



Grower Summary

P1902293

Commercial evaluation of new
poinsettia varieties

Final 2020

Project title: Commercial evaluation of new poinsettia varieties

Project number: P1902293

Project leader: Mr Andrew Fuller & Mr Harry Kitchener

Report: Final

Previous report: N/A

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Date project commenced: July 2019

Date project completed (or expected completion date): January 2020

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GROWER SUMMARY

Headline

At marketing (November 21st 2019) the top varieties as scored by 29 growers were provided by Selecta Young Plants. They had three varieties in the top five (Xmas Universe, SK167, and SK176). A new dark red 'oak leaf' type (PON127) placed second (supplied by Bekeenkamp), whilst Ferrara from Dummen placed fifth. However, PON127 and Ferrara had greater variability in the scores (i.e there was not such a close consensus between growers in their scores).

Assessments were carried out again on January 15th, 2020 at the end of the shelf-life assessments. Seventeen growers scored SK175 (Selecta) as being the best performing variety, followed closely by Embla (Dummen), Xmas Universe (Selecta) and PON124, PON126 and Blissful red (all from Bekeenkamp). The 'control' varieties all scored equally well at the end of shelf-life (Astro Red, Leona Red and Infinity Red). The varieties which scored well in November, PON127, SK167, SK176 and Ferrara all scored lower due to excessive leaf loss, whilst in the case of PON127 it had severe bract edge blackening.

Background

Poinsettia remains a key seasonal crop for UK growers and demand continues to grow from year to year. Concerns around the health (*Bemisia tabaci*) and quality (poorer shelf-life) of the poinsettias grown in mainland Europe is leading more UK retailers to look to source plants from the UK. Brexit is also concerning some retailers who are thus looking to secure more UK-grown material.

Different end markets have differing plant requirements. Products intended for supermarket sale typically require eight plants packed in a cardboard box or on a CC trolley, and must achieve specific minimum/maximum height and visible head counts. In contrast, plants grown for direct sale, or via Garden Centre style outlets, can accept greater variance and broader plants. Thus, the market served will affect a grower's choice of variety.

Key criterion for growers is to be able to commercially grow plants which meet their customer specifications – typically 4-5 heads/bracts and a height of 26-30cm above the pot. Over 95% of the total volume sold are red poinsettias, more so within supermarkets, compared to garden centres, which tend to have a greater range of colours.

Each year poinsettia breeders bring new varieties to the market – aiming for brighter coloured, longer lasting plants which can be grown with minimal, or without chemical growth regulation, and which can be grown at higher densities and are easy to sleeve without stem breakage.

The aim of having these variety trials is to compare a range of varieties from each breeder under a standard growing regime, which can be tracked and monitored through their growing phase, and tested in a shelf-life environment. There are breeder trials within Europe but not every UK grower is able to attend, and European growing conditions and systems can be markedly different from that in the UK.

Thus Neamelea Nurseries was chosen, as being one of the most modern glasshouse facilities in the UK, for the trial and growing site. Twenty 'new' red poinsettias were selected from five breeding/young plant supply companies and supplied for potting in week 30 into 13 cm pots at Neamelea.

Summary

Objective 1: To evaluate plant quality, height and number of bracts of up to 20 Poinsettia varieties produced under standard commercial practices.

Plants were potted in week 30 into 13 cm Modiform green PP pots using Bulrush standard poinsettia substrate (see Appendix). Initially plants were grown at 20-21°C Day/Night (D/N) with +2°C ventilation and shading set at 250W/m². Fleece was used over the crop prior to pinching. Plants were pinched to six leaves 2 weeks after potting.

Plants were spaced after 6 weeks to 25 plants/m². After a further 4 weeks, plants were final spaced at 10.5 plants/m². At both spacings, plants were graded according to their size (see Appendices for notes and plant grade records). At final spacing each plot size comprised of 100 plants.

After pinching, temperatures were amended to 18-19°C DN with ventilation +2C and shading set to 450W/m². Photographs were taken at planting and at intervals of 4 weeks throughout the growing trial of each variety (see separate Appendices).

At harvest/marketing the following assessments were taken: plant height, plant width, total number of visible shoots; number of secondary shoots and overall quality score (1-10).

All plants were assessed by a group of 29 growers at the AHDB Open Day held on 21st November 2019 where they scored all varieties from 1-10, 10 being the best quality.

Heights – with exception of PON127, Desidero Red, Futura Brilliant Red which had mean heights below 20 cm, all other plants reached expected specification with Ferrara Red and Infinity Red at 30 cm.

Visible Bract Count – Ferrara Red had over five bracts, the highest recorded, whilst the majority of varieties averaged between 3-4. More secondary shoots were observed across varieties – averaging a further 2-3 bracts. Note: the trial was grown without chemical growth regulation.

Width – plants averaged between 35-40 cm, and indicative of the final plant density of 10.5 plants/m² (thus around 45 heads per m²)

Quality Scores- the variety PON 126 scored the highest at 7/10, whilst Futura Brilliant red, Desidero Red and SK167 were the lowest scored varieties.

Grower scores - saw the variety Xmas Universe topping the list, whilst Allegra was deemed the poorest.

Objective 2: To evaluate the performance of selected Poinsettia varieties (up to 12 chosen by the grower panel at the Nov Open Day) submitted to shelf life testing.

At the AHDB Grower Open Day in November 29 growers assessed the varieties at the point of sale and selected their preferred 12 varieties.

Six plants of each variety were sleeved, boxed (6 per box) and travelled for a minimum of 4 hours (using a Neamelea vehicle) before returning to site and remaining in boxes for the remainder of a 24 hour period.

The following day, plants were removed from boxes and placed into the shelf-life area. Plants remained sleeved for a period of 7 days after which sleeves were removed.

Plants were placed into saucers and watered as required throughout the shelf-life period. Plant assessments were carried out weekly over a 5-week period and included; percentage leaf fall, percentage bract drop, percentage bract edge blackening, cyathia score and overall plant quality score (scores were from 1-10, 10 being the best score). The shelf-life environment was kept at 20°C D/N, Relative Humidity 50-60% and a light level of 900-1000 lux for 18 hours per day.

Photographs at the end of shelf-life are included in separate Appendices.

Quality Scores – the varieties SK175, PON 124, Astro Red (control), Leona Red (control) held up and gained the highest overall quality scores at the end of the 5 weeks shelf-life assessment. Generally, these varieties showed the least decline in quality. PON 127, SK167, SK176 were the worst quality at the end of shelf-life.

Grower assessments in January chose SK175, Xmas Universe, PON124 and Desidero red as being the higher quality plants. PON127 and Embla being the poorest.

Financial Benefits

The main cost inputs for a grower will be material costs (young plants, pot, substrate, chemicals, fertiliser, biological controls), labour (planting, pinching, spacing and dispatch), energy and overhead allocations. These typically could be:

- Materials – 40%
- Labour 25%
- Energy 25%*
- Waste 10%

*based on burning oil for energy. Now the majority of poinsettia growers would use renewable biomass, which could be considered cost neutral.

The main opportunity for growers to influence their financial returns from these trials would be a reduction in waste and improved return per m² due to an increase in plant density.

Waste can be affected by variety choice. Each variety would have different vigor, affecting height, and their ability to generate shoots or visible heads will be affected by their 'breaking' success, and also the angle of shoot development. Typically those varieties with a 'v-shape' lend themselves better to 'sleeving' and packing, particularly for supermarket sales, whilst other varieties have a broader width and shoots more angular or candelabra-shaped, which can be more prone to damage at sleeving and packing.

These different varietal characteristics can affect growing plant density, requirement for chemical growth controls and waste due to not meeting specification on bract count.

These variety trials on a commercial nursery allow a wide range of varieties to be grown under the same environmental conditions and for growers to come and view them both at the point of sale but also at the end of January to observe their performance under shelf life conditions. Not all growers have the time and space to run large-scale trials and thus have the opportunity to view these AHDB trials and focus their variety selection appropriately. If overall crop waste could be reduced from 10% to 5% based on variety selection, on a total volume of 100,000 plants, this saving of 5000 plants could be worth nearly £10,000 additional income.

Action Points

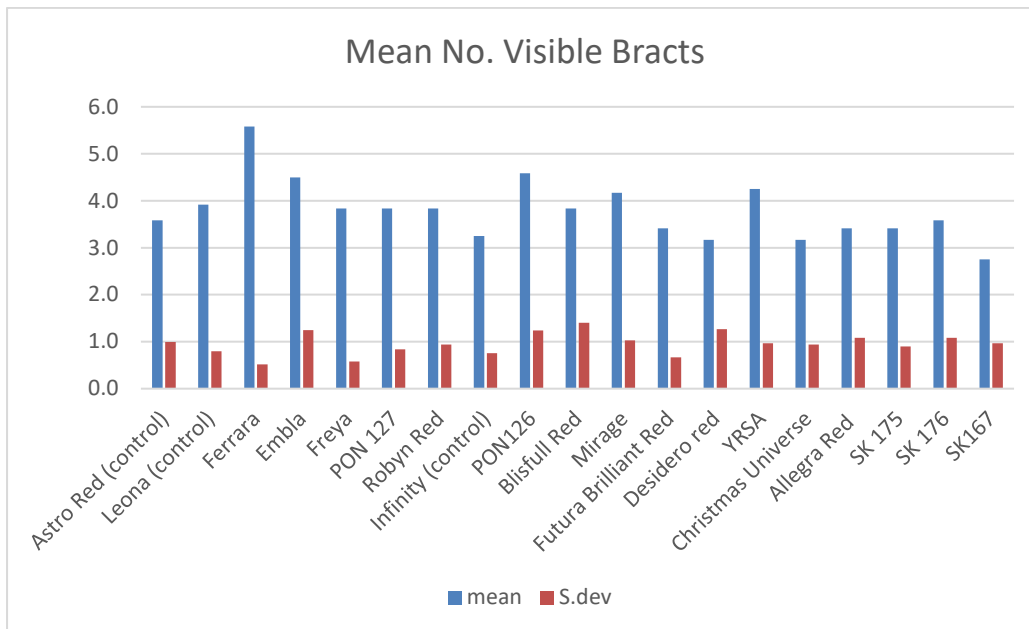
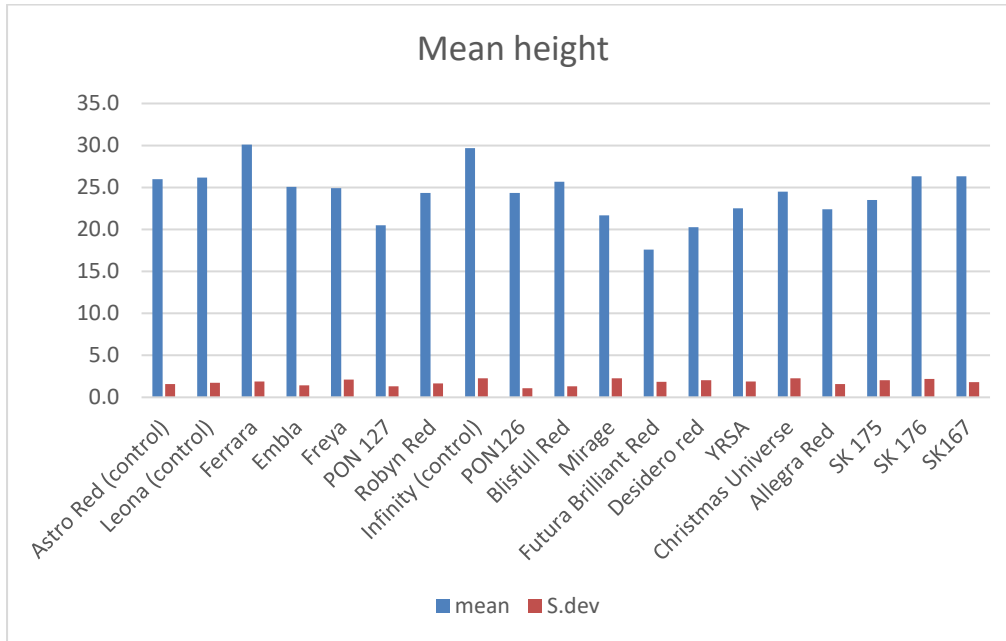
In these assessments, varieties supplied by Selecta performed the strongest in terms of their overall quality assessment made by growers at marketing in November, and after shelf-life testing in mid-January. The varieties were Xmas Universe and SK175.

Test plants for their robustness through the supply chain and performance in shelf-life as demonstrated by the variety PON127 which was ranked the 2nd best variety in November, but performed very poorly in shelf-life due to bract edge burn.

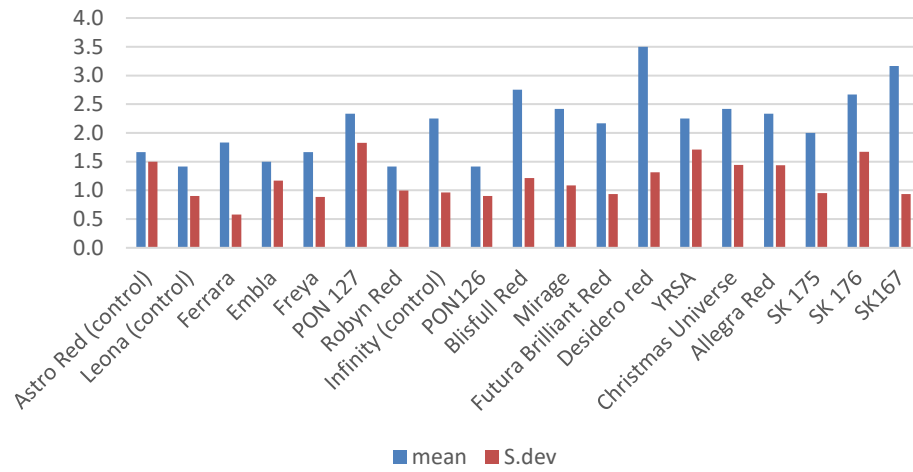
Use new genetics where available, as this can allow plants to be grown with little or no requirement for chemical plant growth regulation, and break very well, to produce plants that meet market specifications and can assist in helping growers lower their crop waste.

Appendix 1 – Results graphs

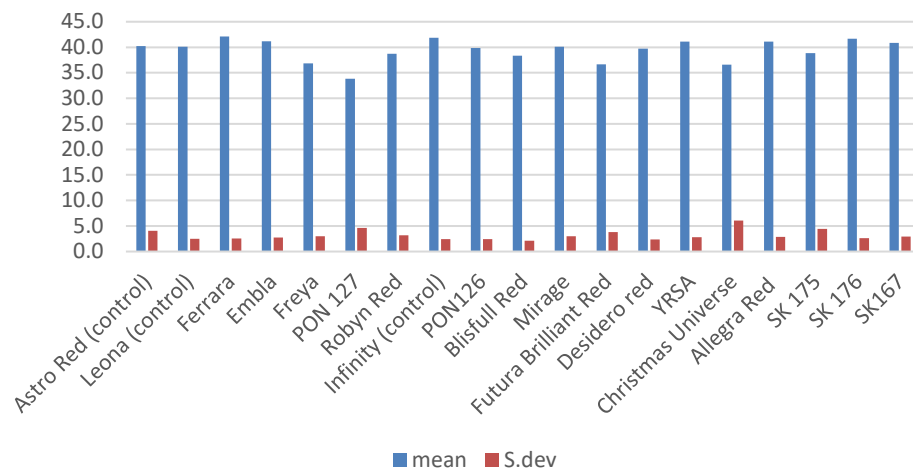
Results - Assessment scores at harvest/marketing (November 2019)

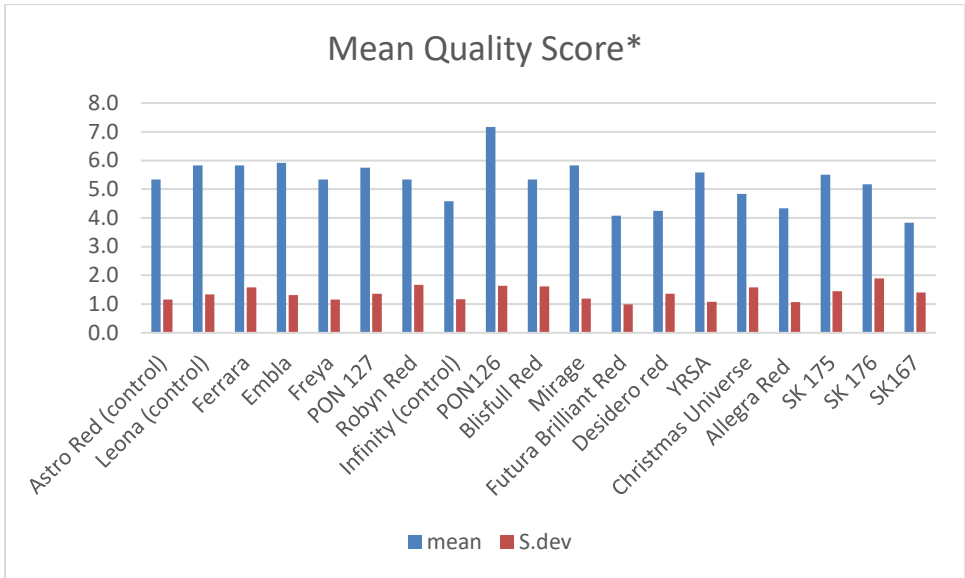


Mean No. Secondary Shoots



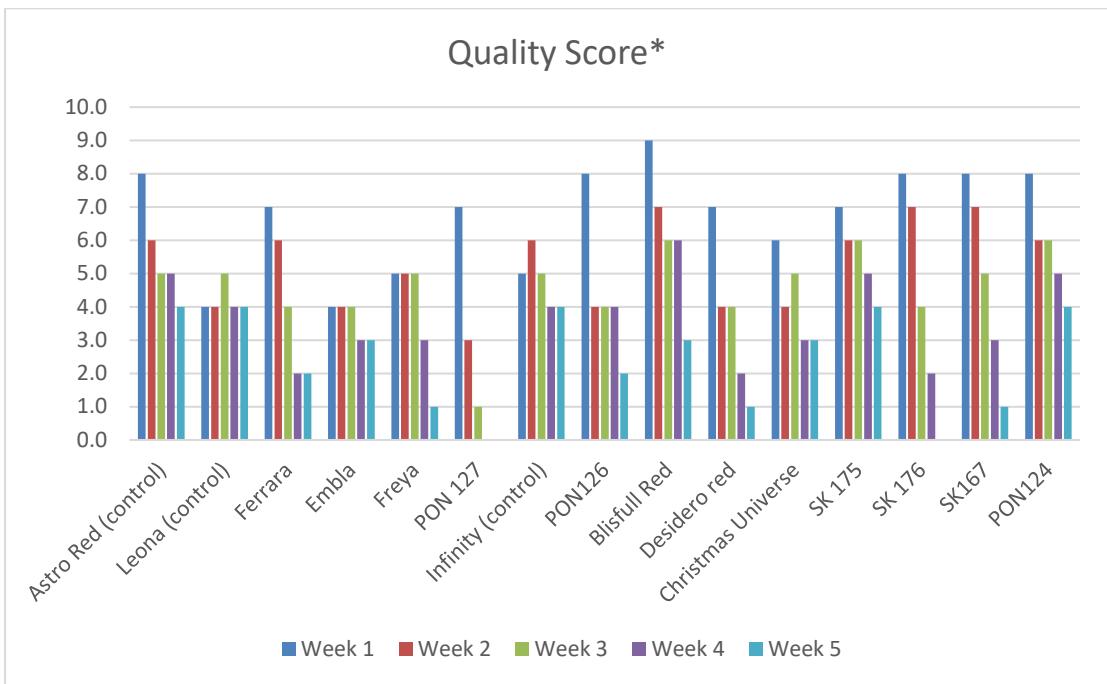
Mean width



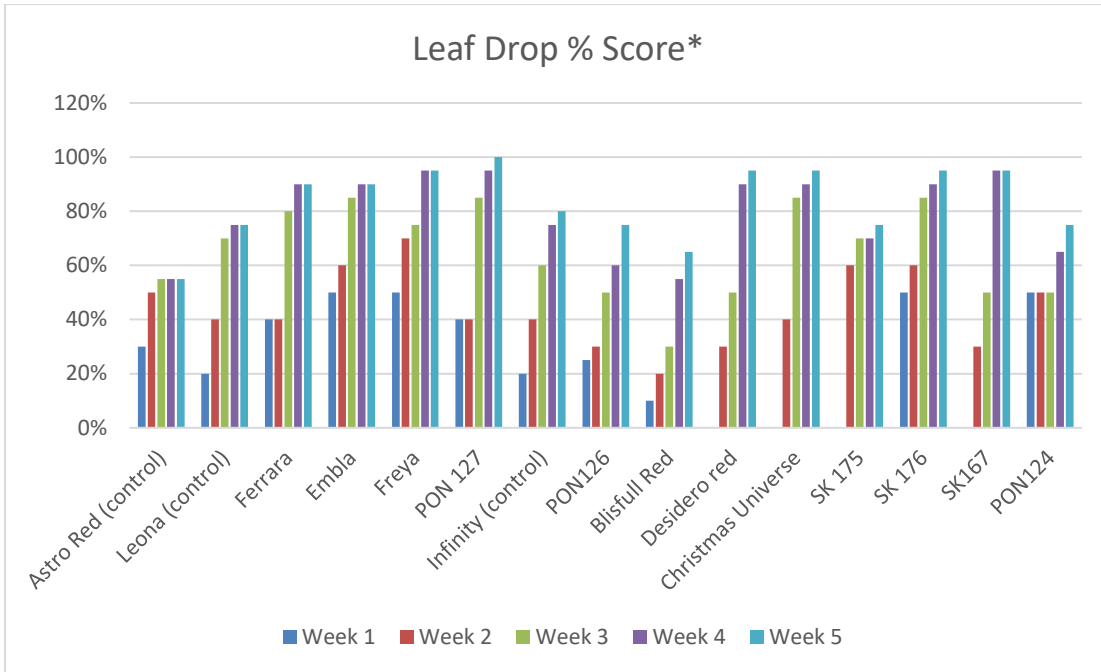


+quality score was a subjective assessment by Mr Harry Kitchener. Max score = 10

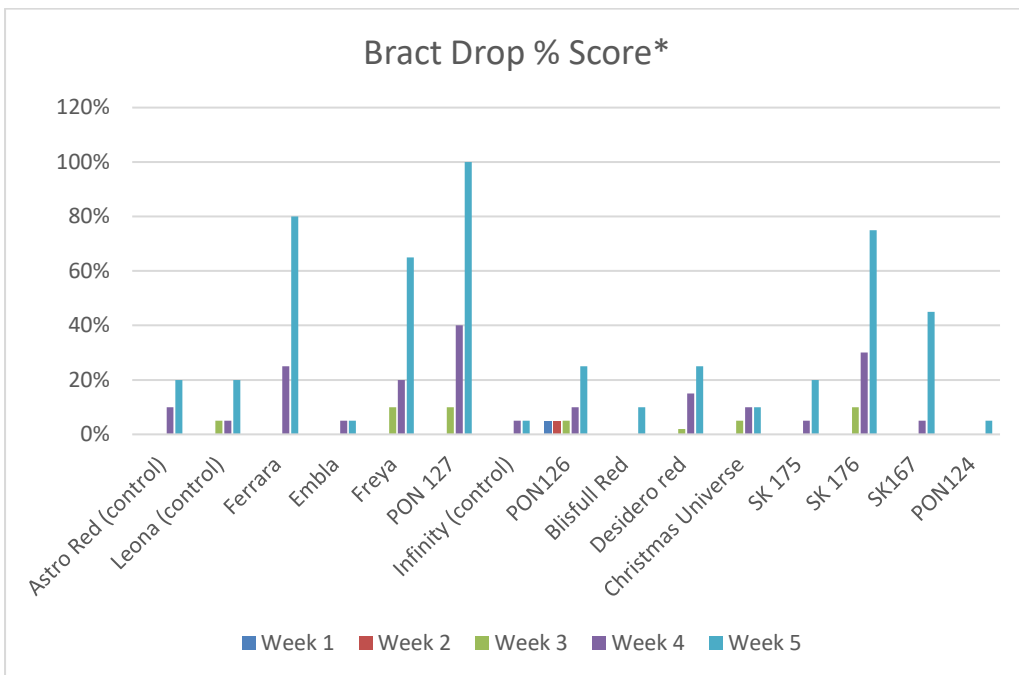
Results - Assessment scores during shelf-life (January 2020)



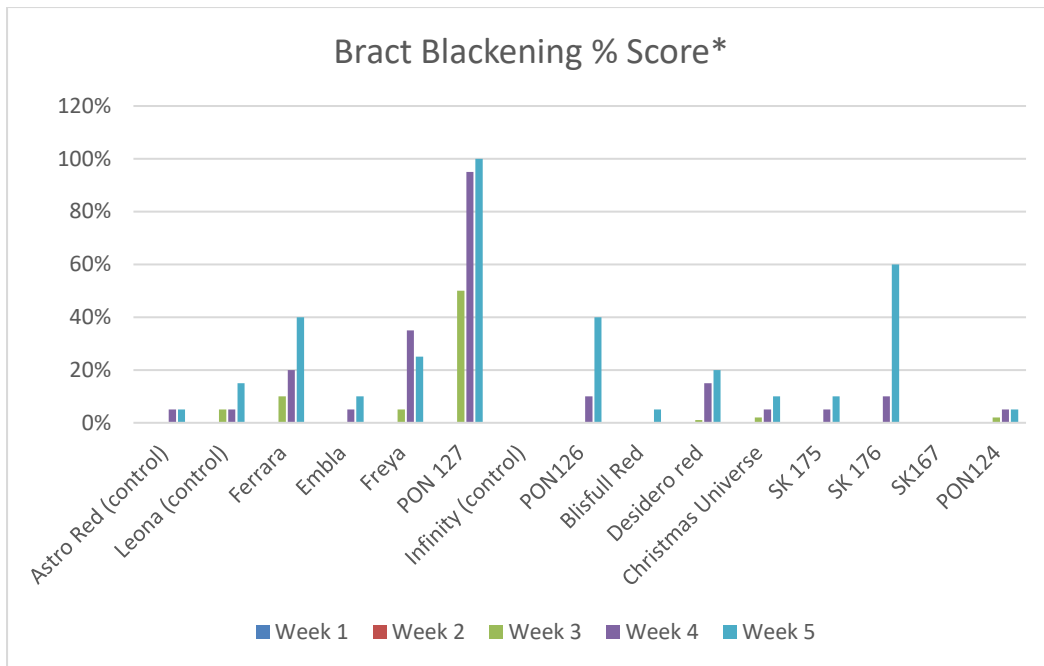
+quality score was a subjective assessment by Mr Harry Kitchener. Max score = 10



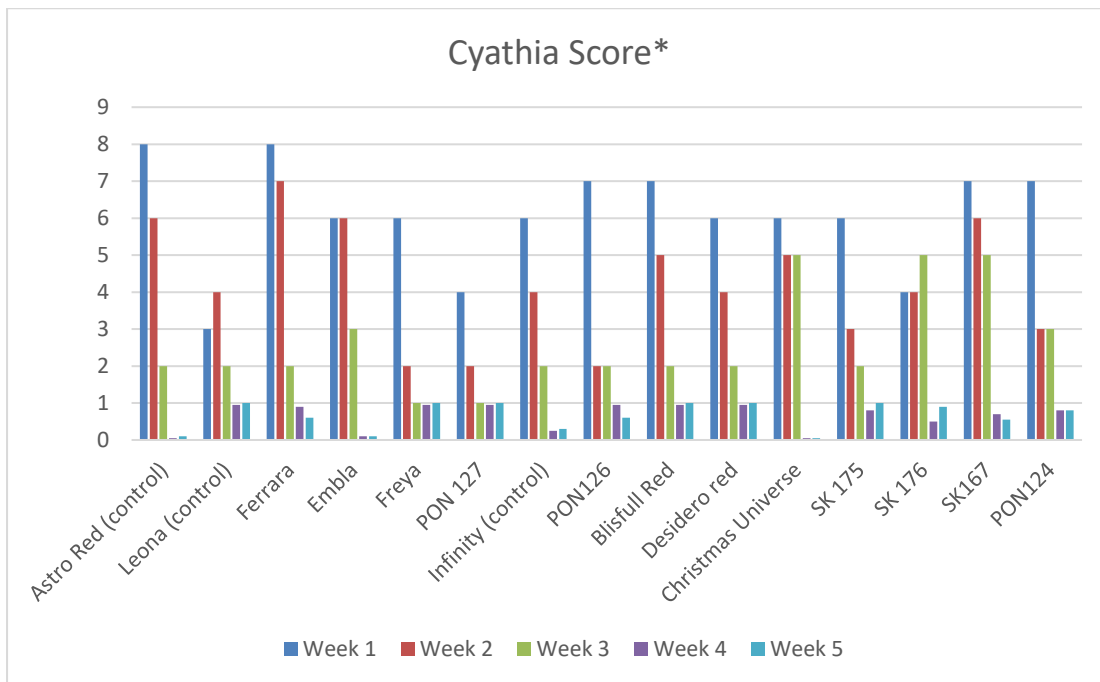
*% score – 0-100%, 100% full leaf loss



*% score – 0-100%, 100% full bract loss

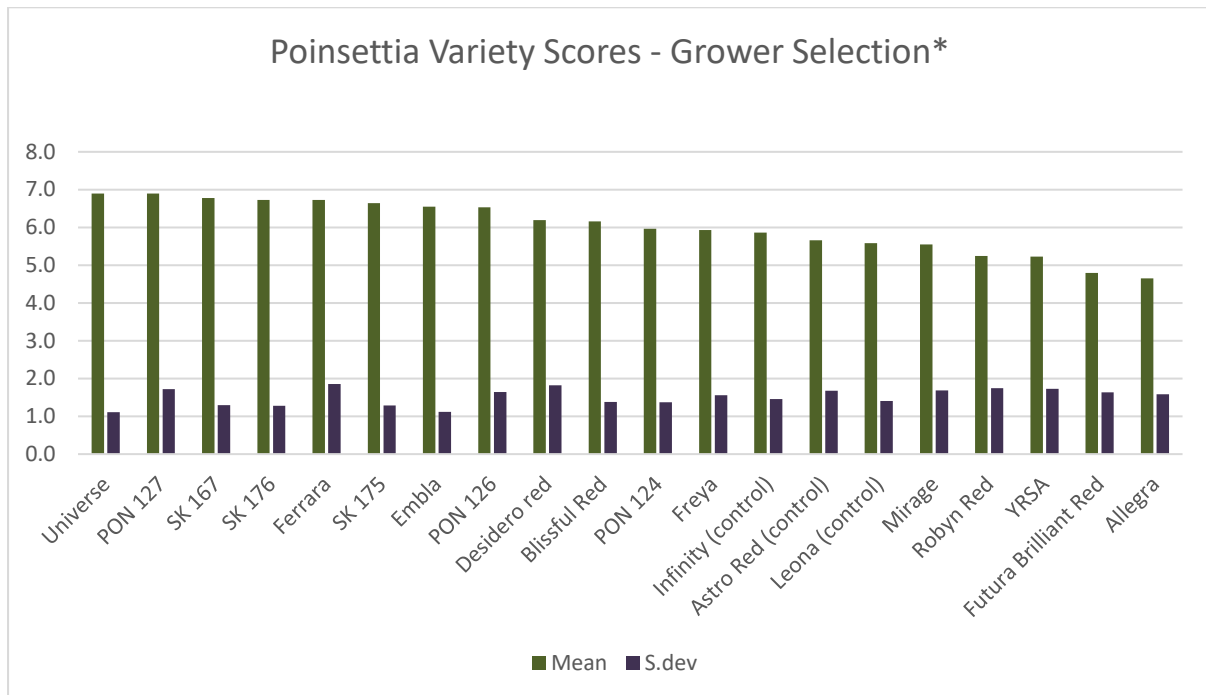


*% score – 0-100%, 100% full bract loss due to bract edge blackening



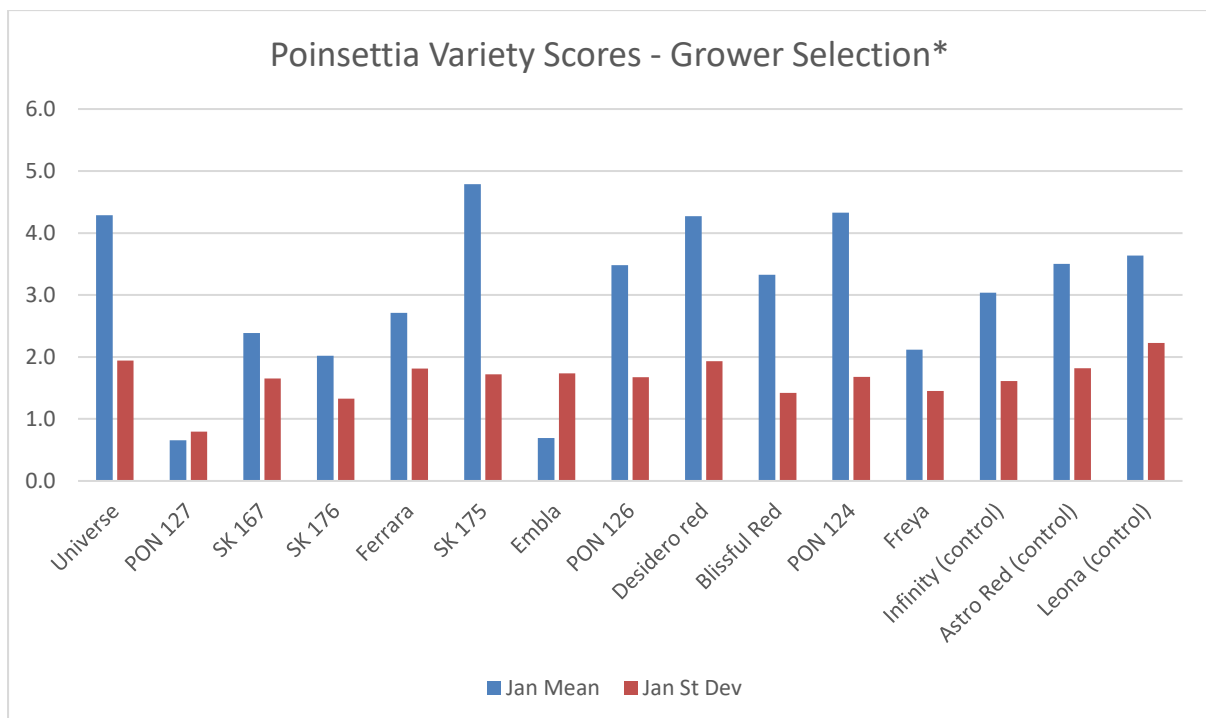
*score 10-1, 10 being fully present and intact

Results – Grower Assessment scores at harvest/marketing (November 2019)



*scores were recorded from 29 grower assessments made during the Open Day held on 21st November 2019. Max score = 10

Results – Grower Assessment scores at end of shelf-life (January 2020)



*scores were recorded from 17 grower assessments made during the Open Day held on 15th January 2020. Max score = 10

Appendix 2 – Crop Observations and notes at first spacing 9-10th September 2019

| First Spacing: 09.09. - 10.09. | | | | | | | |
|---------------------------------------|--------------|---------------|---------------|---------------|--------------|----------------|--------------|
| Variety | Large | Height | Medium | Height | Small | Height | Waste |
| A1 | 67 | 15cm - 16cm | 90 | 12cm - 15cm | 11 | 10cm - 12cm | |
| A2 | 127 | 13cm - 17cm | 0 | | 39 | 9cm - 13cm | 2 |
| A3 | 0 | | 131 | 13cm - 15cm | 35 | 10cm - 11cm | |
| A4 | 0 | | 80 | 13cm - 15cm | 3 | 6cm - 8cm | 1 |
| A5 | 0 | | 68 | 13cm - 14cm | 16 | 10,5cm - 12cm | |
| A6 | 0 | | 60 | 12cm - 14cm | 24 | 8.5cm - 10cm | |
| A7 | 68 | 15cm - 16cm | 82 | 13cm - 15cm | 17 | 11cm - 13cm | 1 |
| B1 | 150 | 15cm - 19cm | 75 | 12cm - 15cm | 11 | 8cm - 12cm | 1 |
| B2 | 135 | 18cm - 19cm | 81 | 15cm - 16cm | 23 | 9.5cm - 11.5cm | |
| B3 | 90 | 15cm - 17cm | 45 | 12cm - 15cm | 107 | 9cm - 11cm | 2 |
| B4 | 157 | 16cm - 18cm | 60 | 14cm - 16cm | 21 | 13cm - 14cm | |
| E1 | 0 | | 240 | 10cm - 14cm | 70 | 6.5cm - 10cm | |
| E2 | 0 | | 255 | 10cm - 15cm | 57 | 6cm - 10cm | |
| C1 | 0 | | 135 | 9cm - 10cm | 24 | 8cm - 9cm | 1 |
| C2 | 0 | | 144 | 11cm - 13cm | 4 | 9cm | 2 |
| C3 | 0 | | 90 | 9cm - 11cm | 58 | 8cm - 9cm | 1 |
| D1 | 0 | | 120 | 11cm - 13cm | 31 | 10cm - 11cm | |
| D2 | 0 | | 150 | 12cm - 14cm | 0 | | |
| D3 | 0 | | 112 | 12cm - 17cm | 37 | 9cm - 12cm | 3 |
| D4 | 0 | | 132 | 12cm - 14cm | 16 | 10cm - 12cm | |

These notes at week 37 show the typical grading of plants between 'large', 'medium' and 'small' by the variety and also the plants wasted

| | large | medium | small | waste |
|------------------|--------------|---------------|--------------|--------------|
| Bekeenkamp | 22.3% | 61.3% | 16.0% | 0.4% |
| Dummen | 55.7% | 27.3% | 16.7% | 0.3% |
| Syngenta | 0.0% | 79.6% | 20.4% | 0.0% |
| Lazzeri | 0.0% | 80.3% | 18.9% | 0.9% |
| Selecta | 0.0% | 85.6% | 13.9% | 0.5% |
| Total Avg | 18.9% | 64.0% | 16.6% | 0.4% |

Appendix 3 – Crop Observations and notes at first spacing 4-5th October 2019

| Second Spacing: 04.10. - 05.10. | | | | | | | |
|--|--------------|---------------|---------------|---------------|--------------|-----------------|--------------|
| Variety | Large | Height | Medium | Height | Small | Height | Waste |
| A1 | 118 | 18cm - 23cm | 48 | 16cm - 19cm | 1 | 12cm | 1 |
| A2 | 120 | 19cm - 23cm | 38 | 17cm - 19cm | 3 | 10cm - 12cm | 2 |
| A3 | 39 | 20cm - 23cm | 128 | 16cm - 20cm | | | |
| A4 | 53 | 21cm - 24cm | 28 | 18cm - 19cm | 2 | 10.5cm - 11.5cm | 1 |
| A5 | | | 84 | 13cm - 18cm | | | |
| A6 | | | 70 | 15.5cm - 19cm | 14 | 8.5cm - 11cm | |
| A7 | 138 | 18cm - 23cm | 28 | 15cm - 16.5cm | | | 2 |
| B1 | 225 | 16cm - 22cm | 11 | 13cm - 14cm | | | 1 |
| B2 | 198 | 21cm - 28cm | 39 | 17cm - 19.5cm | | | 2 |
| B3 | 60 | 18cm - 23cm | 173 | 18cm - 20cm | 9 | 10cm - 12cm | 2 |
| B4 | 201 | 22cm - 27cm | 38 | 14cm - 19cm | | | |
| E1 | 220 | 18cm - 21cm | 86 | 15cm - 17cm | 4 | 9.5cm - 11cm | |
| E2 | 276 | 19cm - 22m | 33 | 14cm - 17cm | 3 | 8cm | |
| C1 | 109 | 18cm - 20cm | 45 | 11cm - 15cm | 4 | 9cm - 10cm | 2 |
| C2 | 63 | 17cm - 18.5cm | 84 | 14.5cm - 17cm | | | 3 |
| C3 | | | 145 | 12cm - 16cm | 2 | 8,5cm - 9cm | 2 |
| D1 | 126 | 19cm - 22cm | 25 | 13cm - 15cm | | | |
| D2 | 106 | 16cm - 19cm | 44 | 13cm - 15cm | | | |
| D3 | 143 | 19cm - 22cm | | | 6 | 9cm - 13cm | 3 |
| D4 | 99 | 18cm - 22cm | 49 | 15cm - 17cm | | | |

These notes at week 40 shown the typical grading of plants between 'large', 'medium' and 'small' by the variety and also the plants wasted

| | large | medium | small | waste |
|------------------|--------------|---------------|--------------|--------------|
| Bekeenkamp | 44.6% | 51.7% | 3.1% | 0.6% |
| Dummen | 71.6% | 26.9% | 0.9% | 0.5% |
| Syngenta | 79.7% | 19.2% | 1.1% | 0.0% |
| Lazzeri | 36.7% | 60.5% | 1.3% | 1.5% |
| Selecta | 78.8% | 19.7% | 1.0% | 0.5% |
| Total Avg | 59.2% | 38.4% | 1.8% | 0.6% |

Appendix 4 – Substrate Specification (Bulrush)

Peat Grade 18mm

30% Dark Peat

60% Light Peat

10% Sod Peat

200L Perlite

1.7Kg PG Mix 15:10:20+TE

0.4L Wetting Agent

5.5kg Lime