Consumer Color Preference in New Guinea Impatiens

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SUMMARY. Potential consumers were surveyed in the spring of 1996 to gain insight into preferences for flower and leaf color in New Guinea impatiens (*Impatiens hawkeri* Bull.). Survey participants indicated a preference for bright solid colors, and bicolor flowers. The most preferred solid flower colors were red-violet, and red. The least preferred solid flower colors were pink and blush. Potential consumers ranked bicolor flowers over their solid color counterparts. Red and variegated foliage were preferred to solid green. Foliage with solid red upper or lower surfaces were preferred 2:1 over variegated foliage.

New Guinea impatiens (*Impatiens hawkeri*) is an important spring crop for many growers. Versatility and variety are two of the reasons for the rapid increase in production and popularity of this plant since its introduction to U.S. floriculture in the 1970s (Banner and Klopmeier, 1995). Rapid and continuous development of new and improved cultivars have led to tremendous diversity in flower color, leaf color, plant size, and growth rate. Many cultivars are available that perform well in small or large containers, baskets or outdoor flowerbeds (Berghage, 1996).

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There are a large number of commercially available cultivars, and breeders are continually introducing new plants. Ease of production and plant quality are important criteria that growers can use to choose which cultivars to produce (Staby et al., 1979) and much information is available on greenhouse and field performance of New Guinea impatiens cultivars (Bailey, 1996; Berghage, 1998). There is less information available however, to help producers make selections based on consumer preference. Sales figures from the major suppliers can provide an indirect indication of consumer preference, but supplier sales are also influenced by other factors such as ease of production, grower preferences and availability.

To help provide commercial growers additional guidance for making New Guinea impatiens cultivar selections a survey was conducted in the spring of 1996. The survey was designed to address three basic questions concerning color choices.

- What solid flower color(s) do consumers prefer?
- Is there a difference in preference between solid color flowers and bicolor flowers?
- What foliage color do consumers prefer?

Methodology

Plants were selected from among the 118 cultivars in the 1996 Pennsylvania State cultivar trial to represent the full range of solid flower colors found in New Guinea impatiens. Ten colors were identified (Table 2). One plant, uniform for size, form, and flower number, of each color was selected and randomly arranged in a row on a display table. Survey participants were asked to rank their flower color preference from 1 (most preferred) to 10 (least preferred). Survey participants were self-selected from the general public attending the 1996 Memorial Day festival in Boalsburg, Pa. More than 150 potential consumers were surveyed resulting in 130 surveys with usable responses.

Consumer preference for bicolor flowers was examined by substituting two plants with bicolor flowers into the cultivar arrangement on the display table at random intervals. In the first substitution a plant with salmon bicolor flowers replaced the plant with solid salmon colored flowers. A lavender bicolor flowered plant replaced the plant with solid lavender flowers in the second substitution.

Table 1. Ages and participants indicating a New Guinea impatiens purchase in the last 2 years.

Age of respondent	Participant making purchase (%)	Total respondents in age bracket (%)
60+	57.1	20.9
50-60	61.1	26.9
40-50	57.9	28.4
30-40	33.3	17.9
18-30	25	6.0

To examine preference for foliage color, four cultivars with similar flower color (pink and salmon), and plant size, but with leaves differing in color were used (Table 3). Survey participants were asked to compare all six possible pairs, and select the plant they preferred from each pair. Chi-square was used to analyze results.

Survey participants were also asked their age and gender and whether or not they had purchased a New Guinea impatiens in the last 2 years.

Results

Survey participant age ranged from 18 to 82, with a mean and me-

dian of 51 years old. Seventy-eight people responded to the question of age with usable answers, thirteen responses were not clear and thirty-eight were left blank. Of the 130 survey participants, 18% were male, 58% were female, and 24% did not provide gender information. Of the participants, 34% indicated that they had purchased a New Guinea impatiens in the last 2 years, 34% had not, and 33% did not answer this question. The age of each potential consumer was correlated ($r = 0.277$) with whether a purchase had been made in the last 2 years (Table 1). Survey participants under 40 were less likely to have purchased a New Guinea

impatiens in the last 2 years than those over 40. Gender of survey participants was not significantly correlated with NGI purchase in the last 2 years or with participant age.

FLOWER COLOR RATINGS. Survey participants ranked brighter flower colors such as red-violet or red, and bicolor flowers higher than others. The most highly ranked solid flower color was red-violet. The most preferred bicolor was a purple star. These were followed by salmon-bicolor, red, dark pink, lavender, orange, salmon, white, light lavender, pink, and blush (Table 2). The average ranking for the red-violet and lavender bicolor cultivars was 3.3. Of the survey respondents, 63% and 64% selected these colors as one of their top three most highly ranked colors respectively. Only 9% and 10% of the survey participants ranked these colors in their bottom three color choices respectively. In contrast dark pink, orange and lavender all had similar average rankings (5.0 to 5.2) but the specific rank assigned by survey participants varied by color. Lavender

Table 2. Flower color preference among potential New Guinea impatiens consumers. Ranking average is the average of the preference ranking for 42 survey respondents for solid colors, 36 with substitution 1, and 41 with substitution number 2.^z Where substitution did not significantly ($P = 0.05$) influence ranking, means have been pooled.

Color	Representative cultivar ^y	Ranking avg (1-10)	Respondents ranking in each category (%)		
			1-3	4-7	8-10
Red-violet	Anguilla (10)	3.3	63	28	9
Red	Prepona (7)	4.6	43	37	20
Dark Pink	Bonaire (3)	5.0	29	55	16
Lavender	Celebrette Lavender (8)	5.1	41	28	31
Orange	Timor (1)	5.2	34	41	24
Salmon	Flora (6)	6.0	17	52	31
White	Moorea (5)	6.4	21	37	42
Light lavender	Celebration Light Lavender II (4)	6.4	23	35	42
Pink	Pot-o-Gold Pink (9)	6.7	4	56	40
Blush	Samoa (2)	7.3	7	41	52
Substitution 1 (solid salmon replaced with bicolor salmon flowers) ^x					
Salmon bicolor	Volcano Orange (6)	4.4	48	31	21
Red	Prepona (7)	3.5	66	20	14
Red-violet	Anguilla (10)	4.4	44	42	14
Substitution 2 (solid lavender replaced with bicolor lavender flowers) ^w					
Lavender bicolor	Celebration Purple Star (8)	3.3	64	26	10
Salmon bicolor	Volcano Orange (6)	4.4	48	31	21
Red-violet	Anguilla (10)	4.4	44	42	14
Pink	Pot-o-Gold Pink (9)	7.5	2	43	55

^zThe average ranking provides a general idea of how participants responded to the color while the three distribution categories provide information detailing the participants response to the color (i.e., rating the color favorably, percentage ranking it from 1-3; rating the color neither favorably nor unfavorably, percentage ranking the color from 4-7; or rating the color unfavorably, percentage ranking the color from 8-10).

^yPosition on display table (1) = left to (10) = right.

^xRatings changed for two flower colors when salmon bicolor flowers replaced solid salmon in the display. Only colors where significant changes in preference occurred are listed. Rankings of 'Volcano Orange' and 'Anguilla' were not significantly changed between substitution 1 and 2 so means were pooled.

^wNew Guinea impatiens with lavender bicolor flowers rated higher than solid colors and salmon bicolor when substituted for solid lavender colored flowers in the display. Only flower colors where significant changes in preference compared to the display with all solid colors are listed. Rankings of 'Volcano Orange' and 'Anguilla' were not significantly changed between substitution 1 and 2 so means were pooled.

was one of the top three color preference choices for 41%, compared to 34% and 29% for orange and dark pink respectively. Lavender was also one of the bottom three color rankings for a larger percentage of respondents than orange or dark pink. Few respondents indicated that dark pink was in either their top or bottom three color preferences. This suggests that participants either liked lavender flowers or they didn't, but that dark pink was pretty much acceptable for everybody.

FOLIAGE COLOR. Survey participants showed a definite preference for leaves with color in addition to green. Leaves with a dark green upper surface and red lower surface, or leaves with red upper and lower surfaces were preferred by almost two thirds of the survey participants, and variegated leaves were preferred over plain green leaves (Table 3). There was no significant difference in preference between leaves with a dark green upper surface and red lower surface and leaves with red upper and lower surfaces. Solid green leaves were the least preferred of the four surveyed leaf colors.

Conclusions

The potential consumers participating in this study preferred New Guinea impatiens with colored leaves, and bicolor and brighter solid flower colors like red and red-violet. There seems to be a general agreement that red flowers appeal to many potential flower purchasers. Red flowers have been preferred in studies with fresh cut roses (*Rosa hybrida* L.) and carnations (*Dianthus caryophyllus* L.) (Sherman et al., 1956), zonal geraniums (*Pelargonium x hortorum* L.H. Bail.)

(Wolnick, 1983), and poinsettias (*Euphorbia pulcherima* Willd. ex Klotzsch) (Herrmann and Voigt, 1988).

The high rankings demonstrate a strong preference by survey respondents for bicolor New Guinea impatiens flowers which also finds some precedent in studies done with fresh cut flowers. Cut flower bunches made up of nonhomogeneous colors are more appealing to potential consumers than homogeneous colored bunches (Robertson and Chatfield, 1981).

There are, of course, many factors that can influence general preferences for flower color. Gender for example, influences the preference for red roses (Robertson and Chatfield, 1981) and geraniums (Zehner et al., 1982), but was not a significant factor in preference for red and red-violet New Guinea impatiens in this study. Other factors might also be expected to influence consumer preference. For example, leaf color preference was evaluated using plants with pink and salmon flowers in this survey. Several of the survey participants indicated a strong dislike for variegated green and yellow leaves and pink flowers. They stated that they thought the plants were gaudy. Although beyond the scope of this survey, it is interesting to speculate on how consumer preference might be influenced by the interaction between leaf and flower color. The range of flower colors in the product mix and the way plants are displayed could also have an influence on consumer flower color preference. For example in this study the preference for red flowers was enhanced by placing a salmon bicolor flower next to the red flowered plant.

These survey results should suggest to growers and retailers a mix of New Guinea impatiens with a majority of bright colors including red, red-violet, violet, and bicolor flowers and solid colored red and red green leaves. Orange, dark pink, salmon, and salmon bicolor flowers and plants with variegated leaves, although less preferred, were a strong second choice for many participants. These latter colors are likely to show their strength in the marketplace as follow-up purchases and purchases by consumers with more plant purchase experiences. Whites, light colors, blushes and plants with plain green leaves also should have a place in the product mix (in smaller numbers) both to show off other colors and because they are preferred by a number of customers.

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Table 3. Leaf color preferences of 123 survey participants for New Guinea impatiens. Differences in preference for all comparisons except Green upper/red lower vs. red upper and lower were significant by chi-square at the 5% level.

Leaf color comparisons	Representative cultivars	Respondents indicating preference (%)
Green upper/red lower	Bonaire	70
Green	Dark Delias	30
Red upper and lower	Kalima	78
Green	Dark Delias	22
Green upper, red lower	Bonaire	64
Variegated	Aglia	36
Red upper and lower	Kalima	69
Variegated	Aglia	31
Variegated	Aglia	56
Green	Dark Delias	44
Green upper, red lower	Bonaire	50
Red upper and lower	Kalima	50