional samples in 2023 as the problem was rarely seen. The Project Manager will continue to liaise with both the researchers and growers beyond the life of the CFC and it is hoped that additional funding can be secured to investigate the issue further.

Financial Benefits

This is the final year of the CFC project and as such any financial benefits reported should

also take into account the potential £2.5 million of new product trialled and facilitated by previous CFC programmes.

One of the main ongoing financial benefits to the industry from the current 5 year CFC work plan has been from the 2018 work on downy mildew in column stocks. The 2018 work was able to quickly develop an effective new spray programme that, when adopted by growers, reduced losses considerably. Since then, the CFC has continued to monitor the situation and has ensured that the spray programme continues to be effective by follow sensitivity testing in 2019 and 2021. Phytotoxicity trials were also undertaken in 2022 as part of the scoping work to develop additional products to include in the spray programme and a final sensitivity trial undertaken in 2023. The outcome of these most recent trials has been used to produce a revised web page and amended suggested spray programme for the control of DM on column stocks. As in previous years, it is impossible to put an exact figure on the savings, the ongoing adoption of the control measures and spray programme from the 2018 trials resulted in no known major outbreaks of downy mildew on column stocks. The UK produces about 11 million stems at an average of 32p per stem in 2023, making a total industry value of around £3.5m. Again, using conservative industry estimate of potential crop loss from the new strain of downy mildew (based on 2018 losses in Holland and the UK) of 10% represents an annual saving to the industry in 2023 of over £350,000.

A number of new products trialled during the 6 years of the current CFC programme such as *Ammi majus and visnaga*, *Aster ericoides*, *Astrantia*, *Daucus carota*, *Lepidium*, *Limonium*, *Scabious* and *Veronica* have been planted by small to medium sized nurseries. An estimate of the total area of these new products in 2023 is 4 ha and if *Scabious* is used as an example, with a yield of around 30 stems/m² at a return of 25p per stem this is an additional annual farm gate value of £3000,000.

Other new products have been planted either on a commercial scale or as commercial trials for supply to the supermarkets. These include *Eryngium*, *Tanacetum*, Willow and other woody foliage. An estimate of the area of these products would be 8ha and with an estimated

average farm gate value of £30,000 to £50,000 per ha depending on species

this amounts to an additional total farm gate value of between £240,000 and £400,000.

The following section is a summary of all of the trials undertaken during the final 6 years of the CFC project and signposts the annual report they can be found in. The annual reports can be accessed from the CFC project page on the AHDB archive website ([The National Cut Flower Centre Trials Programme for 2018 to 2022 | AHDB](#)).

Asclepius incarnata and tuberosa variety trial covered in the 2018 and 2019 annual reports.

Ammi majus and visnaga spacing and variety trials covered in the 2018 and 2019 annual reports and a new web page [Seed-raised species suitable for use as 'fillers' in mixed bouquets | AHDB](#) .

Aster ericoides variety and spacing trial covered in the 2021 and 2022 annual reports.

Astrantia variety and continuity trial covered in the 2018, 2019 and 2021 annual reports.

Craspedia variety trial covered in the 2021 annual report.

Dahlia vase life trials in conjunction with Floralife covered in the 2018 annual report.

Daucus carota spacing and variety trials covered in the 2018 and 2019 annual reports and a new web page [Seed-raised species suitable for use as 'fillers' in mixed bouquets | AHDB](#) .

Didiscus caeruleus variety trial covered in the 2019 annual report.

Echinacea variety trial covered in the 2018 and 2019 annual reports.

Eryngium variety trial covered in the 2019 annual report.

Eucomis autumnalis seed and corm raised variety trial covered in the 2018 and 2019 annual reports.

Gomphrena spacing, continuity, harvesting techniques and variety trial covered in the 2019 and 2021 annual reports.

Lepidium spacing and different forms of planting material trial covered in the 2019 annual report.

Lily alternative growing media trials in conjunction with Bullrush covered in the 2018 and 2019 annual reports.

Limonium (statice) variety and spacing trial of new annual and perennial varieties covered in the 2021 and 2022 annual reports.

Lysimachia fortunei variety trial covered in the 2018, 2019 and 2021 annual reports.

***Matthiola incana* (Column stocks)**

- *Fusarium oxysporum* variety susceptibility trial covered in 2018, 2019 and 2022 annual reports.
- Variety trial of late flowering Japanese varieties covered in the 2018 and 2019 annual reports.
- *Fusarium oxysporum* control using biological agents covered in the 2019, 2021 and 2022 annual reports.
- Downy mildew (DM) control of a new and aggressive “Dutch strain” covered in the 2018, 2019 and 2023 annual report and revised technical guidance webpage [Downy mildew control in protected crops of cut flower column stocks | AHDB](#).
- Phytotoxicity of new DM chemicals covered in the 2022 annual report.
- Variety trial of the new ‘Stox’ range of *Matthiola* covered in the 2022 annual report.
- Elicitors for *Fusarium* control covered in the 2022 annual report.

Monarda demonstration plots covered in the 2018 annual report.

Peony herbicide trials covered in the 2019, 2021, 2022 and 2023 annual reports and summarised in a new technical guidance webpage [Weed control in outdoor peony crops for cut flower production](#).

Scabious variety trial featuring the new Scoop series covered in the 2018, 2019, and 2021 annual reports and a web page [Scabious as a cut flower for the UK market | AHDB](#).

Seed priming trials covered in the 2021 and 2022 annual report.

***Tanacetum vulgare* (Matricaria)** variety and continuity trials covered in the 2021 and 2022 annual reports.

Trachelium caeruleum variety and spacing trial covered in the 2021 annual report.

Veronica longifolia spacing, variety, continuity and disbudding trial covered in the 2018, 2019 and 2021 annual reports.

Zinnia vase life trials in conjunction with Floralife covered in the 2018 annual report.

Other web pages and technical notes during this period.

[CFC/AHDB Information Sheet 9. ‘Sunflowers \(*Helianthus annuus* cultivars as a field and tunnel grown cut flower crop.](#)

[CFC/AHDB Information Sheet 10. ‘Alstroemerias \(*Alstroemeria* hybrids\) as tunnel grown cut flower crop.](#)

[Factsheet 01/20. Guidelines for the post-harvest handling of cut flowers and foliage.](#)

[New webpage. Management of botrytis in cut flower peony crops.](#)

[New webpage. Ornamental grasses suitable for use as 'fillers' in mixed bouquets.](#)

[New webpage. Seed raised species suitable for "fillers" in mixed bouquets.](#)

[New webpage. Summary of minor crops trialled at the CFC.](#)

[New webpage. Tanacetum as a cut flower for the UK market.](#)

[New webpage. Weed control in outdoor peony crops for cut flower production.](#)

[Webpage update. Downy mildew control in protected crops of cut flower column stocks.](#)

Action Points

- Column stock growers should continue to be vigilant to the ongoing threat of the new and very damaging strain of downy mildew identified in 2018, and obtain a copy of, and implement the recommendations of the AHDB webpage [Downy mildew control in protected crops of cut flower column stocks](#).
- As part of the column stocks downy mildew work, the CFC is investigating the possibility of obtaining EAMU's to add more fungicides to the DM armoury via the newly formed Horticultural Crop Protection Ltd and growers should therefore keep themselves regularly updated on new EAMU approvals via the internet, their local agronomist or the [HCP website](#).
- Peony growers should keep themselves up to date with the CFC herbicide trials and any new EAMU's issued.
- Sunflower growers will have the opportunity to be involved with the ongoing petal spotting issues if further collaborative trials can be developed and should keep themselves up to date with developments.
- Growers can consider voluntarily contributing to the HCP via the BPOA to ensure that the future provision of cut flower EAMU's can be maintained.