



Grower Summary

The National Cut-flower Trials
Centre Programme for 2018 - 2022

Annual report 2021

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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.]

AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

Lyndon Mason

Project Manager and Director

Cur Flower Centre Ltd

Signature Date

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GROWER SUMMARY

Headline

- *Tanacetum* has been demonstrated to be a crop that can be produced by growers for the home market.
- *Astrantia major* continues to show the potential to be developed as a new UK cut flower crop which is currently in demand by the market.
- *Trachelium* is also a crop that could be developed by the UK growers if demand can be developed with the supermarkets.
- New varieties of Scoop Scabious continue to be well received by the industry but owing to the high labour costs of harvesting they are only likely to be sold to higher value niche markets in the foreseeable future.
- Varieties of Gomphrena have shown potential for production as seed raised fillers which can be harvested by once over cropping but they need to be trialled further by the industry.
- Ongoing Peony herbicide trials have shown HDC H44 could be added to the armoury if an EAMU for use on Peony can be obtained.
- Removing the centre flower bud from Veronica produced a taller, heavier and more floriferous premium end product.
- New varieties of tissue cultured Limonium have generated interest within the industry but further trials to assess their economic potential will be undertaken in 2022.

Background

The National Cut Flower Trials Centre (CFC) was proposed by industry representatives and subsequently funded by the HDC (now AHDB Horticulture)¹, starting in 2007. Its short-term aim was to provide information on new product development, novel or alternative cut flowers

¹ Initially with part-funding from the Lincolnshire Fenlands LEADER+ programme

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 in 2020 resulted in the CFC losing a full year of trials and because of this the end date of the project has been moved from 2022 to 2023. Most of the trials planned for 2020 were moved to 2021 including the perennial trials which were left in situ for an additional year. After the industry voted to end the AHDB levy, the AHDB have agreed that the CFC will be one of the ongoing legacy projects ensuring funding will continue to the end of the contract for the work in 2023.

Summary

Aster ericoides.

Aster ericoides is a product that is imported to the UK for use mainly as a filler in mixed bouquets. It naturally flowers in the Autumn but can be manipulated to produce an AYR crop using blackouts and night break lighting. The CFC has investigated the crop in previous years and it was included in the 2021 trials following a request from a local packer who was interested in single flowered varieties.

A range of varieties were planted in week 20 and once the plants were well established they

grew away rapidly. By the time that the crop was in flower in early October some of the stems were nearly 2m tall and a substantial number of extra stakes were required to keep the stem upright. No powdery mildew was observed on the crop (a regular prophylactic fungicide programme had been applied) and while very long, bulky marketable stems were produced, they were too large to be usable by supermarkets. At the open day in September, it was suggested that once the stems are growing away vigorously they should be cut back again to encourage shorter and lighter shoots that would be more suited for use as fillers in mixed bouquets. This technique will be applied to next year's trial.

Astrantia major

Astrantia was planted at the CFC for the first time in 2018, with a trial of a new range of varieties including 'Sparkling Stars Pink' and 'Sparkling Stars Red'. There was a favourable market response to this crop in 2018 and with it being a perennial plant they were overwintered into 2019. It had only been intended to overwinter these for one more year but owing to the Covid issues in 2020 they were left in situ to enable them to be viewed again at the 2021 Open Day.

In 2019 and 2020 the trial produced a flush of good quality marketable stems with a stem length that was consistently in excess of 65cm and with a VL of between 10 and 12 days. In 2021 the crop produced the first stems in week 19 and continued to flush heavily for a number of weeks, again producing long good quality stems. Owing to the size of the flush and an attack of leaf miner it was decided to cut back the plants in week 25, which resulted in a second good quality flush from week 28 onwards.

Astrantia appears to have the potential for UK production as both an outdoor and protected crop and is already being commercially trialled by some growers. A number of new varieties are also now available over and above those planted at the CFC.

Column stocks (Matthiola) - Fusarium T34 trial.

An AHDB funded trial investigating *Fusarium* on 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. In order to assess the potential of T34 to control *Fusarium* in column stocks, the CFC intended to replicate this technique in 2021 by asking the Dutch propagator of the plugs to apply T34 and Prestop (*Gliocadium catenulatum* - another product claimed to have some control of *Fusarium oxysporum*), at the seeding stage. Unfortunately, the products were not actually applied until dispatch of the seedlings so it was decided that rather than lose a full year of trials, the products would be applied after planting into the tunnel already infected with *Fusarium oxysporum*.

The results of the 2021 trial did not show any visual or statistical control of the disease by either of the products. In 2022 the original proposed trial will be revisited to investigate the effect of a commercial propagator drenching the plugs with T34 and Prestop at the seeding stage.

***Gomphrena haageana* varieties**

Gomphrena has been investigated by the CFC in previous years, and of the species trialled *G. haageana* was the only one that produced stems that were long enough to be suitable for use as a filler in mixed bouquets. The product was not taken up by the industry but recent interest in UK produced fillers resulted in a request to revisit *Gomphrena* trials especially to investigate if labour costs could be reduced by once over harvesting, with the crop then being graded over a flower line.

Two plantings were made in 2021 i.e. week 25 and week 30. The week 25 planting started flowering around week 32 and was in full flush by week 36 and consistently produced flower stems in excess of 50 cm long. The week 30 planting did not produce stems of adequate length to be marketable. The week 25 crop was not harvested at the optimum time in order that it could be viewed at the September Open Day. The feedback from some growers at the Open Day was that it had potential for once over harvesting and that they would now undertake their own trials.

Limonium

Limonium is grown in Holland but is not produced by many UK growers. Of the product that is grown in the UK, most is direct seeded annual varieties, with very little perennial crop being produced. New varieties of micro propagated Limonium from Danziger were offered to the CFC in 2021 from the Danziger Safora and Sensy family.

The plants established well and grew away without any issues. The Sensy colours were the first to flower from week 33 onwards and produced a flush of very strong and tall stems in excess of 65cm long. The Safora colours flowered quite a bit later and were not ready to cut until week 40 and produced stems that while marketable, were shorter and weaker than Sensy. All plants will be overwintered and further assessments made in 2022, including an economic assessment of the crop's potential.

Peony herbicide trial

At the CFC 2019 Open Day, herbicide trials on Peony were given high priority by the industry, and as a result plans were drawn up to develop a number of trials over the life of the CFC project. The first of these was planted in the autumn of 2019, with the treatments being applied in February of 2020 and 2021. Two products were trialled that have not been previously used on Peony i.e. Hurricane SC (500g/l diflufenican), both on its own and also tank mixed with Stomp Aqua (455g/l pendimethalin); and HDC H44 both on its own and also tank mixed with Sunfire (500g/l flufenacet).

Owing to the very dry Spring of 2020 and 2021, there was little weed growth in any of the plots during the period that these herbicides would still be active. Assessments were made for phytotoxicity, stem length and total stems per plot but weed control could not be assessed. Expected range of activity for the selected treatments however is summarised below.

Treatment	Expected activity
Sunfire	Mainly for grass control, has worked well and has current ornamentals approval

HDC H44	Wide range of weed activity and also some good post emergence activity Will need an EAMU for ornamentals if effective
Hurricane	Long residual activity and has existing ornamentals approval
Stomp Aqua	Has ornamentals approval and is a safe option, well used on peonies already and good record/experience with it

In the 2020 trial, some shoots had already emerged when the herbicide treatments were applied. This resulted in a significant amount of damage in the Hurricane SC plots in the form of leaf purpling and distortion. No damage occurred in 2021 when no shoots had emerged at the time of herbicide application.

Statistical analysis of stem length and total stem numbers data confirmed there was no significant difference between treatments, confirming that none of the treatments had any impact on flower stem length or total stem count. HDC H44 does not have a current approval for use on ornamentals so if the industry wants to use this herbicide an EAMU will need to be obtained. The damage seen from Hurricane seems to rule it out as being a possible candidate for use on Peony.

Seed Priming Trial

Seed priming is a technique used quite extensively in the vegetable industry but has not been widely adopted by the cut flower industry. Preliminary trials undertaken by Elsoms had shown that there may be the potential to prime some flower seeds with the intention of achieving an earlier and more even germination, hence aiding both weed control and making flower maturity more even. It had been intended to undertake trials at the CFC in 2020 but owing to the Covid restrictions, these trials had to be delayed until 2021.

During 2021 it was intended to trial a wide range of species including Ammi, Bupluerum, Larkspur, ornamental brassica and Sweet Williams but owing to issues with the priming of small quantities of seed, only Sweet William and Larkspur were available to trial in 2021. Two different seeding dates were used (week 25 and week 33) with the trial being direct seeded

in the third bay of the multispan tunnel.

Unfortunately, the 2021 trials did not show any visual differences between the primed and non-primed crop so in conjunction with Elsoms the seed priming technique will be revisited in 2022.

Scabious (varieties of *Scabiosa atropurpurea*).

Scabious are well-known as a vigorous garden plant with prolific, attractive flowers in a wide range of colours. The perennial forms are already grown as outdoor commercial cut flower crops. In recent years new ranges of *S. atropurpurea* have been introduced to the market with the Scoop series generating the most interest from the industry. New and improved varieties have continued to be introduced and the 2020 trials concentrated on a new range called Bon Bon and new introductions of Focal Scoop.

Trials in previous years have indicated that an early planting date produces a more prolific crop because it allows the plant to establish a sturdy frame and good root structure before being put under stress during warmer weather conditions. In order to maximise their potential the plugs were therefore potted into 9cm pots in week 12, pinched four weeks later and the well branched plants transferred to the tunnel in week 20.

In 2021 the plants did not establish as well as they had in previous years and were constantly less vigorous. This would appear to have been caused by the diabolical weather in May, which meant the plants did not bulk up in the way they usually do. This lack of growth was not made up later in the season. The trial started to flush in week 27, and while many marketable stems were produced throughout the season, they were not as strong as in previous years.

The ongoing CFC and grower trials have shown that new series of Scabious (especially the 'Scoop' series) have good market potential and are popular with consumers. The positive attributes of the crop include a unique flower form, vibrant colours, high yield and a consistently good vase life. However, the growth habit and flowering of the crop means that

harvesting costs are an issue, and unless this is reflected in the final stem price the large scale production of Scabious will not be economically viable. At the current time, the crop is only being grown on a small scale in the UK by growers that are supplying premium markets or via direct sales to the public.

A webpage entitled [Scabious as a cut flower for the UK market](#) was produced by the CFC/AHDH in 2021.

Tanacetum parthenium

Tanacetum (also known as Matricaria) is a member of the *Asteraceae* family and produces a mass of small flower heads similar to Santini chrysanthemums. They are widely grown in Holland and imported to the UK to be used mainly as a filler. The purpose of the 2021 trial was to investigate the potential for *Tanacetum* to be grown as a UK crop and show the range of varieties currently available for cut flower production.

Plantings were made in week 23 and 29 with both plantings establishing well and the plants growing away with no issues except for a small amount of leaf miner which was eliminated by an appropriate application of pesticide. The first flowers were cropped 7 to 8 weeks after planting with the Vegmo single flowering variety 7 to 10 days earlier than the other varieties. The quality of the end product, potential to produce over a long flowering period and ease of production mean that this crop has potential for home production.

Trachelium caeruleum

Trachelium is another crop produced in Holland but not widely grown in the UK. Earlier CFC trials had shown that it has the potential to be home grown hence producing a fresher product with a better VL than imported stems. It was decided that the current market dynamics mean it is now a suitable time to revisit *Trachelium* as UK grown crop and put it in front of growers and buyers to assess its potential.

'Lake Michigan Blue' and 'Lake Michigan White' were planted in week 23 with the first flowers being ready to harvest in week 33. The trial produced strong stems in excess of 50cms in

length with a large flower head.

Previously, *Trachelium* has been grown as an annual crop but after a request at the 2021 Open Day it will be trialled as a perennial in 2022.

Veronica longifolia

In 2018 a new range of Veronica was trialled (the 'Skyler' series) which is available as blue, white and pink flowered varieties. The trial demonstrated that when tunnel grown, a combination of different planting and pinching dates can achieve a three-month flowering period. It is likely that this period could be extended further if the crop was grown in a glasshouse. The trial was left in situ and in 2021 the disbudding trial was developed further. This technique involved the removal of the centre bud.

The first flush of flowers was ready to disbud from week 24 and the "spray type" product was ready to harvest 10 to 14 days later. The removal of the centre bud resulted in a longer and visibly stronger "spray type" flower stem with between four and six blooms. This was considered to be a better-quality product for use in mixed bouquets.

The CFC will not be undertaking additional trials on *Veronica* and some plantings have already been made by UK growers.

Financial Benefits

This is the third year of the new five-year project and as such any financial benefits reported will not take into account the potential £2.5 million of new product trialled and facilitated by previous CFC trials.

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 (followed up by additional sensitivity testing in 2019 and 2021 that was facilitated by, but not funded by the core CFC project). While 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 18 million stems at an average of 24 p per stem, making a total industry value of around £4.3 m. A 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 2020 of £430,000.

A number of new products trialled during the first three years of the current CFC programme such as Scabious, Lepidium and Veronica have been planted by small to medium sized nurseries. An estimate of the total area of these new products in 2021 is 2 ha and if Scabious is used as an example, with a yield of around 30 stems/m² at a return of 25 p per stem this is an additional farm gate value of £150,000.

Other new products have been planted either on a commercial scale or as commercial trials for supply to the supermarkets. These include *Astrantia*, *Eryngium* and Willow. An estimate of the area of these products would be 4ha and with an estimated average farm gate value of £25,000 per ha this amounts to an additional total farm gate value of £100,000.

Action Points

- Production of *Aster ericoides*. Limonium, Veronica and Scabious could be suitable novel, niche ventures for UK cut flower growers.
- Other products from the 2021 CFC trials could be considered for production on a larger scale for supermarket production. These include *Astrantia*, *Tanacetum* and *Trachelium*.
- Growers can access a number of CFC/AHDB technical notes and webpages relating to CFC trials, of which the latest is entitled [Scabious as a cut flower for the UK market](#).
- Column stock growers should continue to be vigilant to the ongoing threat of the new strain of downy mildew identified in 2018, and obtain a copy of, and implement the recommendations of AHDB / CFC Information Sheet 11 [Maintaining successful](#)

[control of downy mildew in protected crops of cut flower column stocks](#). Additional trials on DM will be undertaken in 2022 and growers should be alert to any updates to the control strategy that develops from this work.

- If there is enough industry support an EAMU should be obtained for the use of the herbicide HDC H44 on Peony.