Consumers Prefer Red Poinsettia Cultivars

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SUMMARY. Consumer flower-color preferences are of interest to market researchers, plant producers, and retailers because this information can help them to anticipate accurately the sales product mix. Our objective was to determine consumer bract-color preferences for 47 poinsettia (*Euphorbia pulcherrima* Willd. ex Klotzsch) cultivars. Visitors (124) to the Franklin Park Conservatory in Columbus, Ohio, rated 'Sonora', a red cultivar, highest (4.6 of 5.0) of any cultivar. Nine of ten highest rated cultivars were red. We compared the ratings of poinsettia buyers with those of nonpoinsettia buyers and found only one difference: nonpoinsettia buyers rated 'Jingle Bells III', a marble cultivar, higher (4.3) than poinsettia buyers (3.8). We also compared consumers who had purchased a red poinsettia to those who had purchased nonred colors and found that red poinsettia buyers rated 'Sonora' higher (4.9) than nonred poinsettia buyers (4.5). Men rated 'Red Elegance' higher (3.7) than women (3.3), whereas women rated 'Freedom White' higher (3.1) than men (2.4). We found few differences

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Fig. 4. Representative example of sensitivity comparison and the range of resonance in laser Doppler vibrometer (LDV) and accelerometer. Hassaku was subjected to the measurement of two parameters—(A) phase shift, (B) amplitude—that were related to the firmness. See Fig. 1 legend for details concerning the method of the measurement.

proach involving the LDV has a higher sensitivity and is less intrusive than an accelerometer. Because of these features, the LDV has advantages over an accelerometer for detecting fruit firmness, and it could potentially lead to on-line quality evaluation and fruit sorting.

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between men and women, buyers and nonbuyers, and nonred buyers and red buyers, which may indicate a relatively homogeneous market that does not greatly differentiate among poinsettia bract color.

A summary of consumer research in floriculture identified several investigations of flower-color preferences (Behe, 1993). Some studies suggested that most consumers prefer red over other flower colors. Red flowers have a distinctly different meaning than other flower colors and are most often linked to romance (Doyle et al., 1994). Hutchison and Robertson (1979) showed that men preferred red roses over other rose colors, and women preferred colors other than red. Men and women preferred pink roses least. Wolnick (1983) reported that consumers preferred red over other geranium (*Pelargonium × hortorum* L.) colors. Hermann and Voigt said that 46% of consumers interviewed in Philadelphia and Washington, D.C., had purchased a poinsettia for Christmas 1985 and that 79% of those were red (1988). Our objective was to determine consumer preferences for 47 poinsettia cultivars.

Methods

Waldrop (1992) reported that good test markets have a population that reflects the national population on the average. Columbus, Ohio, has a population representative of a typical American city, making it a useful test market (Sales and Marketing Management, 1996). Located in the city is the Franklin Park Conservatory, which is a public garden whose primary mission is educational and which serves as a regional location for the general public to enjoy indoor and outdoor plant material displays. Of the Franklin Park Conservatory members, 12% was 60 years of age or older (P.B. Redman, unpublished data); 23% of the Columbus market area was 50 and older (Sales and Marketing Management, 1996). Further, 60% of the Conservatory's membership was from homes with at least two children and 24% had an annual household income of \$50,000/year. People (124) visiting the Franklin Park Conservatory during December 1995 rated 47 poinsettia cultivars based on their personal preferences for bract color.

Individuals over age 18 who visited the conservatory during November and December 1995, were asked

to examine plants on display and rate them on how well they liked them. Participants were asked to rate all plants on a scale from 5 = strongly like to 1 = strongly dislike. They were free to pass through the display and return to modify ratings of plants if desired. They were also asked to provide information regarding their past poinsettia purchases and demographic characteristics (age, household income and size, and gender). There were 24 red, 7 white, 7 pink, and 9 novelty poinsettia cultivars in the study. Four of the cultivars were not named cultivars, rather they were experimental. Data were analyzed using Student's *t* test with SAS software (1990).

Results and discussion

Of 124 participants, 65% was female, 20% was male, and 15% chose not to answer the question regarding gender. Age ranged from 20 to 95 years, with an average of 55.3 years. Number of persons living in the household ranged from one to nine, with an average of two. Responses to household income in 1994 were distributed among 10 categories ranging from less than \$10,000 to \$90,000 or more in \$10,000 increments. Twenty-two percent chose not to answer the income

Table 1. Rating of red poinsettia cultivars.

Cultivar	Supplier	Rating good or excellent (%)	Avg rating ^{z,y}
Sonora	Fischer	83	4.6 a
Red Sails	Paul Ecke Ranch	71	4.4 b
Eckespoint Success	Paul Ecke Ranch	70	4.4 b
Freedom Red	Paul Ecke Ranch	84	4.4 b
Cortez	Fischer	70	4.4 b
Stop Light	Express Seed Co.	73	4.3 b
Red Delight	Mikkelsen's	67	4.2 b
Lilo Red	Paul Ecke Ranch	68	4.2 b
Dynasty	Oglevee	60	4.1 bc
Jolly Red	Ball	59	4.0 cd
V-14 Red	Paul Ecke Ranch	52	3.8 df
Bonita	Fischer	52	3.8 df
Picacho	Fischer	52	3.8 df
#95510	Mikkelsen's	44	3.7 efg
Eckespoint Celebrate II	Paul Ecke Ranch	61	3.7 efg
Nutcracker Red	Oglevee	49	3.7 efg
Donner	Mikkelsen's	49	3.6 fgh
Supjibi Red	Paul Ecke Ranch	39	3.5 ghi
Red Splendor	Oglevee	40	3.5 ghi
Red Elegance	Ball	36	3.4 hi
Annette Hegg Dark Red	Paul Ecke Ranch	34	3.4 hi
#95530	Mikkelsen's	31	3.4 ij
Nobelstar	Fischer	31	3.4 ij
#95520	Mikkelsen's	26	3.1 j

^zAverage ratings were compared in pairs using a Student's *t* test with $\alpha \leq 0.05$. Means followed by same letters are not statistically significant.

^yRating scale: 5 = strongly like, 3 = neutral, 1 = strongly dislike.

Table 2. Rating of white poinsettia cultivars.

Cultivar	Supplier	Rating good or excellent (%)	Avg rating ^{z,y}
#95500	Mikkelsen's	53	3.8 a
Angelica White	Paul Ecke Ranch	53	3.7 ab
Nutcracker White	Oglevee	46	3.5 ad
V-14 White	Paul Ecke Ranch	40	3.5 bcd
Lilo White	Paul Ecke Ranch	32	3.2 e
Annette Hegg Top White	Paul Ecke Ranch	30	3.1 e
Freedom White	Paul Ecke Ranch	24	2.4 e

^zAverage ratings were compared in pairs using a Student's *t* test with $\alpha \leq 0.05$. Means followed by same letters are not statistically significant.

^yRating scale: 5 = strongly like, 3 = neutral, 1 = strongly dislike.

question. The category with the greatest percentage of responses was greater than \$90,000 (13%), followed by \$40,000 to \$49,999 (11%), and \$60,000 to \$69,999 (11%). Median household income was \$40,000 to \$49,999.

Sixty-seven percent of the participants had purchased a poinsettia in 1994, 23% had not, and 10% chose not to respond to this question. Forty-four percent had purchased a red poinsettia in 1995, 15% had purchased a pink poinsettia, 10% had purchased a white poinsettia, 11% had purchased a multicolored poinsettia, and 6% had purchased a salmon- or peach-colored poinsettia.

Only 12 cultivars received a rating of 4.0 or higher on a 5.0 scale. 'Sonora', a red cultivar, received the highest average rating of any cultivar (4.6), regardless of bract color. Eighty-three percent of participants rated it good (4.0) or excellent (5.0). Ten of the top twelve cultivars were red. Two exceptions were 'Monet', a peach cultivar, and 'Angelika Pink'. 'Monet' was rated good or excellent by 77% of the participants and 'Angelika Pink' was rated good or excellent by 69% of the participants. This indicates that red cultivars were preferred over other

colors, a finding consistent with previous studies. We examined consumer preferences by bract color to determine highly rated red, white, pink, and novelty cultivars.

Among red cultivars, 'Sonora' was the highest rated cultivar (Table 1). The next eight cultivars were slightly less preferred, but received a similar rating. 'Freedom Red' had a higher percentage of consumers rate it good or excellent. Since many of the red cultivars received similar ratings, this may indicate that consumers did not see distinct differences between them.

We examined preferences for the white cultivars (Table 2). An experimental cultivar from Mikkelsen's (#95500) was the top-rated white cultivar with a 3.8 average rating. It received a rating similar to 'Angelica White' and 'Nutcracker White.' 'Lilo White', 'Annette Hegg Top White', and 'Freedom White' received similarly lower ratings than the top four cultivars. No white cultivars were rated 4.0 or higher.

Only one pink cultivar, 'Angelica Pink', was rated 4.0 or higher, which was statistically similar to 'V-14 Pink' and 'Pink Peppermint' (Table 3). 'V-14 Pink' had the greatest percentage of consumers rating it good or excel-

lent compared to the other pink cultivars. 'Nutcracker Pink', 'Annette Hegg Hot Pink', and 'Flirt' were all rated similarly lower than other pink cultivars.

'Monet' was the highest rated novelty cultivar (Table 4), with a 4.4 average rating; 77% of the consumers indicated it was good or excellent. It was followed by 'Jingle Bells III', a marble cultivar. Rated lower than 'Jingle Bells III' were 'Dark Puebla', 'Angelica Marble', and 'Puebla'. 'Lemon Drop', a yellow cultivar, was the lowest of all cultivars rated.

We compared the ratings of poinsettia buyers with those of nonpoinsettia buyers (Wilcoxon Rank Sum test, $p \leq 0.05$). There were no differences between the consumer groups in age, household size, or gender. However, poinsettia buyers had a higher household income (\$60,303) than nonbuyers (\$41,293). There was only one exception: nonpoinsettia buyers rated 'Jingle Bells III' higher (4.3) than poinsettia buyers (3.8).

We compared consumers who had purchased a red poinsettia to those who had purchased nonred colors. The only demographic difference was household income. Consumers who purchased red poinsettias had a higher

Table 3. Rating of pink poinsettia cultivars.

Cultivar	Supplier	Rating good or excellent (%)	Avg rating ^{z,y}
Angelica Pink	Paul Ecke Ranch	69	4.1 a
V-14 Pink	Paul Ecke Ranch	73	3.9 ab
Pink Peppermint	Paul Ecke Ranch	59	3.9 ac
Freedom Pink	Paul Ecke Ranch	52	3.8 bc
Nutcracker Pink	Oglevee	35	3.4 d
Annette Hegg Hot Pink	Paul Ecke Ranch	37	3.3 d
Flirt	Fischer	32	3.2 d

^zAverage ratings were compared in pairs using a Student's *t* test with $\alpha \leq 0.05$. Means followed by same letters are not statistically significant.

^yRating scale: 5 = strongly like, 3 = neutral, 1 = strongly dislike.

Table 4. Rating of novelty poinsettia cultivars.

Cultivar	Supplier	Rating good or excellent (%)	Avg rating ^{a,y}	Color
Monet	Paul Ecke Ranch	77	4.4 a	salmon
Jingle Bells III	Paul Ecke Ranch	63	3.9 b	marble
Dark Puebla	Fischer	48	3.6 c	marble
Angelica Marble	Paul Ecke Ranch	48	3.5 cd	marble
Puebla	Fischer	39	3.4 ce	marble
Maren	Fischer	32	3.3 def	salmon
Freedom Jingle Bells	Paul Ecke Ranch	27	3.0 fg	marble
Freedom Marble	Paul Ecke Ranch	25	2.9 gh	marble
Lemon Drop	Paul Ecke Ranch	21	2.7 h	yellow

^aAverage ratings were compared in pairs using a Student's *t* test with $\alpha \leq 0.05$. Means followed by same letters are not statistically significant.

^yRating scale: 5 = strongly like, 3 = neutral, 1 = strongly dislike.

household income (\$63,717) than the nonred buyers (\$49,385). Age, household size, and gender distribution were similar when the two groups were compared. Again, of 47 cultivars rated, only one difference emerged. Red poinsettia buyers rated 'Sonora' higher (4.9) than nonred poinsettia buyers (4.5).

We compared the preferences of men and women. The only demographic difference between them was household size; men had an average household size of three compared to two for women. There were two differences in preferences among the 47 poinsettia cultivars. Men rated 'Red Elegance' higher (3.7) than women (3.3), whereas women rated 'Freedom White' higher (3.1) than men (2.4). 'Sonora' was the highest rated cultivar for both groups.

This was a relatively extensive consumer evaluation of poinsettia cultivars available in the U.S. market. Our results were consistent with previous researchers in that red flowers or bracts were most preferred (Hermann and Voigt, 1988; Hutchison and Robertson, 1979; Wolnick, 1983). We found few differences when comparing men and women, nonbuyers with buyers, and nonred buyers with red buyers. With few differences identified in several group comparisons, we concluded that these poinsettia buyers were a relatively homogenous group in terms of poinsettia bract-color preference. This would indicate that a homogeneous marketing approach may be effective for many typical markets or that other variables contribute to

consumer bract-color preference. If the market were truly homogeneous, a uniform marketing strategy would be effective in markets similar to the one tested here and may be effective elsewhere. If other variables not investigated here contribute to consumer preferences, then a uniform marketing strategy would not be effective in marketing poinsettias in markets similar to the one tested here. We feel the latter deserves further examination.

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