

Federal-State Marketing Improvement Program
Final Performance Report
For the Period of 9/30/2013 to 9/30/2015

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Recipient Name: Michigan State University
Project Title: Visual Path for Food Producing Plants: Power of Involvement & Expertise
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Project Contact: Dr. Bridget K. Behe, Professor, 517-353-0346, behe@msu.edu

An Outline of the Issue or Problem: Marketers invest nearly 8% of their advertising budget on in-store marketing because > 70% of all buying decisions are made at the point of purchase. Eye-tracking technology enables researchers to literally see what consumers are looking at during a shopping experience. Expertise and involvement are two sociological constructs that indicate the level of knowledge and interest consumers have in a product, and have been demonstrated to influence purchase decisions of other products. This study aimed to determine which parts of a display that novice/expert consumers view first/longer when viewing plant displays of branded vs. non-branded food-producing plants. Our hypothesis was that involvement and expertise would influence the cues that consumers pay attention to and will influence purchase intention differently. The primary outcome of the research was the connection between visual data and the plant knowledge and expertise of consumers. We selected food-producing plants, two herbs and two vegetables, since they help promote a healthy lifestyle and diet. We conducted in-person and online surveys in May 2014 to accomplish our goals.

Goals and Objectives:

Our goal was to investigate the roles that product involvement and expertise played in capturing and holding attention for branded and non-branded food producing plants with the intention to use this information to stimulate sales of these products. Our objectives were:

- A. **Objective A: To refine measures of product involvement and product expertise to assess differences in attention to point-of-purchase stimuli for food producing transplants (e.g. herbs and vegetables).** H₁: Consumers with high involvement will demonstrate faster measures of visual attention (e.g. total visit duration) and higher purchase intention than low involvement consumers. H₂: Consumers with high plant expertise will rely on different cues than consumers with low expertise. H_{2a}: High expertise consumers will rely on intrinsic cues (e.g. plant color) to assess plant quality. H_{2b}: Novice (low expertise) consumers will rely on extrinsic cues (e.g. price, brand) to assess plant quality.
- B. **Identify the extent to which attention capturing elements of retail display vary by consumer segment (high vs. low involvement; expert vs. novice).** H₃: High involvement consumers will

attend to different cues than low involvement consumers. H4: Novice consumers will respond more favorably to extrinsic cues (e.g. price) than expert consumers.

C. **To communicate the findings** through in-state and out-of-state extension meetings, trade publications, and peer-reviewed articles.

We developed both an in-person and online surveys (IRB approval X13-1113e) accomplish the first two objectives. The survey consisted of first viewing 16 images and then answering questions regarding plant brand recognition, awareness, purchases, involvement, and expertise as well as the use of herb and vegetable transplants. We also collected demographic information about each respondent. We screened for potential respondents who had made > 0 plant purchases in the six months prior to the study. Researchers showed study participants images of 16 plants, varying the container color (white, green, and yellow), plant type (basil, parsley, tomato, and pepper), plant brand (generic and 3 national brands), and price. The images we showed to subjects to determine purchase intention were developed from a conjoint design, which is a statistical method used to determine preferences for products with a given set of attributes. Although all 144 combinations could have been presented to subjects, we developed partial factorial design of 16 combinations to retain the ability to assess all attributes in the complete design but reduce the time investment of each participant. Researchers selected vegetable and herb transplants: tomato (*Solanum lycopersicum*) and pepper (*Capsicum annum*) were selected to represent vegetable transplants while parsley (*Petroselinum crispum*) and basil (*Ocimum basilicum*) were selected to represent edible herb plants. Price levels were chosen based on typical national price reflective of many types of plant outlets of similar products in 2013. We selected three national plant brands which, at the time of the study, had been in existence from 22 to 134 years. Each image consisted of a picture of a transplant in a 4-inch container with a price shown in the lower right region of the image. After photographing the plants against a black background and used Adobe Photoshop to digitally alter the container color and add brand and price information. Subjects were shown the images and asked to respond verbally to “how likely are you to purchase this plant?” using a 5 point Likert scale. We adapted 27 survey questions on product involvement and expertise (from the Marketing Scales Handbook by Bruner, James, and Hensel) to develop scales for herb (and separately) vegetable expertise. Demographic characteristics were requested in the final portion of the survey.

Contribution of Project Partners: Masterpiece Flower Company (Michigan) and Dramm Corporation (Minnesota) contributed matching funds (\$18,000 of the total) to the project. Other collaborating retail garden centers who helped provide plant material for images and/or input on the study were Koetsiers Greenhouse (Grand Rapids, MI) and Schwartz Greenhouse (Romulus, MI).

Results, Conclusions, and Lessons Learned:

Project results and conclusions: Study participants who had seen the plant brands prior to the study had a higher mean likely to buy rating for branded plants compared to those who had not seen the plant brands prior to the study. In the conjoint analysis, we found that plant type was the most important product attribute. Price and brand were similarly important but also less important than plant type. All three attributes were more important than container color. Having no brand on the container detracted \$0.20 from the perceived value of the plant while the brands added up to \$0.15 to the perceived plant value. Heavy

usage consumers had a higher brand consciousness than light usage consumers, but heavy and light usage consumers had similar patterns of visual attention to the brand. We predicted that a branded (vs. unbranded) container would capture participants attention more quickly (shorter TTFF). Consistent with our hypothesis, the branded package captured attention first. Our finding confirmed the fact that brand serves as an important external cue in drawing consumers' first attention and is consistent with prior research. Respondents also focused attention longer (total visit duration) on the branded container and product. This suggests that the two national brands in the study were salient to the participants and were able to hold their attention. We predicted that the branded product and container would more quickly capture and hold the attention of highly involved consumers (shorter time to first fixation). Contrary to our hypotheses, involvement did not influence the attention capturing ability of the product, nor did it influence sustained attention to the branded product or container. However, since brand name was the only product information provided, and respondents viewed only one item at a time, the simplicity of the stimuli may not have warranted central processing for the high involvement group. We developed two highly reliable and valid scales for herb (and separately) vegetable expertise that can be, and have been, used in subsequent studies.

Lessons learned: We had no unanticipated challenges or occurrences. If other researchers engage in eye-tracking studies, the data extraction phase is more time-consuming than originally thought. We disseminated the findings in peer-reviewed and industry publications as well as scientific and trade presentations. The involvement and expertise scales have been helpful in other investigations.

Evaluation: The project results were disseminated through oral and print means. Anecdotal evidence from discussions with Michigan retailers in 2015 would indicated that their sales have increased through a better understanding of the visual information consumers use in making a purchase decision. We projected that if horticultural industry professionals and researchers better understood the attention capturing elements of garden center displays, they could refine those displays at the 16,000 independent garden centers to obtain a purchase of just two more items from the entire store (at an average retail price of a fresh herb or vegetable transplant at \$4 per plant), an investment of \$26,665 would result in a five-fold return on investment. We believe the goal was achieved.

Current or Future Benefits/Recommendations for Future Research: Retail and production firms who grow ornamental and edible transplants will continue to benefit from the findings of this study. The research team obtained subsequent funding to investigate flowering annuals and perennial shrubs (data were collected in May, 2015 and are currently under analysis). Future research will continue to probe the elements in merchandised displays that capture visual attention and impact consumer purchase decisions.

Project Beneficiaries: Greenhouse, nursery, and floral crop production accounts for 2.5% of all U.S. plant producers. There were 4849 producers in the U.S. (as of the 2015 Floriculture Crop Highlights) who produce approximately \$1.26 billion (wholesale value) of bedding/garden plants. Of the 2657 nursery production/retail firms responding to a recent (2013) nationwide survey, 27% of the firms had retail only sales while 31% had production and retail activities, with sales of \$1.592 billion (Hodges, Khachatryan, Hall, and Palma, 2015, Production and Marketing Practices and Trade Flows in the United States Green Industry, 2013, ISBN 1-58161-420-9). Both producers and retailers are affected when a plant is sold.

Additional Information: Include publications, presentations, websites and other materials or information generated by the project. Provide as attachments or Internet links.

Peer-reviewed Publications

1. Behe, Bridget K., Patricia T. Huddleston, and Lynnell Sage. 2016 (accepted). Age Cohort Influences Brand Recognition, Awareness, and Likelihood to Buy Vegetable and Herb Transplants. HortScience.
2. Yuan, Shupe, Bridget Behe, Patricia Huddleston, and Lynnell Sage. (in review). The Effects of Product Expertise and Involvement on Information Search and Consumers' Decision Process. International Review of Retail, Distribution, and Consumer Sciences.
3. Behe, B.K., Mikyung Bae, P. Huddleston, and Lynne Sage. 2015. The Effect of Involvement on Visual Attention and Product Choice. Journal of Retailing and Consumer Services. 24(May):10-21.

Scientific Presentations:

1. Behe, Bridget, Lynnell Sage, and Patricia Huddleston. 2015. The Role of Plant Brands in Consumer Quality Perceptions of Herb and Vegetable Transplants. American Society for Horticultural Science. August 4-7. New Orleans, LA.
2. Sage, Lynnell, Patricia Huddleston, and Bridget Behe. 2015. Age Influences on Product Involvement and Expertise for Vegetable and Herb Transplants. American Society for Horticultural Science. August 4-7. New Orleans, LA.
3. Sage, Lynnell, Bridget Behe, and Patricia Huddleston. 2015. Eye-tracking Technology Data Collection Methods. American Society for Horticultural Science. August 4-7. New Orleans, LA.

Industry Presentations

1. Marketing Panelist: What are the Coming Trends? Griffin Horticultural Expos. Springfield, MA (August 26) and Lancaster, PA (September 30). 45 and 75 participants.
2. Marketing to Make the Sale. iLandscape Educational Program. Chicago, IL. February, 2015. 87 participants.
3. Eye-tracking Reveals How Consumers Shop for Plants in the Retail Garden Center. Harold Wilkins Endowed Seminar at the University of Minnesota and University of Wisconsin-River Falls. 35 and 42 participants. November, 2014.
4. Caught You Looking! 2014. CanWest Trade Show and Educational Conference, Vancouver, BC. October. 53 participants.
5. Where have all the Customers Gone? 2014. CanWest Trade Show and Educational Conference. Vancouver, BC. October. 12 participants.

6. Enhancing the Connection between People and Plants: Consumer Research in the retail Environment. Tobii International North American Conference. Washington, DC. 42 participants.
7. Consumer Research in Horticulture. Columbus (OH) College of Art & Design. September, 2014. 7 participants.
8. Vegies: Counting the Cost, Identifying a Market, and Should I Do It? Cultivate14, Columbus, OH. July, 2014. 47 participants.
9. Conversations with Your Next Customers. Cultivate14, Columbus, OH. July, 2014. 37 participants.
10. Inspire & Refresh: What Spring Training Really Should Look Like. Saginaw Nursery & Landscape Association. February, 2014. 58 participants.
11. Greenhouse Marketing. Webinar for Annie's Project (Rutgers University). Hour-long webinar with Dr. Jennifer Dennis. February 6, 2014, with 27 online participants.
12. Improving Productivity and Profitability in the Nursery Business. Gulf States Expo for the Alabama Nursery Association. Mobile, AL. January, 2014.
13. Enhancing the Customer Experience. Gulf States Expo for the Alabama Nursery Association. Mobile, AL. January, 2014.
14. Walk, Run, Race: Improving Marketing Strategies for the Beginner, Intermediate, and Advanced Marketer. Gulf States Expo for the Alabama Nursery Association. Mobile, AL. January, 2014.
15. Conducting Core Customer Group Discussions: What Your Customers Really Should be Telling You. Great Plains Expo for the Nebraska Landscape and Nursery Association. Lincoln, NE. January, 2014.
16. Inspire and Refresh: What Spring Training Really Should Look Like. Great Plains Expo for the Nebraska Landscape and Nursery Association. Lincoln, NE. January, 2014.

Purchase

Q39. What is your participant number for the eye-tracker?

Q40. Did you complete this survey . . .

- before you completed the eye-tracking portion of the study?
- after you completed the eye-tracking portion of the study?

Q3. In thinking about your plant purchases over the past six months, please check the box beside all the types of plants that you purchased in the past six months.

- | | |
|--|---|
| <input type="checkbox"/> Annual flowering plants (e.g. petunia, marigold, impatiens). | <input type="checkbox"/> Fruit producing trees (apple, pear, etc.) |
| <input type="checkbox"/> Vegetable plants (e.g. tomato, pepper) | <input type="checkbox"/> Evergreen trees or shrubs (e.g. pines, conifers, junipers) |
| <input type="checkbox"/> Herbs (e.g. basil, parsley, sage) | <input type="checkbox"/> Shade trees (e.g. maple, oak, etc.) |
| <input type="checkbox"/> Flowering perennials (e.g. hosta, chrysanthemum, day lily, cone flower) | <input type="checkbox"/> Indoor flowering potted plants (e.g. orchid, African violet, etc.) |
| <input type="checkbox"/> Flowering shrubs (hydrangea, liliac, etc.) | <input type="checkbox"/> Indoor foliage plants (cactus, succulent, weeping fig, etc.) |
| <input type="checkbox"/> Non-flowering shrubs (e.g. boxwood, taxus, etc.) | <input type="checkbox"/> None of the above |

Questions

Q20. Please indicate the extent to which you agree or disagree with the statements below.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I like to serve fresh vegetables in hot or cold dishes at many meals.	<input type="radio"/>				
Meals just aren't as enjoyable without fresh herbs.	<input type="radio"/>				
I enjoy cooking with fresh vegetables.	<input type="radio"/>				
Fresh herbs taste better than dried herbs.	<input type="radio"/>				
Fresh vegetables taste better than processed (canned or frozen) vegetables.	<input type="radio"/>				
I like to serve fresh herbs in hot or cold dishes at many meals.	<input type="radio"/>				
I enjoy cooking with herbs.	<input type="radio"/>				
Meals just aren't as enjoyable without fresh vegetables.	<input type="radio"/>				

Q21. Please check all that apply. In the last six months, me or someone in my household ate . . .

fresh tomatoes

fresh parsley

fresh peppers

fresh basil

Q22. We would now like to ask you some questions about herb and vegetable plants. These would be plants that you would grow outside to have fresh herbs and/or vegetables to use in meals. If you grow herbs or vegetables from seed, these would be included in our questions about plants. What brands of vegetable or herb plants can you name?

Q23. Please indicate the extent to which you agree or disagree with the statements below.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The well-known national plant brands are best for me.	<input type="radio"/>				
The more expensive plant brands are usually my choices.	<input type="radio"/>				
Nice garden centers and specialty stores offer me the best products.	<input type="radio"/>				
Differences among plant brands are large.	<input type="radio"/>				
Differences among plant brands are hard to judge.	<input type="radio"/>				
The best plant brand is hard to determine.	<input type="radio"/>				

Q24. Which of these brands have you seen? Please click under each brand you have seen.







I have not seen any of these brands.

Q25. Regarding Burpee products . . .

	Not at all	A little	Somewhat	Moderately	Very Much
How familiar are you with them?	<input type="radio"/>				
How experienced are you with them?	<input type="radio"/>				
How knowledgeable are you about them?	<input type="radio"/>				

Q26. Regarding Bonnie Plant products . . .

	Not at all	A little	Somewhat	Moderately	Very Much
How familiar are you with them?	<input type="radio"/>				
How experienced are you with them?	<input type="radio"/>				
How knowledgeable are you about them?	<input type="radio"/>				

Q27. Regarding Proven Winners products . . .

	Not at all	A little	Somewhat	Moderately	Very Much
How familiar are you with them?	<input type="radio"/>				
How experienced are you with them?	<input type="radio"/>				
How knowledgeable are you about them?	<input type="radio"/>				

Q28. I think that herb plants are

	unimportant				important
	<input type="radio"/>				

Q29. I think that herb plants are

	of no concern to me				of great concern to me
	<input type="radio"/>				

Q30. I think that herb plants are

	mean nothing to me				are of great importance to me
	<input type="radio"/>				

Q31. I think that herb plants are

	uninteresting				interesting
	<input type="radio"/>				

Q32. I think that herb plants are

	boring				exciting
	<input type="radio"/>				

Q33. I think that herb plants are

	unappealing				appealing
	<input type="radio"/>				

Q34. I think that herb plants are

	mundane				fascinating
	<input type="radio"/>				

Q35. I think that herb plants are

	mundane				fascinating
	<input type="radio"/>				

Q36. Please indicate the extent to which you agree or disagree with the statements below.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I know a lot about herb plants.	<input type="radio"/>				
I am a herb plant expert.	<input type="radio"/>				
Compared to other people, I am interested in herb plants.	<input type="radio"/>				
I am involved with growing herbs plants.	<input type="radio"/>				
I grow herb plants around my home.	<input type="radio"/>				
I automatically know which herb plants to buy.	<input type="radio"/>				
At the place of purchase, I can visually detect my preferred herb plants without much effort.	<input type="radio"/>				
I can immediately identify my preferred herb plants even if they are displayed with others.	<input type="radio"/>				
I enjoy learning about herb plants.	<input type="radio"/>				
I will search the latest information on herb plants before I make a purchase.	<input type="radio"/>				
I keep current on the most recent developments about herb plants.	<input type="radio"/>				
I consider myself knowledgeable about herb plants.	<input type="radio"/>				
My knowledge of herb plants helps me to understand very technical information about them.	<input type="radio"/>				
I can recall many herb plants from memory.	<input type="radio"/>				
I can recognize many types of herb plants.	<input type="radio"/>				
I can recall product-specific attributes about herb plants.	<input type="radio"/>				
I can recognize many names of vegetable plants.	<input type="radio"/>				
I am knowledgeable about herb plants.	<input type="radio"/>				
In general, I know a lot about herb plants.	<input type="radio"/>				
Because of my personality, I would rate herb plants as being of the highest importance to me, personally.	<input type="radio"/>				

Q37. I think that vegetable plants are

	unimportant				important
	<input type="radio"/>				

Q38. I think that vegetable plants are

	of no concern to me				of great concern to me
	<input type="radio"/>				

Q39. I think that vegetable plants are

	mean nothing to me				are of great importance to me
	<input type="radio"/>				

Q40. I think that vegetable plants are

	uninteresting				interesting
	<input type="radio"/>				

Q41. I think that vegetable plants are

	boring				exciting
	<input type="radio"/>				

Q42. I think that vegetable plants are

	unappealing				appealing
	<input type="radio"/>				

Q43. I think that vegetable plants are

	mundane				fascinating
	<input type="radio"/>				

Q45. Please indicate the extent to which you agree or disagree with the statements below.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I know a lot about vegetable plants.	<input type="radio"/>				
I am a vegetable plant expert.	<input type="radio"/>				
Compared to other people, I am interested in vegetable plants.	<input type="radio"/>				
I am involved with growing vegetable plants.	<input type="radio"/>				
I grow vegetable plants around my home.	<input type="radio"/>				
I automatically know which vegetable plants to buy.	<input type="radio"/>				
At the place of purchase, I can visually detect my preferred vegetable plants without much effort.	<input type="radio"/>				
I can immediately identify my preferred vegetable plants even if they are displayed with others.	<input type="radio"/>				
I enjoy learning about vegetable plants.	<input type="radio"/>				
I will search the latest information on vegetable plants before I make a purchase.	<input type="radio"/>				
I keep current on the most recent developments about vegetable plants.	<input type="radio"/>				
I consider myself knowledgeable about vegetable plants.	<input type="radio"/>				
My knowledge of vegetable plants helps me to understand very technical information about them.	<input type="radio"/>				
I can recall many vegetable plants from memory.	<input type="radio"/>				
I can recognize many types of vegetable plants.	<input type="radio"/>				
I can recall product-specific attributes about vegetable plants.	<input type="radio"/>				
I can recognize many names of vegetable plants.	<input type="radio"/>				
I am knowledgeable about vegetable plants.	<input type="radio"/>				
In general, I know a lot about vegetable plants.	<input type="radio"/>				
Because of my personality, I would rate vegetable plants as being of the highest importance to me, personally.	<input type="radio"/>				

Q46. Thinking back over the plants and gardening supplies you purchased over the past six months, approximately how much did you spend (in total) on gardening supplies and plants (excluding mechanical equipment like mowers and tillers)?

Q47. From which type(s) of stores did you purchase plants and gardening supplies over the past six months? Please check all that apply.

- Independent, free-standing garden center Mass-merchandise Print catalog
- Home improvement or hardware store Internet None of the above
- Supermarket or grocery store

Q48. From which type of store did you purchase most or a majority of the plants and gardening supplies you bought over the past six months? Please check only one type of store.

- Independent, free-standing garden center Mass-merchandise Print catalog
- Home improvement store Internet None of the above
- Supermarket or grocery store

Q49. In what year were you born?

Q50. What is your gender?

Male

Female

Q51. Not counting yourself, how many other adults (age 19 years and older) live in your household?

Q52. How many children (age 18 years and under) live in your household?

Q53. What is your ethnicity (ethnic heritage)? Please select all that apply.

- White/Caucasian Asian Pacific Islander
- African American Native American Other
- Hispanic

Q54. What is the highest level of education you have completed (please choose one)?

- | | | |
|---|---|--|
| <input type="radio"/> Less than High School | <input type="radio"/> 2-year College Degree | <input type="radio"/> Doctoral Degree |
| <input type="radio"/> High School / GED | <input type="radio"/> 4-year College Degree | <input type="radio"/> Professional Degree (JD, MD) |
| <input type="radio"/> Some College | <input type="radio"/> Master's Degree | |

Q55. Do you live in a metropolitan, suburban, or rural region?

metropolitan region

suburban region

rural region

Q56. What was your approximate total family or household gross income for 2013 (please choose one)?

- | | | |
|--|--|--|
| <input type="radio"/> Less than \$19,999 | <input type="radio"/> \$80,000 to \$99,999 | <input type="radio"/> \$160,000 to \$179,999 |
| <input type="radio"/> \$20,000-\$39,999 | <input type="radio"/> \$100,000 to \$119,999 | <input type="radio"/> \$180,000 to \$199,999 |
| <input type="radio"/> \$40,000-\$59,999 | <input type="radio"/> \$120,000 to \$139,999 | <input type="radio"/> \$200,000 or more |
| <input type="radio"/> \$60,000 to \$79,999 | <input type="radio"/> \$140,000 to \$159,999 | <input type="radio"/> Prefer not to answer |

The Role of Plant Brands in Consumer Quality Perceptions of Herb and Vegetable Transplants

Bridget K. Behe*, Lynnell Sage,
Department of Horticulture
and Patricia Huddleston
Department of Advertising & Public Relations
Michigan State University



Problem Statement



- With sluggish demand for many ornamental plants (Hodges et al., 2009), competition has intensified.
- Brands are “name, term, design, symbol” differentiates products.
- Branded products help marketers differentiate their products from others, most often at a premium price (Kotler and Keller, 2009).
- The impact of branding on consumer choice has not been extensively studied with regard to plants.

Protocol



- May 2014 conducted two simultaneous studies
- In-person survey of 75 Mid-Michigan subjects (compensated \$25)
- Online survey (identical to above) of 566 consumers representative of 3 age groups: Boomers, Gen X, Gen Y
- Saw identical images and answered identical questions about herbs (parsley, basil), vegetables (tomato, pepper), use, purchase, and growing plants.



Plant	Pot Color	Brand	Price
Basil	Green	None	\$0.99
Parsley	White	L	\$1.49
Pepper	Yellow	N	\$1.99
Tomato		P	

- Conjoint design
- Random presentation

Results: Brand recognition

Have you ever seen this brand of plant?	Brand P (n=365)		Brand L (n=237)		Brand N (n=178)	
Boomer	73.6%	a	31.4%	b	26.4%	a
Gen X	60.6%	b	44.9%	a	33.3%	a
Gen Y	56.6%	b	52.6%	a	36.2%	a
Total	64.4%		41.9%		31.4%	

Online sample only. Percent responding “yes” they had seen the brand logo shown on the survey. Separation by Least Square Means with $\alpha = 0.05$. Means with the same letter by column are similar statistically.

A higher percentage recognized Brand P. The difference in brand recognition by age group is striking.

Results: Brand recognition

Have you ever seen this brand of plant?	Boomer (n=216)		Gen X (n=198)		Gen Y (n=152)	
Brand P (n=365)	73.6%	a	60.6%	b	56.6%	b
Brand L (n=237)	31.4%	b	44.9%	a	52.6%	a
Brand N (n=178)	26.4%	a	33.3%	a	36.2%	a
Total	64.4%		41.9%		31.4%	

Online sample only. Percent responding “yes” they had seen the brand logo shown on the survey. Separation by Least Square Means with $\alpha = 0.05$. Means with the same letter by row are similar statistically.

A higher percentage recognized Brand P. The difference in brand recognition by age group is striking.

Results: Brand knowledge



L	Familiar	Experienced		Knowledgeable		
Gen Y (n=152)	3.21	a	3.07	a	3.04	a
Gen X (n=198)	3.04	b	2.89	b	2.86	b
Boomer (n=216)	2.88	b	2.71	b	2.54	b
Total (n=566)	3.45		3.26		3.14	

Online sample only. Measured using 5 point brand familiarity scale where 1=not at all, 2=a little, 3=somewhat, 4=moderately, 5=very familiar. Separation by Least Squares Means with $\alpha = 0.05$. Means with the same letter are similar statistically.

Gen Y was more familiar, experienced, and knowledgeable about this brand; Gen X and Boomers were similarly less familiar, experienced, and knowledgeable. Was true for all 3 brands.

Results: Conjoint analysis

- Analysis showed that respondents made their decision to buy based on plant type (44.2% a), price (21.2% b), brand (20.3% b) and container color (14.3% c).
- Basil was most highly valued (\$0.85 more than parsley) and pepper was worth least (-\$0.85 than parsley).
- Green and white containers detracted 5 cents from the perceived value; yellow added \$0.10 to perceived value.
- Generic or no brand detracted \$0.20 from the perceived value; Brand L added \$0.025, Brand M added \$0.05, and Brand P added \$0.15.

Results: How long and how fast did they look at the plant, container, and price?

	Time to first fixation (milliseconds)		Total visit duration (milliseconds)		Percent dwell time	
Plant	0.264	b	2.283	a	87.0%	a
Price	1.252	a	0.189	b	6.1%	b
Container	1.389	a	0.200	b	6.9%	b



In-person sample. Separation by Least Squares Means with $\alpha = 0.05$. Means with the same letter are similar statistically.

Consumers first looked at the plant, then container and price similarly.

Consumers looked longest at the plant, then container and price similarly.

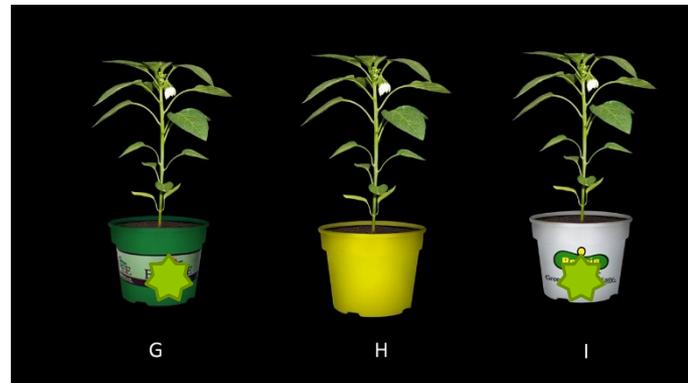
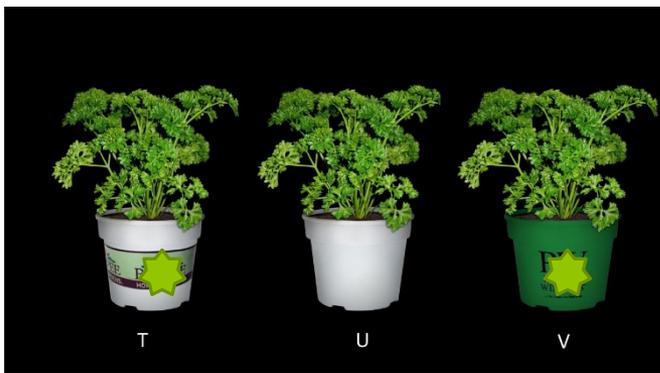
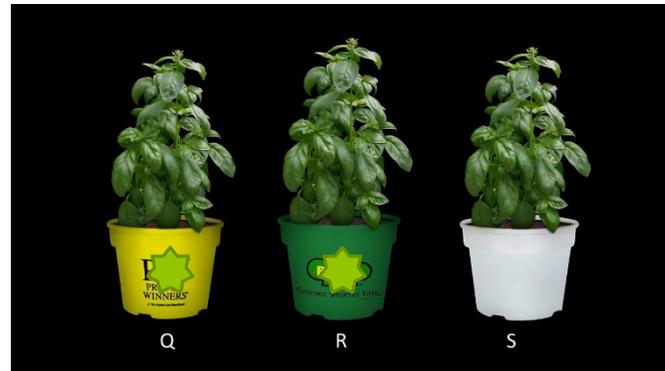
Results: How did they look at brands differently?

	Likely to buy		Time to first fixation		Total visit duration		Percent dwell time	
Generic	5.6	ns	1.3	ns	0.049	b	6.7	b
Brand L	5.8		1.5		0.216	a	30.4	a
Brand N	5.7		1.4		0.234	a	30.0	a
Brand P	5.7		1.7		0.228	a	31.9	a

In-person sample only. Separation by Least Squares Means with $\alpha = 0.05$. Means with the same letter are similar statistically.

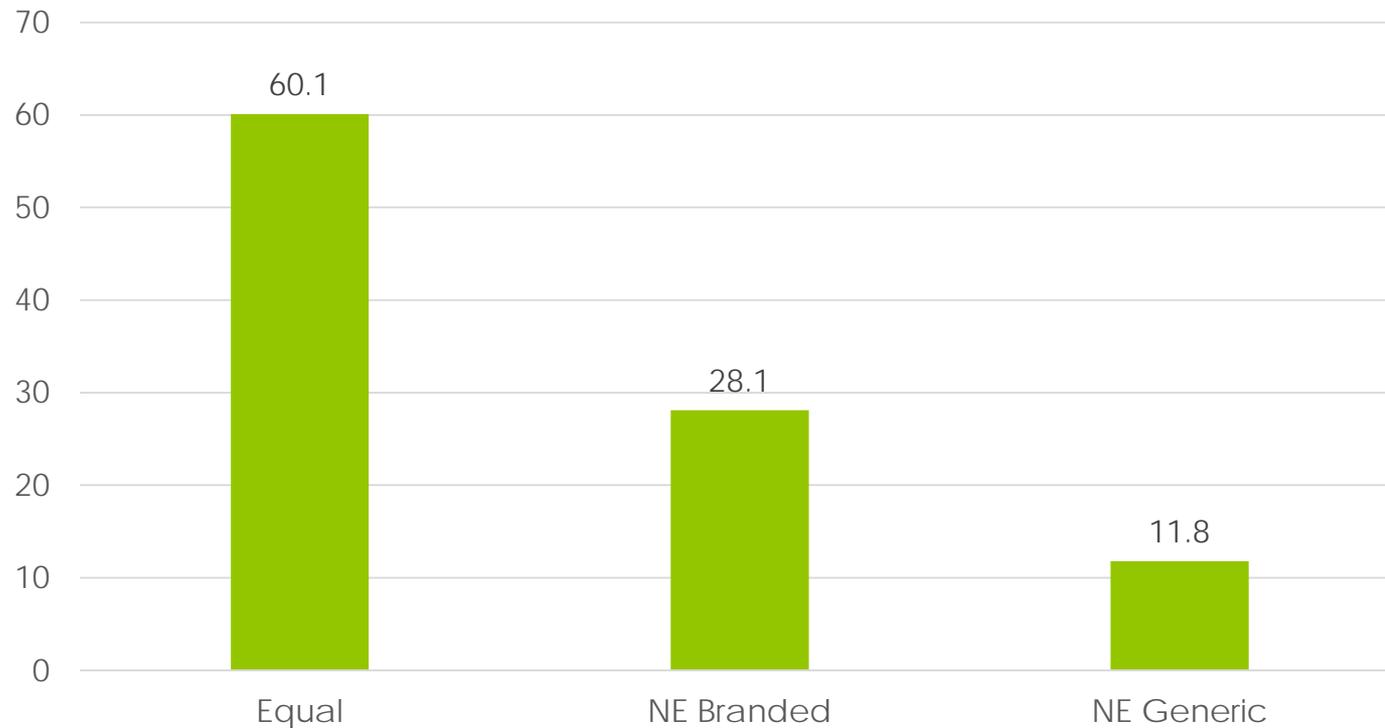
No difference in LTB by brand, even though % dwell time increased.

Which plant is the best quality?



Perceived plant quality

Percent Responding with highest quality



Chi-square = 104.1458, df= 2, $p < 0.001$

Conclusions/Recommendations

- A higher percentage of Boomers recognized the national brands, but Gen Y reported they had greater familiarity, experience, and knowledge of those brands.
- Visually, subjects spent as much time on the brand as on the price (plant still gets the most visual time with 87% dwell time).

Conclusions/Recommendations

- Brands were relatively as important as price (20.3% of the purchase decision).
- Generic or no brand detracted \$0.20 from the perceived value. Having a brand is better than no brand.
- Different brands added different values. Brand L added \$0.025, Brand M added \$0.05, and Brand P added \$0.15 to perceived value.
- There was a difference in quality perception; most found them similar but 28% of the sample reported the branded plants as higher quality even though they were digitally identical.

Acknowledgements

- Corporate sponsors: Masterpiece Flower Company LLC, Dramm Corporation
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- Horticultural Research Institute
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United States Department of Agriculture
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Age Influence on Product Involvement and Expertise for Vegetable and Herb Transplants

Lynnell Sage*, Bridget K. Behe, and Patricia Huddleston
Michigan State University

Problem Statement



- Sales of herb and vegetable transplants have grown sharply over the past few years, yet little research has investigated who the buyers of these products are.
- Our primary research question was, “Do younger consumers have a different level of expertise or involvement with regard to herb and vegetable transplants?”

Literature

- Baby Boomers (persons aged 50-64 years) have long been a core customer group for live plants (Dennis and Behe, 2007). However, younger age cohorts do not appear to be purchasing plants to the same extent, causing industry concern (Butterfield and Baldwin, 2013).

Age Subcultures

- Literature
- Baby Boomers (1946-1964) 25%; 49 to 67 yrs.
 - Generation X (1965 to 1976) 17%; 37 to 48 yrs.
 - Gen Y or Millennial Generation (1977 to 1995) 25%; ages 18 to 36 today



Literature

- Experts are individuals who know more, solve problems faster, and use their information differently (Herling, 2000) compared to novices Tanka and Taylor, 1991).
- Product expertise level affects purchase decisions. Park and Lessig (1981) found that consumers with lower product expertise used a brand name as the *only* product attribute in the buying process.
- Roa and Monroe (1988) reported that subjects with a moderate level of product familiarity did *not* use brand name alone. Thus, we see evidence that product expertise affects the branding information sought and used in making the decision to buy.

Literature

- Product involvement is another important influence on the purchase decision (Maoz and Tybout, 2002; Park et al., 2007).
- Studies have described product involvement as the perceived relevance of the product based on inherent interests, values, or needs (Greenwald and Leavitt, 1984; Hupfer and Gardner, 1971).
- People who have a higher level of involvement with an activity were more likely to spend more energy or time on it (Rothschild, 1984).
- Studies have shown that consumers with a higher level of product involvement spent more time in brand evaluation than less involved consumers (Matthes et al., 2013; Park 1995; Pieters and Wedel, 2004). Thus, involvement level also influences information sought, including the brand.

Materials and Methods



- May 2014 an online survey of 566 consumers representative of 3 age groups: Boomers, Gen X, Gen Y
- Shown images of branded/unbranded herbs (parsley, basil), vegetables (tomato, pepper)
- Questions pertaining to their use, purchase, and growing of these plants.
- Asked questions about product expertise and involvement, separately, for vegetable and herb transplants.

Results

Percent of total respondents in each age group	Boomer	Gen X	Gen Y	Avg. Age
Online (n=566)	35.9% (n=205)	34.5% (n=194)	29.6% (n=167)	50 years

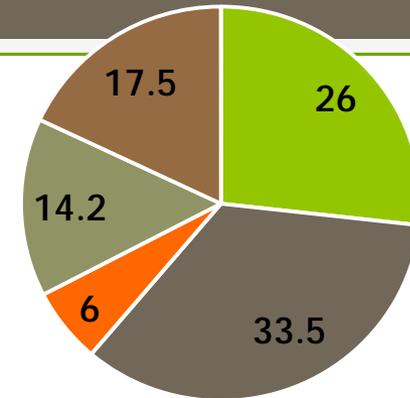
Results: Purchases by age group

In the last 6 months, someone in my household purchased	Boomer (n=202)	Gen X (n=195)	Gen Y (n=169)	significant difference?
Vegetable plant	28.6%	32.4%	39.0%	yes
Herb plant	26.0%	32.5%	41.5%	yes
Purchased no plants	20.7%	34.5%	42.9%	yes

Separation by Pearson Chi-square significance test with $\alpha = 0.05$.

A higher percentage of Gen Y bought vegetables and herbs.

Results: Shopping by age group



■ IGC ■ HI ■ Super ■ MM ■ Others

Where did you make MOST of your plant/gardening purchases?	Boomer (n=202)	Gen X (n=195)	Gen Y (n=169)
Independent Garden Center	36.1%	33.4%	30.6%
Home improvement store	34.4%	39.1%	26.5%
Supermarket or grocery store	35.3%	20.6%	44.1%
Mass-merchandiser	41.3%	30.0%	28.7%

Measured with yes or no response to "From which types of store did you make MOST of your purchases for plants and gardening supplies over the past 6 months (please check one)."

Herb/Vegetable Interest and Expertise

- 4 unique dimensions
- Measured with 50 questions adapted from the Marketing Scales Handbook for product importance

Herb/Vegetable Interest

- I think that herb plants are unimportant/important.
- I think that herb plants are of no/great concern to me.
- I think that herb plants mean nothing/are of great importance to me.
- I think that herb plants are uninteresting/interesting
- I think that herb plants are boring/exciting; unappealing/appealing; mundane/fascinating

Herb/Vegetable Expertise

- I know a lot about herb plants.
- I am a herb plant expert.
- Compared to other people, I am interested in herb plants.
- I am involved with growing herbs plants.
- I grow herb plants around my home.
- I automatically know which herb plants to buy.
- At the place of purchase, I can visually detect my preferred herb plants without much effort.
- I can immediately identify my preferred herb plants even if they are displayed with others.
- I enjoy learning about herb plants.
- I will search the latest information on herb plants before I make a purchase.
- I keep current on the most recent developments about herb plants.
- I consider myself knowledgeable about herb plants.
- My knowledge of herb plants helps me to understand very technical information about them.
- I can recall many herb plants from memory.
- I can recognize many types of herb plants.
- I can recall product-specific attributes about herb plants.
- I can recognize many names of herb plants.
- I am knowledgeable about herb plants.
- In general, I know a lot about herb plants.
- Because of my personality, I would rate herb plants as being of the highest importance to me, personally

What do they know about fresh herbs and vegetables?

	Herb interest		Herb expertise		Vegetable interest		Vegetable expertise	
Gen Y (n=169)	0.04	a	-0.01	a	0.05	a	-0.01	a
Gen X (n=195)	0.00	b	0.00	b	0.00	b	0.01	a
Boomer	-0.15	c	0.05	c	-0.24	c	-0.03	b
Total	0.00		0.00		0.00		0.00	

Separation by Tukey's Honestly significant test with $\alpha = 0.05$. Means in column with the same letter are similar statistically.

Gen Y had higher herb and vegetable interest (but not expertise).
Boomers had higher herb expertise.

Conclusions

- Gen Y has higher veg **interest** but not expertise. This means they can use it, but aren't knowledgeable about growing it. They are primed for purchases, but need help.
- Gen Y reported a high percentage of purchasing "most" plants/related items from mass-merchandiser and supermarket.

Acknowledgements

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Michigan State University
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The Perceived Value of Branded Plants

Bridget K. Behe, Ph.D., Professor, Department of Horticulture, Michigan State University, East Lansing, MI 48824 behe@msu.edu 517-353-0346

What goes unseen goes unsold, and for transplants, a retailer's ability to grab the customer's attention is especially important to the first step of getting plants sold. Some research outside horticulture has shown that consumers use very few pieces of information to make a purchase decision, most often they use brand and price. Other work suggests that brand recognition positively influences buying. Some researchers maintain that brands which are on the "top of mind" are the real drivers of the purchase decision, with known brands more likely selected than unknown brands.

There has been some research on state and regional horticultural brands, but not national brands. Collart et al. (2010) showed that Texas consumers who shopped for ornamental plants weekly or monthly had higher state brand awareness than consumers who shopped for plants less often. Consumers who had higher state brand awareness were willing to pay more for branded plants. In their study, the two brands effectively differentiated products creating a price premium of ~10%. Additionally, people ages 40-55 years were least likely to be aware of brands while people age 55 or older were willing to pay the least for branded plants. Whery et al. (2007) investigated consumer perceptions of a hypothetical Pennsylvania brand and showed that branded plants were most preferred.

We began our investigation on plant brands in 2014¹ and developed an online survey to better understand the role of plant brand recognition and intention to purchase an herb or

¹ Federal funds were matched with state funds through the USDA Federal-State Marketing program to conduct this study. This project was also supported by the USDA National Food and Agriculture, Hatch Project Number MICL 02085, and by Michigan State University

vegetable transplant. The survey consisted of first viewing 16 images and then answering questions regarding plant brand recognition, awareness, purchases, and demographic information about each respondent. Researchers selected vegetable and herb transplants: tomato, pepper, were selected to represent vegetable transplants while parsley and basil were selected to represent edible herb plants. We selected three national plant brands which, at the time of the study, had been in existence from 22 to 134 years. Each image consisted of a picture of a transplant in a four-inch container with a price shown in the lower right region of the image (Fig. 1). After photographing the plants against a black background we digitally alter the container to add the plant brand (Brand R, S, and T). Survey participants were shown the images and asked to respond verbally to “how likely are you to purchase this plant?” using a 10 point scale. Brand recognition was measured by asking them if they had previously seen the brand logo shown before the study.

Responses came from the entire U.S. and consisted of only people who had made at least one plant purchase. Of the total 566 participants, 57% women and 43% men with an average of 1.5 adults and 0.7 children in the household. Approximately half lived in a suburban area and 73.8% were Caucasian. Nearly one-third had attained a four-year college degree. Average household income was in the \$60,000 to \$79,999 range. We divided the sample into three age groups: Gen Y (ages 18-29), Gen X (ages 30-49) and Boomers (ages 50 and older) to see if there were differences between three groups.

Overall, we saw the highest brand recognition for Brand T (the youngest brand), followed by Brand R then Brand S (the oldest brand). A higher percentage of Boomers had seen Brand T

AgBioResearch. Masterpiece Flower Company and Dramm Corporation also helped fund this study.

compared to Gen Y and Gen X. However, a larger percentage of Gen X and Gen Y had seen Brand R. The percentage of respondents from each age group who had seen Brand S was similar. Both Brand R and S appear primarily on vegetable and herb transplants whereas Brand T primarily markets flowering plants. We found that 20.3% of Boomers had purchased annual plants compared to 6% of Gen X and 3.4% of Gen Y, so having a higher percentage of Boomers who made flowering plant purchases may be one contributing reason for the higher level of brand recognition of the brand appearing primarily on annual plants. We also speculate that the investment in brand advertising may also have contributed to the differences in awareness and recognition.

Next, we compared the average likelihood to buy for branded and non-branded plants by age group. Overall, branded plants were preferred over unbranded plants, with a higher average likelihood to buy rating *even though the plants were digitally identical*. The goal of a brand is to increase the perceived value, which we believe is reflected in a higher average likelihood to buy rating. Our results are consistent with several studies on other types of branded products. In addition, we found that average likelihood to buy was higher for the Gen X and Gen Y groups compared to Boomers which was also consistent with prior work showing younger aged consumers were more likely to buy the branded plants (Collart et al, 2010). Thus it would appear that the national brands studied here did create a perceived difference in the minds of the Gen X and Gen Y participants of this study.

We then compared the average likely to buy score for each brand and each age group by whether the participant had seen the brand logo (before the study). Participants who had seen the brand logo prior to the study reported a higher likelihood to buy average score for all three brands study, consistent with Hoyer and Brown (1990) who showed that known brands were

more likely selected compared to unknown brands. We found an interaction between age and brand recognition, however, the pattern of mean LTB was similar for all three brands in the study. Gen X and Gen Y were more LTB the branded plants they had seen, with Boomers exhibiting a similar reaction but also reporting a lower LTB whether or not they had seen the brand.

Thus, the brand appeared to be more important and appeared to create product differentiation (despite the fact that images for branded unbranded plants were identical) for the younger aged consumers compared to Boomers. Future marketing strategies should include branding as a piece of information used by (especially those younger) consumers to help facilitate their buying decision. Furthermore, we see evidence that brands are being used for plant selection in a manner similar to packaged goods. In the future, branding may help to serve as a part of product differentiation for consumers. While one study does not answer all the questions that arise with regard to branded plants, this is a first step to showing what consumers think about branded plants.

Table 1. Overall and age group comparison of recognition of three national brands from an online plant branding study.

Brand	Percent recognition	% Overall (% of those who previously had seen brand)			2-way, seen/not seen Brand X by age group (1-way, those who saw brand x age)
		Boomers	Gen X	Gen Y	
	Total (n=566)				
R	42% had seen (.0001)	12% (29%)	16% (38%)	14% (34%)	significant difference
S	32% had seen (<.0001)	10% (32%)	12% (37%)	10% (31%)	not significant difference

T	64% had seen ($<.0001$)	28% (44%)	21% (33%)	15% (24%)	significant difference
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1 **Age Cohort Influences Brand Recognition, Awareness, and Likelihood to Buy Vegetable**
2 **and Herb Transplants¹**

¹ Federal funds were matched with state funds in the USDA Federal-State Marketing Improvement Program to fund this research. The authors thank Masterpiece Flower Co. and Dramm Corp. for their generous donations to facilitate this research and Marlene Cameron for adaptation of the images. We also acknowledge Michelle Quigley with the Statistical Consulting Center in the College of Agriculture and Natural Resources Biometry Group at Michigan State University for her advice on the statistical analyses performed in this study. This project was also supported by the USDA National Food and Agriculture, Hatch Project Number MICL 02085, and by Michigan State University AgBioResearch.

3 **Age Cohort Influences on Brand Recognition and Likelihood to Buy Vegetable and Herb**
4 **Transplants**

5
6 **Key words:** *Capsicum annum*, consumer, conjoint analysis, green industry, *Ocimum basilicum*,
7 *Petroselinum crispum*, *Solanum lycopersicum*, survey

8
9 **ABSTRACT**

10 Marketers invest nearly 8% of their advertising budget on in-store marketing because > 70% of
11 all buying decisions are made at the point of purchase. Older consumers, especially Baby
12 Boomers (typically classified as persons born from 1950-1965) have long been considered a core
13 target market for horticultural products. However, some industry concerns have arisen with
14 regard to the lack of purchasing among younger age cohorts, especially Gen X (born 1966-1977)
15 and Gen Y (born 1978-1990). Brands help create the perception of added-value while also
16 differentiating products from competitors. Often, brands are one of a few pieces of information
17 consumers use to make product choices. We conducted an online survey in May 2014 to
18 investigate the role of age cohort and brand recognition on the likely to buy (LTB) two herb and
19 two vegetable transplants. We showed study participants images of 16 plants, varying the
20 container color (white, green, and yellow), plant type (basil, parsley, tomato, and pepper), plant
21 brand (generic and 3 national brands), and price. Approximately equal numbers from three age
22 cohorts (Boomers, Gen X, and Gen Y) were represented in the sample of 566 plant purchasers.
23 We observed that more Boomers had seen (recognized) Brand P while more Gen X and Gen Y
24 participants had seen Brand L. Subjects who had seen the plant brands prior to the study had a
25 higher mean likely to buy rating (LTB) for branded plants compared to those who had not seen

26 the plant brands prior to the study. Furthermore, both Gen X and Gen Y were more LTB branded
27 plants compared to Boomers. In the conjoint analysis, we found that plant type was the most
28 important product attribute. Price and brand were similarly important but also less important than
29 plant type. All three attributes were more important than container color. Having no brand on the
30 container detracted \$0.20 from the perceived value of the plant while the brands added up to
31 \$0.15 to the perceived plant value. Future marketing strategies which include branded plants at
32 the point of purchase likely will increase perceived product value and LTB, especially among
33 younger consumers.

34

35

INTRODUCTION

36 With a slowing of plant sales growth (Hodges et al., 2009), competition among
37 companies for consumers' dollars has heightened. Sluggish demand indicates a maturing market,
38 and an influx of brands is likely to occur at that time in an effort to differentiate products from
39 competitors and enhance the perceived product value (Kotler and Keller, 2009). Branding helps
40 to create the perception of added-value and/or distinguishes a company's products from
41 competitors'. Differentiation and enhancing perceived value through branding may be fruitful
42 actions for the company striving to increase sales. In horticulture, anecdotal evidence suggests
43 that plant branding appears to be more prolific in the 21st century.

44 With > 70% of all buying decisions made at the point of purchase, marketers increased
45 their in-store marketing budgets from approximately 3% in 2004 to approximately 8% in 2010
46 (Stahlberg and Maila, 2010). Marketers also use brands is to facilitate consumers' buying
47 decisions. In the mainstream marketing literature, some evidence suggests that consumers first
48 identify necessary information, before it is cognitively processed, to arrive at a purchase decision

49 (Lin and Chen, 2006; Olson and Jacoby, 1972). Part of that information identified and processed
50 in the purchase decision includes brands. Therefore, it may be important for plant producers and
51 retailers to know which pieces of information at the point of purchase, especially regarding plant
52 brands, influence consumers in their purchase decisions. While there have been some studies on
53 state or regional brands (Collart et al., 2010, Whery, 2007), we still have little information
54 regarding the impact that brands have on consumer perceptions or intentions to purchase plants.
55 Therefore, a better understanding of consumer perceptions of plant branding could help growers,
56 wholesalers and retailers better manage the branded and generic products they grow,
57 merchandise, and more effectively market products to consumers.

58 A maturing of the green industry (Hodges et al., 2009) has included weaker product
59 demand particularly among younger aged consumers (Dennis and Behe, 2007). In light of
60 industry concerns about this reduced demand (Hodges et al., 2009) and, at the same time,
61 changing American demographics (Drucker, 2002), a more precise understanding of consumer
62 perceptions of products is helpful to all marketers. Baby Boomers (most typically described as
63 born between 1950 and 1965) have long been a core customer group for live plants (Dennis and
64 Behe, 2007). However, younger age cohorts do not appear to be purchasing plants to the same
65 extent, causing industry concern (Butterfield and Baldwin, 2013). More information is needed
66 about the perceptions, attitudes, and behavior of younger potential customers to attract them to
67 the products offered by horticultural professionals. Do younger potential consumers view the
68 branded herb and vegetable transplants in the same way as Baby Boomers?

70 *Branding*

71 A brand, as defined by the American Marketing Association (2014), is a “name, term,
72 design, symbol, or any other feature that identifies one seller's good or service as distinct from
73 those of other sellers.” A brand name or logo represents an information “chunk” in consumer
74 decision-making (Simon, 1974) because consumers deduce product characteristics partially
75 based on the brand (Gardner, 1971; Jacoby et al., 1971). Brands serve as information cues for
76 consumers, shaping their expectations about product performance (Kapferer, 2012). Prior
77 research showed that brands play a fundamental role in providing cues when consumers make
78 product purchase decisions (Jacoby et al., 1977; Dodds and Monroe, 1985; Dodds et al., 1991;
79 Keller, 2013). Well-crafted and well-managed brands give companies an advantage in the
80 marketplace (Holmberg, 2002; Kotler and Keller, 2009) and retailers manipulate displays to
81 draw attention to the brands they want to sell (Drèze et al., 1993; Chandon et al., 2009; Clement
82 et al., 2013).

83 Research has demonstrated that consumers use very few pieces of information to make a
84 purchase decision (Hansen, 1969; Olson and Jacoby, 1972), most often the information they use
85 are brand and price (Dodds and Monroe, 1985; Jacoby et al., 1974; Kardes et al., 2004; Olson
86 and Jacoby, 1972). Studies suggest that brand recognition influences purchase behavior (Hoyer
87 and Brown, 1990), with recognition of a brand or anything else defined as a mode of attention or
88 “identifying something by its kind (name) and in view of the use to which it could be put”
89 (Krippendorff, 2005, p. 91). Some researchers maintain that brands which are salient or are on
90 the “top of mind” are the real purchase decision drivers (Nedungadi, 1990; Ehrenberg et al.,
91 1997; Chandon and Wansink, 2002; Keller, 2013). Known brands were more likely selected,

92 regardless of the consumer's quality perception of both known and unknown brands (Hoyer and
93 Brown, 1990). Furthermore, that study showed that when an inexperienced decision maker was
94 selecting between a known and an unknown brand, s/he nearly always selected the known brand.

95 National plant brands have not been as rigorously investigated as state and regional
96 brands. Collart et al. (2010) showed that Texas consumers who shopped for unspecified
97 ornamental plants weekly or monthly had higher state brand awareness than consumers who
98 shopped for plants less often. Consumers who had higher state brand awareness were willing to
99 pay more for branded plants. In their study, the two brands effectively differentiated products
100 creating a price premium of ~10%. Additionally, subjects aged 40-55 years were least likely to
101 be aware of brands while subjects aged ≥ 55 were willing to pay the least for branded plants.
102 Whery et al. (2007) investigated consumer perceptions of a hypothetical Pennsylvania brand and
103 showed that (*Verbena x hybrida* Voss 'Tapien Salmon') branded plants in white containers were
104 most preferred and that the container color was a relatively large proportion of the decision to
105 buy (31.9%). That was different from Hall et al. (2010) which showed that half of the study
106 participants were either non-discriminating or price sensitive in terms of the relative importance
107 of the plant container type.

108 *Demographics*

109 Drucker (2002) wrote that changes in demographics are one of the easiest ways for a
110 business to remain innovative, yet few business managers follow or act upon demographic
111 changes. Demographic characteristics are individual attributes, including age, that shape life
112 experiences, which in turn affect how consumers view products and make purchasing decisions.
113 Divisions in the general population into age cohorts vary somewhat by demographer. Baby
114 Boomers (76 million), categorized as those individuals born between 1950 and 1965, comprise

115 one quarter of the American population and are relatively brand loyal compared to younger age
116 cohorts (Anon., 2012). Baby Boomers buy more floral products compared to Gen X and Gen Y
117 (Dennis and Behe, 2007; Rihn et al., 2012). However, some are engaged in vegetable and herb
118 gardening. Butterfield and Baldwin (2013) reported that 28% of households with persons aged \geq
119 55 engaged in vegetable gardening and 17% engaged in herb gardening.

120 Gen X and Gen Y are two distinct age cohorts that have been studied because of their
121 increasing influence on the economy (Barrow, 1994; Littrell et al., 2005; Roberts and Manolis,
122 2000; Silvergleit, 2004). Gen X consists of 44 million people born between 1966 and 1977
123 (Dunn, 1993). Consumers in this age group reportedly tend to value money, possessions, and the
124 shopping experience more than older generations (Dunn, 1993; Roberts and Manolis, 2000).
125 Members of Gen X are also characterized as well-educated, self-reliant, and practical (Littrell et
126 al., 2005). Butterfield and Baldwin (2013) reported that 10% of persons aged 35-44 engaged in
127 herb gardening but 27% engaged in vegetable gardening.

128 Gen Y represents 72 million Americans born between 1979 and 1995, who are the most
129 ethnically and culturally diverse age cohort in America today; nearly 25% of this age group is
130 African-American and 18% are Latino (Anon., 2013). Urban living has a strong appeal to them
131 and they appear to be more interested in social activities compared to older age cohorts (Anon.,
132 2013). Gen Y are considered digital natives, meaning they have always had the internet. For
133 branded products, they relate to a brand best through a good story about the brand or product and
134 enjoy interacting with the brand on social networks (Anon., 2014). Horticulturally, recent
135 evidence suggests that Gen X and Gen Y are quite interested in locally grown and organic fresh
136 produce (Behe et al., 2013; Yue et al., 2012), making them potential buyers for many types of
137 food-producing plants. For example, “The Foodies” segment identified by Behe et al. (2013) was

138 younger than the other eight segments identified in the study. All members of that consumer
139 segment (6% of the total sample) had purchased fruit trees and two-thirds of them had purchased
140 herbs and vegetable transplants. Butterfield and Baldwin (2013) reported that 22% of persons
141 aged 18-34 engaged in vegetable gardening while 15% engaged in herb gardening.

142 With an overall decline in plant purchases in a maturing market, a better understanding of
143 several factors may help marketers better understand consumers' use of information in the
144 purchase process. Brand recognition, in particular, may play an important role in the purchase
145 decision and may vary by age cohort. Null hypotheses are outlined in Table 1.

146 **METHODOLOGY**

147 We developed an online survey (IRB approval X13-1113e) to better understand the role
148 of age cohort on plant brand recognition and intention to purchase an herb or vegetable
149 transplant. The survey consisted of first viewing 16 images and then answering questions
150 regarding plant brand recognition, awareness, purchases, and use of herb and vegetable
151 transplants. We also collected demographic information about each respondent.

152 The instrument was developed using Qualtrics (Provo, UT) and was active from 14 May
153 to 16 May 2014. Subjects were recruited by Global Marketing Institute, Inc. (GMI; Bellevue,
154 WA) because of their panel quality and pricing. Potential survey respondents were contacted by
155 the vendor and invited to participate. We screened for potential respondents who had made > 0
156 plant purchases in the six months prior to the study and attempted to achieve a sample with
157 approximately 1/3 of the sample in each of three age cohorts: a) born before 1965, which we
158 labeled as Boomers; b) born 1966-1985, which we labeled as Gen X; and c) persons born 1986-
159 1997, which we labeled as Gen Y. This division of the total sample would ensure a sufficient
160 number of respondents in each age group to make comparisons between age cohorts.

161 The images we showed to subjects to determine purchase intention were developed from
162 a conjoint design, which is a statistical method used to determine preferences for products with a
163 given set of attributes (Kuhfeld, 2010). It defines the overall preference for a particular product
164 as the sum of the part-worths (also termed utilities) for each product attribute level (Gaasbeck
165 and Bouwman, 1991; Hartigan, 1975). Conjoint analysis has been used to understand the
166 purchase drivers and willingness to pay for attributes and attribute levels for a wide range of
167 horticultural products, including Christmas trees (Behe et al., 2005b), landscapes (Behe et al.,
168 2005a), mixed flowering annual containers (Mason et al., 2008), and sustainable/eco-friendly
169 plant production (Behe et al., 2010; Behe et al., 2013). For this study, we employed a
170 combination of product attributes and levels that represented a 4 (plant types) x 4 (3 national
171 brands and a generic or no brand) x 3 (prices) x 3 (container colors) factorial experiment.
172 Although all 144 combinations could have been presented to subjects, we developed partial
173 factorial design of 16 combinations to retain the ability to assess all attributes in the complete
174 design but reduce the time investment of each participant (Chrzan and Orme, 2000).

175 To assess the use of plant brands, we began by selecting, from anecdotal evidence,
176 relatively common transplants for which there may be demand among all age cohorts. Thus we
177 selected vegetable and herb transplants: tomato (*Solanum lycopersicum*) and pepper (*Capsicum*
178 *annuum*) were selected to represent vegetable transplants while parsley (*Petroselinum crispum*)
179 and basil (*Ocimum basilicum*) were selected to represent edible herb plants. Container colors
180 were selected based on Whery et al. (2007) while price levels (\$0.99, \$1.49, and \$1.99) were
181 chosen based on typical national price reflective of many types of plant outlets of similar
182 products in 2013. We selected three national plant brands which, at the time of the study, had
183 been in existence from 22 to 134 years.

184 Each image consisted of a picture of a transplant in a 15cm container with a price shown
185 in the lower right region of the image (Fig. 1). After photographing the plants against a black
186 background, Adobe Photoshop (Adobe Systems, San Jose, CA) was used to digitally alter the
187 container color and add brand and price information. Subjects were shown the images and asked
188 to respond verbally to “how likely are you to purchase this plant?” using a 5 point Likert scale.
189 After completing the conjoint portion of the study, brand recognition and awareness were
190 measured by asking subjects if they had previously seen the brand logo shown before the study
191 and how familiar with each plant brand they were. Demographic characteristics were requested
192 in the final portion of the survey.

193 *Data analysis*

194 For each subject, part-worth utility scores for each level of each attribute, and relative
195 importance values for each attribute were generated using the ordinary least squares (OLS)
196 algorithm for each individual in a metric conjoint analysis. The analysis was done by the
197 TRANSREG Procedure (METHOD=morals to fit each model individually) in SAS software v.
198 9.4 (SAS Institute Inc. 2014). The likely to buy ratings (LTB) comprised the dependent variable,
199 and the attributes were the independent class variables. Part-worth utilities within each attribute
200 were restricted to a sum of 0. The OLS algorithm converged for 468 of the 566 dependent
201 variables. Means of attribute utility coefficients and relative importance across respondents by
202 age cohort were analyzed in PROC GLIMMIX for significant differences using Tukey’s honestly
203 significant test for conservative pairwise comparisons to avoid Type I errors.

204 **RESULTS AND DISCUSSION**

205 *Demographic characteristics*

206 The sample was drawn from the entire U.S. and consisted of only subjects who had made
207 > 0 plant purchases. Of the total 566 participants, 27% were classified as (Gen Y) or born
208 between 1997 and 1986, 35% were classified as Gen X (born between 1985 and 1966), and 38%
209 were classified as Boomers (born in 1965 or earlier) (Table 2). Our sample was comprised of
210 57% women and 43% men with a mean of 1.5 adults and 0.7 children in the household.
211 Approximately half lived in a suburban area and 73.8% were Caucasian. Nearly one-third had
212 attained a four-year college degree. Median household income was in the \$60,000 to \$79,999
213 range. The demographic characteristics of this sample, with the exception of age, were generally
214 consistent with other samples of plant purchasers or gardeners (Butterfield and Baldwin, 2012;
215 Dennis and Behe, 2007).

216 *Brand awareness and Brand recognition*

217 Brand recognition was measured by the percentage of each age cohort who indicated they
218 had seen the national brand logo prior to participating in the study (Table 3). Overall, there was
219 greatest brand recognition for Brand P (the youngest brand), followed by Brand L then Brand N
220 (the oldest brand). A higher percentage of Boomers had seen Brand P compared to Gen Y and
221 Gen X. However, a larger percentage of Gen X and Gen Y had seen Brand L. The percentage of
222 respondents from each age group who had seen Brand N was similar. Thus, the data partially
223 supported H1a and H1b. Both Brand L and N appear primarily on vegetable and herb transplants
224 whereas Brand P primarily markets flowering plants. We found that 20.3% of Boomers had
225 purchased annual plants compared to 6% of Gen X and 3.4% of Gen Y (Chi square =190.431,
226 $p=0.000$). Having a higher percentage of Boomers who made flowering plant purchases may be
227 one contributing reason for the higher level of brand recognition of the brand appearing primarily

228 on annual plants. Although not available to the researchers, the amount of investment in brand
229 advertising may also have contributed to the difference in awareness and recognition.

230 Next, we compared the mean LTB for branded and non-branded plants by age cohort
231 (Table 4). Overall, branded plants were preferred over unbranded plants, with a higher mean
232 LTB rating even though the plants were digitally identical. This finding rejects the null
233 hypothesis H2. The goal of a brand is to increase the perceived value, which may be reflected in
234 a higher mean LTB rating. The finding is consistent with several studies on other types of
235 branded products (Jacoby et al., 1977; Dodds and Monroe, 1985, Dodds et al., 1991; and Keller,
236 2013). We also found that mean LTB was higher for the Gen X and Gen Y groups compared to
237 Boomers. This finding did not support the null H3a and H3b. Consistent with Collart et al.
238 (2010), younger aged consumers were more LTB the branded plants. Thus it would appear that
239 the national brands studied here did create a perceived difference in the minds of the Gen X and
240 Gen Y subjects of this study.

241 We then compared the mean LTB score for each brand and each age cohort by whether
242 the participant had seen the brand logo before the study commenced (Table 5). Subjects who had
243 seen the brand logo prior to the study reported a higher LTB mean score for all three brands
244 study, rejecting the null H4. This finding was consistent with Hoyer and Brown (1990) who
245 showed that known brands were more likely selected compared to unknown brands. We found an
246 interaction between age and brand recognition, however, the pattern of mean LTB was similar
247 for all three brands in the study. Gen X and Gen Y were more LTB the branded plants they had
248 seen, with Boomers exhibiting a similar reaction but also reporting a lower LTB whether or not
249 they had seen the brand.

250 Thus, the brand appeared to be more important and appeared to create product
251 differentiation (despite the fact that images for branded unbranded plants were identical) for the
252 younger aged consumers compared to Boomers. Future marketing strategies should include
253 branding as a piece of information used by (especially those younger) consumers to help
254 facilitate their buying decision. Furthermore, we see evidence that brands are being used for
255 plant selection in a manner similar to packaged goods. In the future, branding may help to serve
256 as a part of product differentiation for consumers.

257 *Conjoint analysis*

258 The conjoint model was significant ($F=231.28$, $p < 0.0001$) and explained 67% of the
259 variance in consumer choice of plant using the 'likely to buy' response (Table 6). Plant type had
260 the highest relative importance, consistent with other studies (Behe et al., 2013; Getter and Behe,
261 2013; Mason et al., 2008). Brand and price had similar relative importance, which was
262 intermediate to plant type and container color. Lower prices were preferred to higher prices,
263 which can be an indication of logic in consumer ratings LTB and also consistent with other
264 conjoint studies. Calculation of the value for each of the attribute levels followed the same
265 methods as Wollaeger et al. (2015). The range in part worth utility scores was 0.386 units (0.247
266 for basil and -0.139 for pepper), which was equal to \$1 (equidistant range from low price to mid-
267 price point and high price). Therefore, each unit of utility score equaled ~2.6 cents. Having no
268 brand on the container detracted \$0.20 from the value while the national brands added from 0 to
269 \$0.15 to the perceived value. Brands N and P were worth the greatest while Brand L was worth
270 the same as the unbranded. So, two of the three national brands had a higher perceived value
271 compared to the generic plant, partially supporting H5 and consistent with Collart et al. (2010)
272 who found that branded products elicited a greater WTP compared to generic plants. Green and

273 white plant containers detracted 8 and 5 cents, respectively, from the perceived value of the
274 product while yellow containers added 13 cents in value. This result did not support the null H6
275 and was a different finding from that of Whery et al. (2007) who showed that white containers
276 were most preferred and the largest percent of the purchase decision.

277 We found a few subtle differences in relative importance and utility scores by age cohort,
278 but we did not get a different separation for the age cohorts compared to the overall sample
279 (Table 6). Since Boomer participants exhibited a similar relative importance value for brand
280 compared to Gen X and Gen Y participants, the data did support the null H7.

281

282

CONCLUSIONS

283 Overall, we did find evidence that consumers used brands on herb and vegetable
284 transplants in a manner similar to packaged goods, as reported in the mainstream marketing
285 literature. Consumers who had seen brands prior to the study were more likely to buy them and
286 branded plants generally were perceived to have greater value (for two of three national brands
287 included in this study) despite the fact that they were digitally identical plants. Thus, brand
288 recognition did influence the purchase decision.

289 Among the four product attributes tested here, brands and price had a similar impact. The
290 horticulture literature does not provide any other evidence of this to date. Price has had a
291 persistent and relatively high profile in most consumer research. Here, we provide some
292 evidence that branding is, relatively, as important as price. More work is needed to understand if
293 the branding effect also is observed with other plant categories (e.g. herbaceous perennials,
294 flowering shrubs, evergreen and deciduous trees).

295 We also found differences by age cohort. Boomers exhibited less brand recognition with
296 two of the three national brands included in this study. Gen X and Gen Y had a higher mean LTB
297 branded plants compared to Boomers, despite the fact that branded and unbranded plants were
298 digitally identical. Even despite having seen Brand P more, Boomers were not as likely to buy it
299 compared to the younger age cohorts. These data support evidence to show that brands have an
300 influence on younger aged consumers that they do not appear to have on Boomers.

301 The limitations of this study include the use of non-flowering plant material. Future
302 research should investigate flowering plants to determine similarities and differences. Live plants
303 may be perceived differently from digital images, even though the images were of high quality.
304 More research is needed to better understand the visual cue of branding and who visually
305 examines that and for how long. That information may play a crucial role in our understanding of
306 the use of branding in the purchase decision.

307

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Table 1. Null hypotheses summary table for age cohort influences on brand recognition, brand awareness, and likelihood to buy vegetable and herb transplants.

Hypothesis number	Hypothesis	Findings	Support found in Table No.
H1a	Baby Boomers will have similar national brand recognition compared to Gen X.	Partial support.	2
H1b	Baby Boomers will have similar national brand recognition compared to Gen Y.	Partial support.	2
H2	Branded plants will have a similar LTB mean rating compared to unbranded plants.	Not Supported.	3
H3a	Gen X will have a similar LTB branded plants compared to Boomers.	Not Supported.	3
H3b	Gen Y will have a similar LTB branded plants compared to Boomers.	Not Supported.	3
H4	Consumers who have seen plant brands will be as LTB them as consumers who have not seen them.	Not Supported.	4
H5	Branded plants will have a similar utility score compared to non-branded or generic plants.	Partial support.	5
H6	White containers will be similarly preferred to green and yellow containers.	Not supported.	5
H7	Branded plants will have a similar relative importance score for Boomers and other age cohorts.	Supported.	6

Table 2. Demographic characteristics of 566 respondents in an online plant branding study. Participants were allowed a no-response answer.

Variables	Number of Respondents	Mean (SD) or Frequency (%)	Gen Y (%) N=152	Gen X (%) N=198	Boomer (%) N=216
Age (years) ^x	566	51 (16)	26.9%	35.0%	38.2%
Gender					
Female	321	57%	15.1%	20.8%	21.1%
Male	242	43%	11.9%	14.2%	16.9%
Adults (≥19) in Household*					
1	93		2.7%	5.3%	8.5%
2	242		9.0%	17.0%	16.8%
3	142		6.9%	8.7%	9.5%
4	48		4.2%	1.6%	2.7%
5	29		2.5%	2.1%	0.5%
6	11		1.4%	0.4%	0.2%
11	1		0.2%	0.0%	0.0%
Children in Household*					
0	325		12.8%	12.2%	32.6%
1	119		7.5%	9.8%	4.0%
2	84		5.0%	9.0%	0.9%
3	30		1.6%	3.4%	0.4%
4	5		0.2%	0.5%	0.2%
5	1		0.0%	0.2%	0.0%
Residence Location					
Metropolitan	164	29.2%	10.1%	11.7%	7.3%
Suburban	297	52.8%	13.2%	18.7%	21.0%
Rural	101	18.0%	3.6%	4.6%	9.8%
Ethnicity					
Caucasian	416		16.8%	24.1%	32.8%
African American	49		3.9%	2.3%	2.5%
Asian	32		1.6%	3.2%	0.9%
Hispanic	23		2.0%	2.1%	0.0%
Native American	2		0.2%	0.0%	0.2%
Combination	32		2.0%	2.5%	1.2%
Other	10		0.5%	0.7%	0.5%
Highest Level of Education (4=2-year college)*					
Less than high school	4		0.2%	0.2%	0.4%

Variables	Number of Respondents	Mean (SD) or Frequency (%)	Gen Y (%) N=152	Gen X (%) N=198	Boomer (%) N=216
High school or GED	97		4.1%	4.6%	8.5%
Some college completed	138		8.9%	6.9%	8.7%
2-year college degree	60		1.6%	4.1%	5.0%
4-year college degree	177		8.4%	14.1%	9.1%
Master's degree	77		3.2%	4.6%	5.9%
Doctoral degree	1		0.0%	0.0%	0.2%
Professional degree (JD, MD)	8		0.4%	0.5%	0.5%
Household Income*		\$64,000 (\$12,000)			
Less than \$19,000	54		2.5	2.9	4.4
\$20,000 to \$39,999	116		4.7	6.3	10.0
\$40,000 to \$59,999	99		5.6	4.4	8.0
\$60,000 to \$79,999	102		5.3	7.1	6.2
\$80,000 to \$99,999	63		3.3	5.8	2.4
\$100,000 to \$119,999	49		2.5	4.2	2.2
\$120,000 to \$139,999	20		0.5	1.6	1.5
\$140,000 to \$159,999	20		1.1	1.1	1.5
\$160,000 to \$179,999	8		0.5	0.4	0.5
\$180,000 to \$199,999	9		0.7	0.5	0.4
\$200,000 of more	12		0.4	0.9	0.9

*Percentages may not add up to 100 due to rounding.

Table 3. Overall and age cohort comparison of brand recognition of three national brands from an online plant branding study.

Brand	Percent recognition	% Overall (% of those who previously have seen brand)			2-way, seen/not seen Brand X by age group (1-way, those who saw brand x age)
		Boomers	Gen X	Gen Y	Significance*, $\alpha = .05$
	Total (n=566)				
L	42% had seen (.0001)	12% (29%) [†]	16% (38%)	14% (34%)	.0002 ⁶ (0.2454) *
N	32% had seen (<.0001)	10% (32%)	12% (37%)	10% (31%)	.1069 ⁴ (.5607) ns
P	64% had seen (<.0001)	28% (44% c) [†]	21% (33% b)	15% (24% a)	.0013 ⁸ (<.0001) *

*A chi-square test was used to test the relationships between the participants' age group and self-reported response to having seen the brand. The analysis was done using the FREQ Procedure in SAS for Windows v 9.4. [†]Horizontal percentages in () may not total 100 due to rounding.

Table 4. Comparison¹ of mean likely to buy (LTB) for branded and not branded products overall and by age cohort from an online plant branding study.

Branding	Age Group	N	Mean LTB (SE)	F	p
Branded	.	6,744	3.58 (0.04) a ²	16.75	<0.0001
Not Branded	.	2,258	3.50 (0.04) b		
.	Gen Y	2,416	3.70 (0.05) a	8.29	0.0003
.	Gen X	3,148	3.62 (0.07) a		
.	Boomer	3,438	3.30 (0.06) b		
Branded	Gen Y	1,809	3.72 (0.08) a	1.34	0.2612
	Gen X	2,357	3.66 (0.07) a		
	Boomer	2,578	3.36 (0.07) b		
Not Branded	Gen Y	607	3.68 (0.08) a		
	Gen X	791	3.58 (0.08) ab		
	Boomer	860	3.24 (0.07) c		

¹Comparisons for this table were generated using the GLIMMIX Procedure of SAS software, Version 9.4 (SAS Institute, Inc, Cary, NC, USA). The dependent variable was LTB, and the independent variables were Branded, Age Group, and their interaction. Participant was considered a random effect. Mean separation was made using Tukey's adjustment. Of 9,056 possible values (566 participants and 16 images each), there were 54 missing for a total N of 9,002.

²Different letters within each grouping indicate significant differences of means by Tukey's adjustment at $\alpha = .05$. F and p values are indicated to the right of each grouping.

Table 5. Comparison of mean likely to buy (LTB) for those who previously had seen and not seen each brand by age group from an online plant branding study.

Brand:	Age Group	Possible N*	Actual N	Mean LTB		SE	F	p
<u>Brand P</u>								
Had Seen	.	5,840	5,807	3.50	a	(0.03)	188.21	<.0001
Had not seen	.	3,216	3,195	3.12	b	(0.04)		
.	Gen Y	2,432	2,416	3.38	a	(0.05)	24.54	<.0001
.	Gen X	3,168	3,148	3.38	a	(0.04)		
.	Boomer	3,456	3,438	3.16	b	(0.03)		
Had Seen	Gen Y	1,376	1,366	3.61	a	(0.05)	16.01	<.0001
	Gen X	1,920	1,911	3.64	a	(0.04)		
	Boomer	2,544	2,530	3.24	b	(0.03)		
Had not seen	Gen Y	1,056	1,050	3.16	bc	(0.05)		
	Gen X	1,248	1,237	3.12	c	(0.04)		
	Boomer	912	908	3.08	c	(0.05)		
<u>Brand L</u>								
Had Seen	.	3,792	3,769	3.81	a	(0.04)	828.79	<.0001
Had not seen	.	5,264	5,233	3.05	b	(0.03)		
.	Gen Y	2,432	2,416	3.44	b	(0.05)	17.70	<.0001
.	Gen X	3,168	3,148	3.52	a	(0.03)		
.	Boomer	3,456	3,438	3.33	c	(0.03)		
Had Seen	Gen Y	1,280	1,269	3.83	b	(0.05)	13.83	<.0001
	Gen X	1,424	1,417	3.97	a	(0.04)		
	Boomer	1,088	1,083	3.62	c	(0.04)		
Had not seen	Gen Y	1,152	1,147	3.06	d	(0.05)		
	Gen X	1,744	1,731	3.07	d	(0.04)		
	Boomer	2,368	2,355	3.04	d	(0.03)		
<u>Brand N</u>								
Had Seen	.	2,848	2,834	3.79	a	(0.04)	453.24	<.0001
Had not seen	.	6,208	6,168	3.19	b	(0.03)		
.	Gen Y	2,432	2,416	3.53	a	(0.05)	22.60	<.0001
.	Gen X	3,168	3,148	3.59	a	(0.04)		
.	Boomer	3,456	3,438	3.36	b	(0.03)		
Had Seen	Gen Y	880	874	3.79	b	(0.06)	3.72	0.0243
	Gen X	1,056	1,050	3.94	a	(0.05)		
	Boomer	912	910	3.65	c	(0.04)		
Had not seen	Gen Y	1,552	1,542	3.28	d	(0.05)		
	Gen X	2,112	2,098	3.24	d	(0.04)		
	Boomer	2,544	2,528	3.07	e	(0.03)		

* (566 participants X 16 images each) – 54 missing values = 9,056 -54 = 9,002 actual values.

Table 6. Part-worth scores of plant, price, brand, and container color from a conjoint analysis of 468* online respondents, by age cohort, to a plant branding survey. Values are a numerical scoring of consumer preferences among all attributes and levels where a higher number indicates that consumers prefer that particular attribute or level over lower values options. Lower case letters in rows are for generational differences, by attribute, between participants. Upper case letters in columns represent differences between attributes within a generational group. All letters indicate mean separation using Tukey's honestly significant test with $P = 0.05$ as a maximum value of significance.

Attribute		Relative Importance Means (SE)			
		Gen Y N=127	Gen X N=160	Boomer N=181	Total N=468*
Plant		39.45 (1.89) a A	42.06 (1.69) a A	45.15 (1.59) a A	42.22 (1) A
Price		21.08 (1.4) b B	22.13 (1.25) b B	22.23 (1.17) b B	21.81 (0.74) B
Brand		23.29 (1.08) a B	21.01 (0.97) ab B	19.25 (0.91) b B	21.18 (0.57) B
Container color		16.18 (0.8) a C	14.79 (0.71) ab C	13.37 (0.67) b C	14.78 (0.42) C
Attribute		Part-worth means (SE)			
		Gen Y N=127	Gen X N=160	Boomer N=181	Total N=468*
Plant					
	basil	0.21 (-0.05) ab A	0.27 (-0.04) a A	0.26 (0.04) a A	0.24 (-0.02) a A
	parsley	0.01 (-0.05) bc ABCDE	0.02 (0.05) bc BC	-0.06 (0.05) c BCDEF	-0.01 (0.03) b BDE
	pepper	-0.10 (-0.05) c DE	-0.14 (0.05) c CD	-0.16 (0.04) c EF	-0.14 (-0.03) c GH
	tomato	-0.11 (-0.05) c DE	-0.15 (0.04) c CD	-0.04 (0.04) c BCDEF	-0.10 (0.02) bc DFGH
Price					
	0.99	0.12 (-0.03) a AB	0.23 (0.03) a A	0.25 (0.03) a A	0.20 (-0.02) a A
	\$1.49	0.00 (-0.02) b BCDE	-0.06 (0.02) bc C	-0.06 (0.02) bc DE	-0.04 (0.01) b CDFG
	\$1.99	-0.12 (-0.03) cd E	-0.17 (0.03) d D	-0.19 (0.02) d F	-0.16 (-0.01) c H
Brand					
	generic	-0.03 (-0.03) bcd DE	-0.08 (0.02) cd CD	-0.01 (0.02) d EF	-0.07 (-0.01) c EFG
	L	-0.06 (-0.03) cd DE	0.00 (0.02) abcd BC	0.09 (0.02) a B	0.01 (-0.01) ab BC
	N	0.02 (-0.02) abc ABCD	0.01 (0.02) abc BC	-0.04 (0.02) cd CDE	0.00 (-0.01) b CD
	P	0.07 (-0.02) ab ABCD	0.07 (0.02) ab B	0.06 (0.02) ab BC	0.06 (-0.01) a B
Container Color					
	green	-0.01 (0.02) ab CD	-0.03 (0.02) b C	-0.05 (0.02) b DE	-0.03 (0.01) b CEF
	white	-0.04 (0.02) b DE	-0.03 (0.02) b C	0.00 (0.01) ab BCD	-0.02 (0.01) b CD
	yellow	0.05 (0.02) a ABCD	0.06 (0.02) a B	0.04 (0.02) a BC	0.05 (-0.01) a B

*98 of the 566 respondents responded with the same purchase intention for all 16 plant images and were therefore excluded from conjoint analysis.

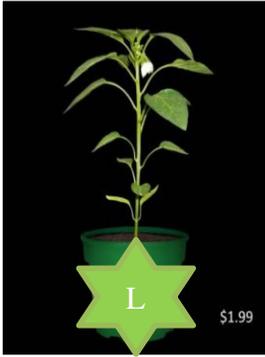
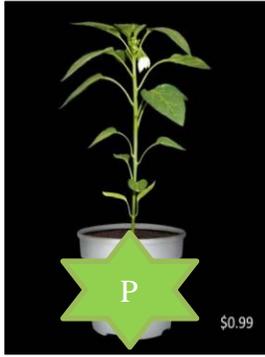
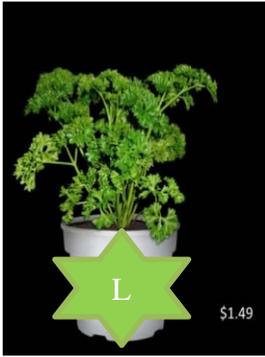
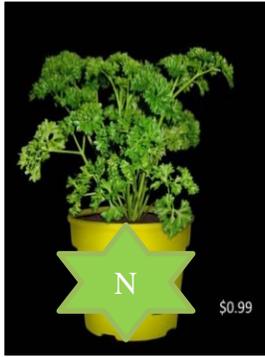


Figure 1. Conjoint set images (with brands disguised here for anonymity) shown to subjects in an online survey, in order from left to right, top to bottom. Respondents were asked, “How likely would you be to purchase this plant?” The choices were: Very Unlikely, Somewhat Unlikely, Undecided, Somewhat Likely, and Very Likely, and treated for analysis as a 1 to 5 Likert scale.