Grower Summary

PO 001

Poinsettia – Energy saving trial, costing and quality

Final 2011

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Before using all pesticides check the approval status and conditions of use.

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Further information

If you would like a copy of the full report, please email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below.

HDC
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

Tel – 0247 669 2051

HDC is a division of the Agriculture and Horticulture Development Board.

Project Number:	PO 001
Project Title:	Poinsettia – Energy saving trial, costing and quality
Project Leader:	Dirk Ludolph (LVG Ahlem)
Contractor:	H K Consulting
Industry Representative:	H M Kitchener
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Headline

Reducing heat set points during short days resulted in a calculated oil saving of up to 4 l/m^2 (or £2.00/m^2 at an oil cost of 50p/l). As would be expected, production at lower temperature delayed marketing and reduced plant size / quality and, of the varieties tested, those impacted least by lower temperature production included 'Freedom Early', 'Monreale Early Red', 'Prestige Early Red', 'Early Milennium', 'Christmas Carol' and 'Christmas Eve'.

Background

Poinsettias are a crop grown in the UK mainly for marketing from wk 46 onwards. The fuel costs for this crop rise quickly as natural temperatures decrease and humidity increases towards the end of the year. With rising energy costs for production and no increase in price for poinsettias in real terms for the last 10 years, it is essential that heat inputs in production are minimized. Previous work, (e.g. HDC project PC 71d) has demonstrated the impacts of reducing temperature set points during the later stages of poinsettia production when there is less solar gain and more heat required from the glasshouse heating system. As a result it is recognized that lowering production temperatures will reduce plant size, although this may be compensated for though earlier potting. Lower temperature will also delay bract reddening and cyathia development and high humidity may cause quality defects and increase incidence of disease. Breeding efforts in recent years have aimed to reduce response times which may help with these issues and hence it was important to update the investigations into lower temperature production by evaluating newer varieties suited to production in Northern Europe in order to inform growers about the trade-off between fuel saving, time of flowering, final plant quality and hence crop marketability.

Summary

A range of 27 varieties were grown in the experimental glasshouse of LVG Ahlem which were selected to represent a range of breeders and response types.

All plants were grown in the same temperature regimes during long days with treatments commencing at the start of short days when plants were grown in either standard or cool regimes as detailed below, where HT = heat set point, VT = vent set point.

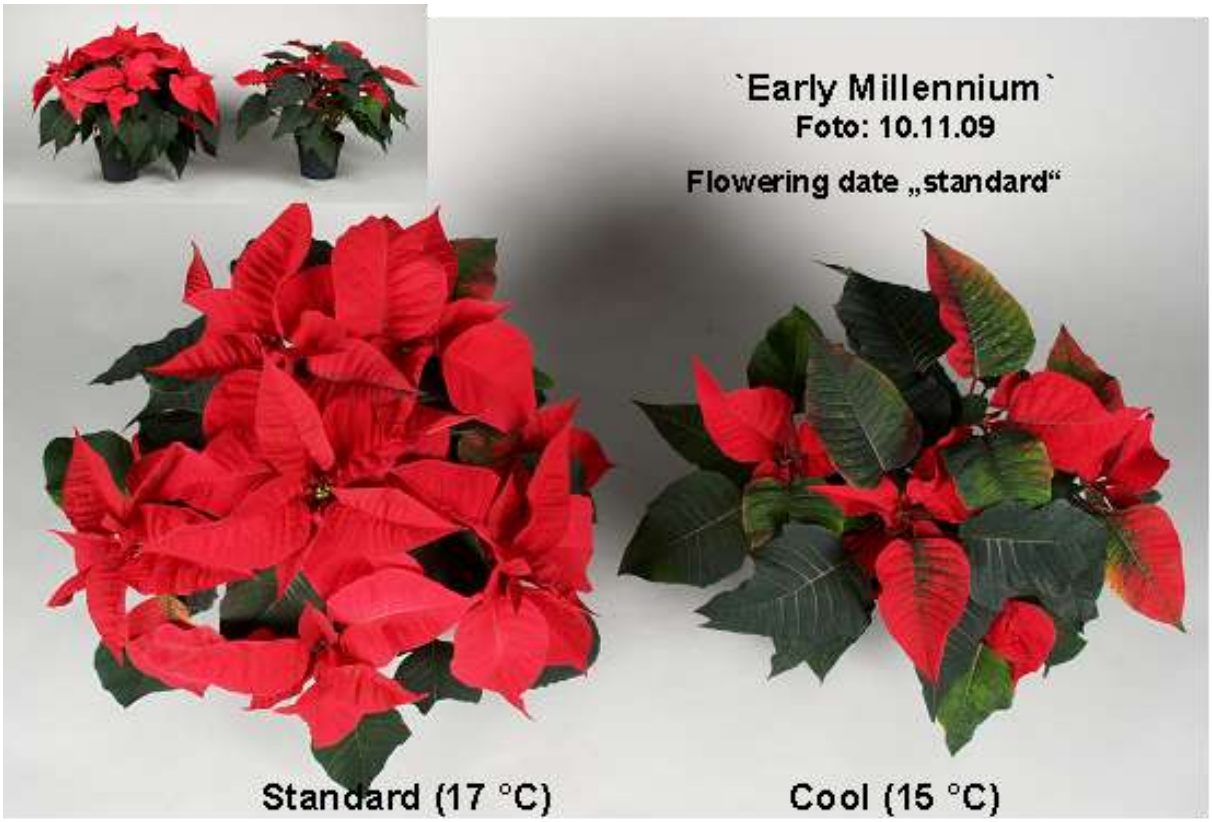
	Standard	**CoolCrop**
Potting	Week 29	Week 29
Temperature (°C) **LD** … KW 29 – 33	HT 20 VT 22	HT 20 VT 22
… KW 34 - 38	HT **16** VT 20	HT **16** VT 20
daylength	natural	natural
Temperature (°C) **SD** from week 39	HT **18 / 16** VT 20 / 20	HT **15 / 13** VT 17 / 17

When grown under standard temperatures, the response times of the varieties tested were within the range expected from breeder recommendations. Growing these varieties within the 'cool' regime however delayed response time by 4 to 21 days, depending on cultivar, with some cultivars remaining unmarketable by the second week of December as detailed in the table below. Whilst the number of days of delay resulting from production in the cool regime was higher for the earlier response varieties (at 15 to 21 days) than the later response types (at 4 to 15 days), all cool grown varieties that failed to mature in time for the marketing window were from response groups of 7.5 weeks or greater.

Influence of temperature regime on flowering date and consequent delay in marketing.

	Flowering Date		
Breeder, ***Variety,*** *Response time (weeks)*	***Standard crop***	***Cool crop***	***Delay in Market Quality (days)***
PLA Eckespoint **'Freedom Early'** (6.5)	09.11.	25.11.	16
PLA **'Early Millennium'** (6.5)	09.11.	25.11.	16
Sygenta **'Mira Red'**(6.5)	11.11.	25.11	14
FLO2 **'Alreddy Red'** (6.5)	16.11.	01.12.	15
PLA Eckespoint **'Autumn Red'** (6.5/7.0)	09.11.	27.11.	18
Red Fox **'Premium Early'** (7.0)	04.11.	25.11.	21
PLA Eckespoint **'Monreale Early'** (7.0)	13.11.	01.12.	18
Lazzeri **'Flamma'**(7.0)	13.11.	27.11.	14
sel **'Christmas Carol'**(7.0)	16.11.	01.12.	15
Red Fox **'Premium Red'** (7.0)	17.11.	05.12.	21
PLA Eckespoint **'Prestige Early'** (7/7.5)	13.11.	27.11.	14
FLO2 **'Stargazer Red'** (7.0/8.0)	23.11.	05.12.	15
Lazzeri **'Allegra'**(7.5)	23.11.	01.12.	8
PLA **'Mars Improved'** (7.5)	23.11.	01.12.	8
sel **'Christmas Day'**(7.5)	25.11.	29.11.	4
Red Fox **'Early Glory'** (7.5)	25.11.	05.12.	10
Red Fox **'Infinity Red'** (7.5)	25.11.	…	No market quality
Red Fox **'Infinity Bright Red'** (7.5)	25.11.	…	No market quality
sel **'Happy Christmas evol.'**(7.5)	25.11.	07.12.	12
sel **'Noel'**(7.5)	25.11.	07.12.	12
PLA Eckespoint **'Cortez Electric Fire'** (7.5/8.0)	20.11.	…	No market quality
Red Fox **'Champion Red'** (7.5/8.5)	25.11.	10.12.	15
Red Fox **'Viking'** (8.0)	20.11.	01.12.	11
sel **'Christmas Beauty'**(8.0)	25.11.	29.11.	4
Red Fox **'Cosmo'**(8.5)	25.11.	05.12.	No market quality
sel **'Christmas Eve evol.'**	13.11.	25.11.	12
sel **'Christmas Angel'** (not available in EU)	25.11.	…	No market quality

In general, the cool regime reduced overall plant size and hence quality as illustrated in below for ‘Early Millennium’.



Of the varieties tested, those considered to perform best in the cool regimes conditions (i.e. suffering the least in terms of reduction in quality) were:

‘Freedom Early’	‘Monreale Early Red’	‘Prestige Early Red’
‘Early Millennium’,	‘Christmas Carol’	‘Christmas Eve’

In addition to the negative impact on quality, any delay in harvesting may also mean increased fuel costs due to the increase in time the crop is on the bench. Whilst not measured here, the potential for increased incidence of disease must also be considered when growing at lower temperature and measures to reduce humidity such as increasing pipe heat or use of fans for air movement will increase energy use and risk mitigating the savings achieved by reducing set point temperatures.

Financial Benefits

If a 'tolerant' poinsettia variety is selected and grown then a cool grown crop may save 35 sec oil at up to 4 l/m^2 at 50p per l, equivalent to £2.00 m^2 (less any custom and excise duty).

However, the savings will be lost if quality is impaired i.e. 2 or more plants with 3 instead of 4 stars /m^2. If quality is affected then the loss may be £2.00 m^2 plus.

Delays to harvest may also increase the costs of energy, labour and other inputs to grow the crop and following crops may be delayed.

Action Points

- When considering cool growing, growers must be aware of quality specifications and selling dates to customers and select appropriate cultivars (i.e. those with short to mid range response groups i.e. 6.5 to 7.0 weeks).

- When cool growing, particular attention needs to be paid to control of humidity e.g. via air movement in order to minimize loss of quality and also incidence of disease which could result in a need for increased control for fungal disease such as *Botrytis*.