Spatial Location of Pigmented Cells in Bracts of Modern Poinsettia Cultivars (*Euphorbia pulcherrima*) and Euphorbia Interspecific Hybrids (*E. pulcherrima* × *Euphorbia cornastra)*

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Introduction

- Poinsettias are the most popular holiday potted plant, with eye-catching colorful modified leaves commonly referred to as bracts.
- Bract color is affected by the location of pigments within the cell layers of the bract tissues.
- Spatial location of pigmented cells in bracts of modern day cultivars of poinsettia (*Euphorbia pulcherrima)* bracts has not been examined since 1982.
- No reports on pigment spatial location of Euphorbia interspecific hybrids (*E. pulcherrima* × *E. cornastra)* have been published.

Objective

Determine the spatial location of pigments in the cell layers of bracts of eight poinsettia / poinsettia hybrid cultivars

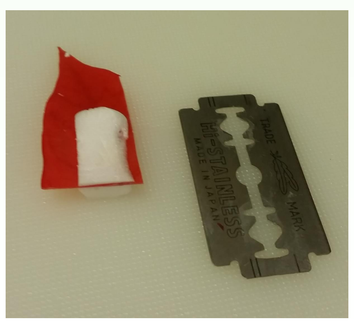
Euphorbia pulcherrima	**Euphorbia interspecific hybrids**
'Premier Red'	'Princettia Dark Pink'
'Premier White'	'Luv U Pink'
'Premier Pink'	
'Freedom Red'	
'Polly's Pink'	
'Orange Spice'	

Materials and Methods

- Detached bracts were infiltrated in 0.25% (w/v) Polyethylene glycol (PEG) with one drop of Tween 20 for 90 minutes under vacuum.
- Infiltrated bracts were placed between Styrofoam (expanded polystyrene) pieces.
- Free hand sections were obtained by cutting thin sections with a razor blade, mounted on a slide and examined under a compound microscope.

Set up for vacuum infiltration of detached bract sections

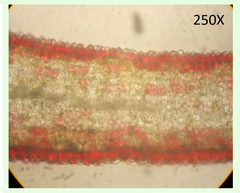
Preparation of thin layer sections



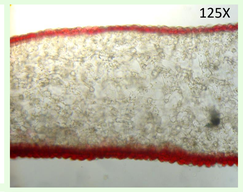
Results

- Pigments were concentrated in the upper and lower epidermis of the cultivars and hybrids examined.
- Mesophyll showed very few pigmented cells, if any.

Premier Red

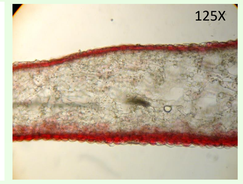


Freedom Red

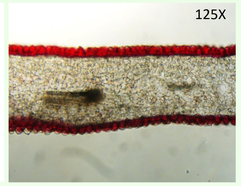


Premier Pink

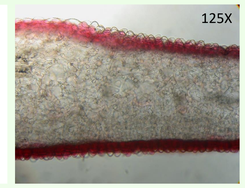
Polly's Pink



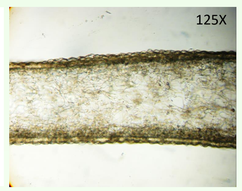
Princettia Dark Pink



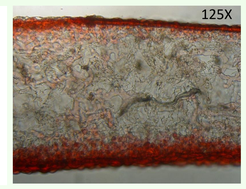
Luv U Pink



Premier White



Orange Spice



Discussion

- Pigment concentration in upper and lower epidermis agree with previously published reports on red and pink poinsettias.
- Findings contrast with previous reports of pigments only being found in the internal spongy tissues of pink bracted sports.
- Location of pigments in modern poinsettia cultivars and *E. pulcherrima* × *E. cornastra* hybrids is reported for the first time.
- Possible future studies
  - Quantify epidermal color thickness and correlate to CIELAB measurements.
  - Examine shape of epidermal cells and mesophyll cell packing in relation to visual texture of bracts.

References

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