Grower Summary

PO 021

Genetic Effects on Poinsettia Production and Shelf Life.

Final 2016

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Project title:	Genetic Effects on Poinsettia Production and Shelf Life.
Project number:	PO 021
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Report:	Final report, April 2016
Previous report:	
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Location of project:	The University of Lincoln
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Date project commenced:	01 June 2015
Date project completed	28 Feb 2016

GROWER SUMMARY

Headline

This trial has highlighted several new poinsettia varieties of significant commercial interest; these include Hera Red, No 57, Astro Red; all benchmarked well and were at least equivalent to Infinity 2.0 the main commercial variety. The trial has also shown wicks and water pads can extend shelf life (retail store phase) by five to eight days.

Background and expected deliverables

Poinsettias are one of the key UK pot plant product lines. To date the industry has relied on a relatively small number of key varieties to meet the needs of supermarkets and multiple retailers. There have been recent concerns that some of the well-established varieties might have become less reliable. The AHDB/BPOA Poinsettia study tour to the Netherlands in 2014 also highlighted a number of new varieties that might be about to enter the market that have potential for cultivation in the UK for these markets. The selection of poinsettia varieties to grow is an important key decision for all pot and bedding plant growers. These decisions are usually made by viewing the varieties at plant breeders open days, on other nurseries and in consultation with colleagues, breeders, customers and peers. It is not clear though whether varietal performance is reliably consistent between all growers, or whether particular varieties suit or are well adapted to the cultivation techniques and facilities used by specific growers. If varieties perform consistently across all growers and facilities, then selection might be simplified as overall performance would be robust across a wide range of circumstances. The aims of this project were to test on a range of different nurseries various new poinsettia varieties, benchmarked against classical commercial controls (12 old and new varieties were tested in total). These varieties were grown across three different sites in the UK to test variety resilience across sites and environmental conditions. Furthermore, all plants were subjected to shelf life testing at the University of Lincoln and a number of irrigation aid treatments were examined to determine their impact on product shelf life.

Summary of the work and main conclusions

The growers who supported the trial by growing the crops were Pinetops Nurseries (Hampshire), Delamore Young Plants (Cambridgeshire) and KRN House and Garden Plants (Lincolnshire).

The varieties tested, from a number of different plant breeders, included (the relevant flowering response time in weeks is provided for each in brackets):

- **Beekenkamp:** Astro Red (7.5 wks), Hera Red (8.5 wks), Pallas Red (7.5 wks) and No 57 (an experimental variety, one grower only and plants received two weeks later than the initial batch).
- **Dummen:** Infinity 2.0 (8 wks), Matinee Bright Red (8 wks), Maxima (8 wks) and Prima Donna (8 wks).
- **Selecta:** Christmas Eve (7.5 wks) (8.5 wks), Christmas Feeling (8.5 wks), Happy Day (8.5 wks).
- **Syngenta:** Neva (8 wks).

During shelf life assessment the impact of different shelf life extension products (Pokon Aqua Pad Standard, a water absorbent pad and Aqua Pad wrapped, a wick based system) were also examined on overall plant quality.

Upon receipt of the crop (22 November 2015) at the University of Lincoln from the commercial sites, plants from one nursery were significantly more advanced than the others (by around two weeks). From the crop records supplied, there were also significant differences in approaches to the use of PGR's to control crop growth and development, one nursery had made five applications of chlormequat compared with up to 13 by another. The overall quality scores at the point of harvest are summarised in the Figure 1 below.

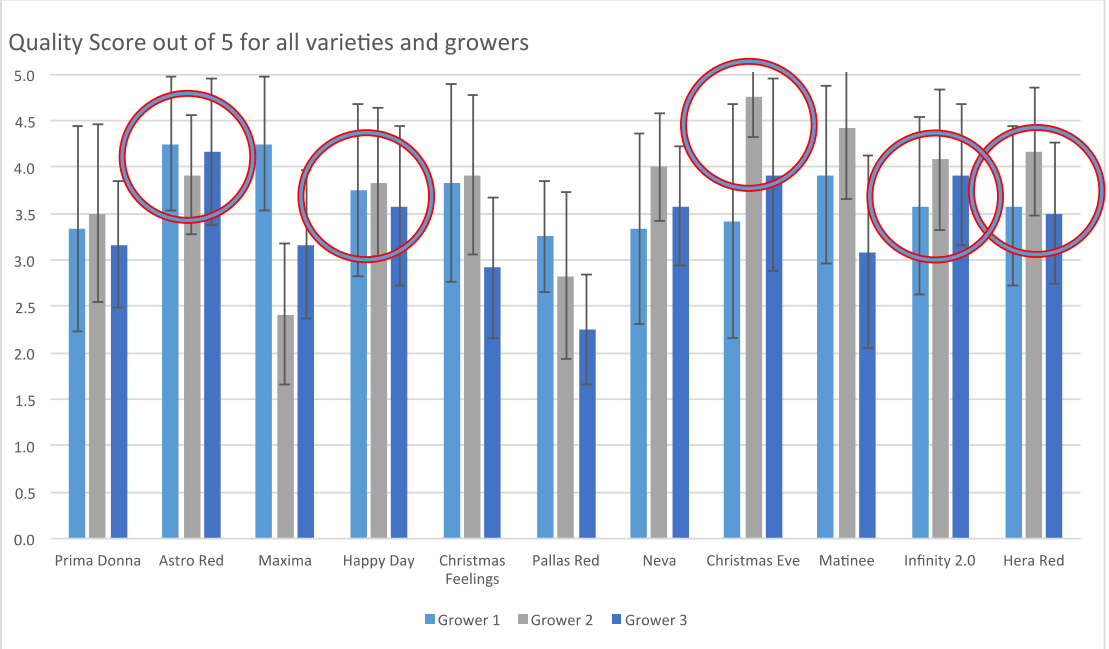

Figure 1. Quality scores for each variety from each nursery at the point of harvest

The data showed that Astro Red, Christmas Eve, Happy Day, Hera Red and Infinity 2.0, achieved the highest, consistent quality scores. There were some significant interactions between nursery and variety, for example Maxima performed very well at grower 1, but was judged to be poor at grower 2. After the plants were harvested a sub-sample were subjected to a full shelf life analysis at the University of Lincoln. The final quality scores at the end of post harvest are summarised in Figure 2 below.

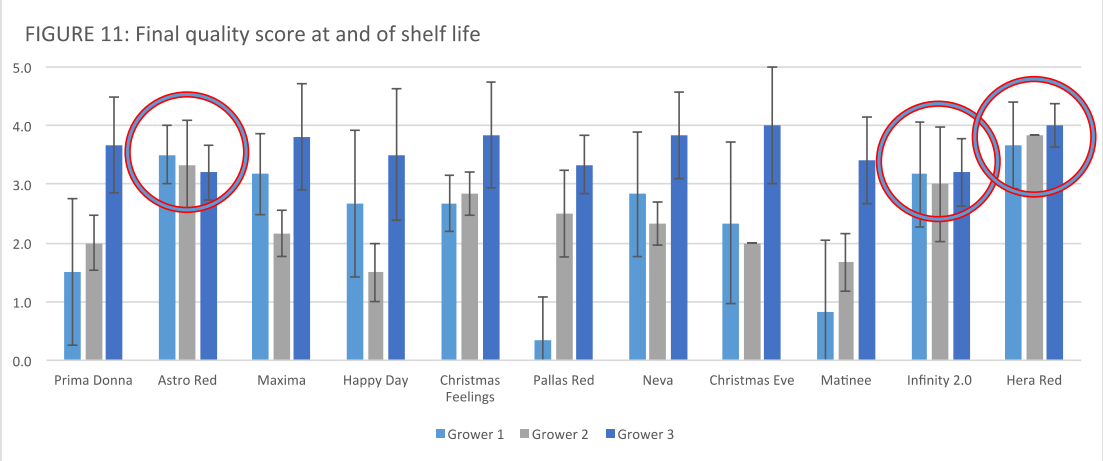

Figure 2. Quality scores for each variety from each nursery at the end of shelf life

The assessors judged Astro Red, Hera Red and Infinity 2.0 as the most consistent highest performing varieties at the end of shelf life. No 57 was also judged to have performed well, but was only trialled on one nursery site. . At the end of the shelf life trial Christmas Eve and Christmas Feeling were also judged to have performed acceptably well.

Of note some varieties showed a high degree of resilience on different nursery sites, in that at marketing stage Astro Red, Christmas Eve, Happy Day, Hera Red and and Infinity 2.0, all had similar (high) quality scores irrespective of production site, and a number (Astro Red, Hera Red and Infinity 2.0 continued this resilience into their shelf life performance. Other varieties were more variable in their responses, for example, Maxima performed better at site 1 than 2. By the end of shelf life, the varietal and grower impacts were more noticeable. The more immature plants from site 3 had better overall shelf life performance, but it is not possible to separate site and maturity factors to establish which are the key drivers for higher performance.

The trials with the aqua pads and wicks were also successful. In these tests the impacts of the aqua pads and wicks were evaluated through a simulated store phase. The trial showed that there were significant differences between varieties and their performance depended on nursery site and growing strategy but in all cases the aqua pads and wicks extended shelf life by five to eight days over a standard control.

During the trial changes in substrate nitrogen and phosphorus levels on one of the trial sites were regularly monitored. This showed that both nutrient levels decline very rapidly during plant growth, and in particular as the crop starts to initiate flowers. The rate of decline was significant and standard nutritional analysis would suggest that the crop might have become deficient in both nutrients. There is a clear need for additional work focussing on poinsettia nutrition and to see if higher applications of either nitrogen or phosphorus from flower initiation have a positive impact on plant quality and shelf life.

These trials via the associated grower open days have assisted the industry in its selection of new poinsettia varieties. We now need to establish if the variety responses are resilient between growing seasons as well as between growers. We are aware that a large amount of new plant material has yet to be evaluated and more diverse and novel material should be included in future trials.

Action points for growers

This trial has highlighted several new varieties of significant commercial interest; these include Hera Red, No 57 and Astro Red; all benchmarked well and were at least equivalent to Infinity 2.0 the current main commercial variety. No 57 were a new potential introduction from Beekenkamp and although only examined on one site it is clearly worthy of further investigation. The new variety Astro Red and Hera Red also performed very well when

assessed both at marketing stage and at the end of shelf life. These varieties were also resilient to all sites in the trial, suggesting they may have potential for wide use across the UK grower base. It should also be noted that the main UK commercial variety Infinity 2.0 also performed well and is still amongst the top ranking varieties assessed in this trial.

