

CONSUMER PREFERENCES FOR GARLAND DESIGNS



MISSISSIPPI STATE UNIVERSITY™
MS AGRICULTURAL AND
FORESTRY EXPERIMENT STATION



MS AGRICULTURAL AND
FORESTRY EXPERIMENT STATION

This document was approved for publication as Research Bulletin 1253 of the Mississippi Agricultural and Forestry Experiment Station (MAFES). It was published by Mississippi State University Agricultural and Natural Resources Marketing.

Copyright 2024 by Mississippi State University. All rights reserved. This publication may be copied and distributed without alteration for nonprofit educational purposes, provided that credit is given to the Mississippi Agricultural and Forestry Experiment Station.

Find MAFES online at [**mafes.msstate.edu**](https://mafes.msstate.edu).

CONSUMER PREFERENCES FOR GARLAND DESIGNS

James M. DelPrince

Extension Associate Professor
Coastal Research and Extension Center
Mississippi State University
j.delprince@msstate.edu

Benedict C. Posadas

Research and Extension Professor
Coastal Research and Extension Center
Mississippi State University
ben.posadas@msstate.edu

Jenny B. Ryals

Research Associate II
MAFES South Mississippi Branch
Mississippi State University
j.ryals@msstate.edu

Patricia R. Knight

Research Professor
Director-Coastal Horticulture Research
MAFES South Mississippi Branch
Mississippi State University
Patricia.knight@msstate.edu

Anthony Bowden

Extension Assistant Professor
University of Arkansas System
Cooperative Extension Service
abowden@uada.edu

Scott A. Langlois

Senior Research Associate
MAFES South Mississippi Branch
Mississippi State University
scott.langlois@msstate.edu

Christine E.H. Coker

Research and Extension Professor
Coastal Research and Extension Center
Mississippi State University
Christine.Coker@msstate.edu

ABSTRACT

This study was conducted to provide benchmark data for flower farmers, Christmas tree growers, floral designers, and florists on the design and construction of value-added garland products. Consumer surveys are crucial in today's dynamic business landscape, providing valuable insights into customer preferences, needs, and opinions.

Responses to this survey consisted of two data collection methods. The first was an in-person survey of participants attending a field day in South Mississippi. Second, respondents were recruited through social media to participate in an online survey. In-person respondents are all from Mississippi. The online respondents were recruited through social media contacts and thus their locations were not recorded.

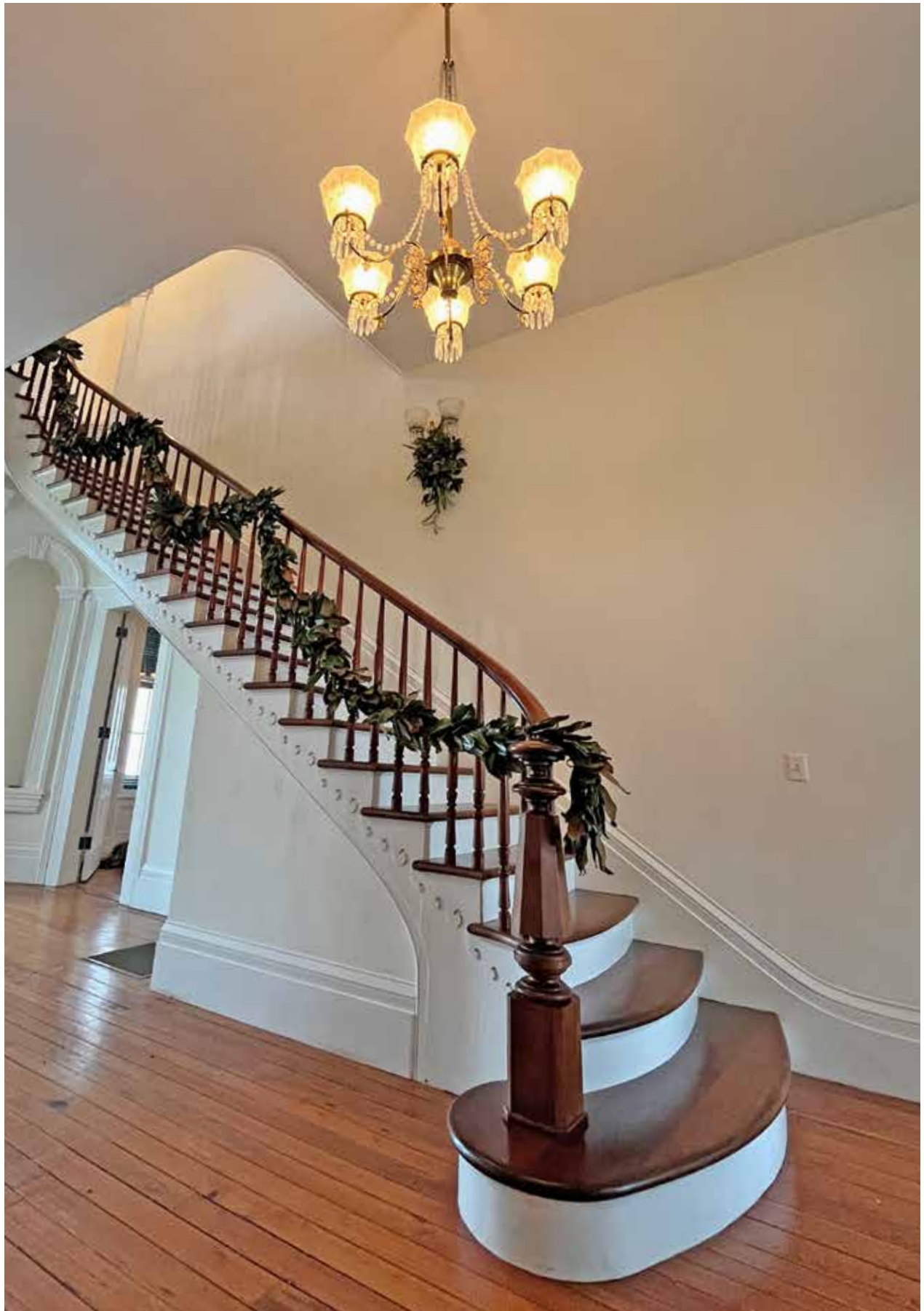
Respondents of the online survey, when compared with in-person participants, showed a greater preference for the garland designs. However, the in-person and online respondents stated a similar willingness to pay for the different garland designs. There were significant differences in the level of liking and willingness to pay for different garland designs. The magnolia/pine garland design was both the top choice and the most expensive of the garland design with an average "willingness-to-pay" price of \$6.26/foot. This survey's results can be used by producers, farmer florists, and designers to develop value-added garland products with greater customer demand to wholesalers, retailers, and through direct sales.

KEYWORDS

- levels of liking,
- socioeconomic characteristics,
- value added,
- willingness to pay

ACKNOWLEDGMENT

This publication is a contribution of the Mississippi Agricultural and Forestry Experiment Station, Mississippi State University. This material is based upon work supported partly by the National Institute of Food and Agriculture, U.S. Department of Agriculture, Hatch project under accession number MIS-211150. The cover photo features a staircase from The Baby Doll House, Benoit, Mississippi. Appreciation is extended to owners, Eustace and Claire Winn.



CONSUMER PREFERENCES FOR GARLAND DESIGNS

INTRODUCTION

The North American Industry Classification System classifies florists in sector 453110 (NAICS, 2023). They are defined as an industry that "comprises establishments primarily engaged in retailing nursery and garden products and may sell a limited amount of a product they grow themselves" (NAICS, 2023). These industries can increase their revenue by manufacturing and selling value-added products. Value-added products enhance a commodity's economic worth and consumer attractiveness (Parveen et al., 2014). The reported gross regional product of the U.S. florist industry reached \$4.8 billion in 2022, creating more than 135,000 jobs. (Lightcast, 2023). In Mississippi, the florist industry created gross regional product amounting to \$45.5 million and 1,700 jobs (Lightcast, 2023). The overall trends of the industry during the past five years were rising sales and jobs.

Garland is a linear, ropelike chain of interwoven flowers or foliage (AIFD, 2022). Value-added products, like garlands, offer numerous benefits to members of this industry, such as Christmas tree farms. They provide an additional revenue stream for farmers, diversifying their income and reducing reliance solely on tree sales. By utilizing excess foliage and trimmings, farms can maximize their resources and generate extra profits. Moreover, garlands help reduce waste by repurposing insect pest- and disease-free materials that would otherwise be discarded, promoting sustainable practices within the industry (Minnesota Dept. of Agriculture, n.d.). These products also enhance customer experience by offering decorative options beyond what is currently available in the marketplace, allowing individuals to personalize their holiday decorations and create a unique festive ambiance. Overall, incorporating garlands into their offerings enable farms to boost profitability, minimize waste, and enrich customer satisfaction.

Garlands are a versatile and easy way to add a festive touch to homes, events, and other spaces (Hunter, 2013). They can easily be customized for any time of year and any celebration (Hunter, 2013). Garlands can come in many different shapes, textures, sizes, colors, and styles and are one of the oldest methods used for decorating with flowers (Singh, 2017). They can bring warmth, luxury, drama, and many other effects to the space where they are displayed. When it comes to the greenery for garlands, options can be unlimited. With the wide range of garlands and garland materials available now, consumers have more choices than ever. Purchasing garlands can also be done in-person at local florists, Christmas tree farms, brick-and-mortar locations, or online stores.



Gathering consumer feedback allows companies to understand their target audience better, identify emerging trends, and make data-driven decisions (Curtin, 1982). Consumer surveys also allow customers to feel heard and valued, fostering a sense of engagement and loyalty.

When it comes to purchasing, online preferences often differ from in-store preferences. The convenience and accessibility of online shopping enables consumers to browse a vast array of products and services from the comfort of their homes, leading to a broader range of choices (Ball, 2019). The absence of physical interactions in online shopping eliminates sensory experiences like touch, smell, and the ability to try products, which can impact preferences. On the other hand, in-store shopping allows for immediate gratification, social interactions, and the ability to examine physically and test products, which can influence purchasing decisions differently. Factors like store ambiance, customer service, and visual merchandising also shape in-store preferences. Despite not constituting a significant portion of online consumer expenditure, the online purchase of plants and associated gardening supplies has consistently risen over the past few years. With the increase of online plant stores emerging, it is important to understand what the online consumer

wants compared to the in-store consumer. Therefore, conducting both online and in-person surveys is essential to monitor current consumer trends, which could hopefully result in increased profit margins and niche market opportunities (Posadas et al., 2023).

This survey builds upon previous research using the same materials described by Posadas and DelPrince (2019) and applied to the design and construction of wreaths. Materials used in the designs are already growing on Mississippi farms.

This study aimed to identify consumer preferences for selected garland designs through a personal and online survey of interested respondents. Specifically, it aimed to achieve the following objectives:

- to describe the methodology for measuring the consumer preferences for various garland designs,
- to compare the willingness to pay (W.T.P.) and levels of liking (L.O.L.) for different garland designs, and
- to measure the effects on consumer preferences for various garland designs by the socioeconomic characteristics of respondents.

METHODS

GARLAND DESIGNS

A series of decorative **garland samples** (24 inches, 60.96 cm) using Mississippi-grown plant materials were designed, constructed, and photographed on September 23, 2022 (Fig. 1-6).

Garland contents were chosen based upon recommendations by garden club members, retail florists, and Extension clientele and replicated those previously used in a wreath design study (Posadas and DelPrince, 2019). These materials can grow, or already grow, on Mississippi farms. Materials used in developing these garland designs are abundant in Mississippi.

GARLAND SAMPLES



Figure 1.
Garland A consists
of cut dormant twigs
of *Salix matsudana*,
corkscrew willow.



Figure 2.
Garland B was
made with magnolia
Magnolia grandiflora
'Little Gem' preserved
via stem absorption
of 1,2,3-Propanetriol
(vegetable glycerin)
from Bulk Apothecary.

GARLAND SAMPLES



Figure 3.
Garland C uses cut
stems of *Magnolia
grandiflora* 'D.D.
Blanchard'.



Figure 4.
Garland D combines
Magnolia grandiflora
'D.D. Blanchard' with
Pinus elliotii, slash
pine.

GARLAND SAMPLES



Figure 5.
Garland E uses a base of *Gossypium hirsutum*, cotton; *Sorghum bicolor*, milo; and *Abelmoschus esculentus*, okra. At 24-inch (60.96 cm) intervals, an ear of *Zea mays*, corn was attached using paper-covered wire.



Figure 6.
Garland F contains *Pinus palustris*, long-leaf pinecones attached to a rope with paper-covered wire.

GARLAND CONSTRUCTION

Plant materials were grown and harvested from the MAFES Beaumont Horticulture Unit in Beaumont, Mississippi, Mississippi State University (MSU) Coastal Research and Extension Center (CREC) in Biloxi, Mississippi, and MAFES R. R. Foil Plant Science Research Center in Starkville, Mississippi.

Construction times include the process of binding materials into the garland (Table 1). All plant materials were bound into garlands using an electric garland maker except the pinecone garland. In that design, each pinecone was individually hand wired, then bound to a rope. Time measurements do not include harvesting or sorting.

Materials costs include the plant materials used and any wire or rope (Table 1). Costs associated with each garland were determined using seasonal wholesale price lists, as well as price lists from Camflor, Watsonville, California, <https://www.camflor.com/>;

Columbia Pine Cones, Ocean Shores, Washington, <https://www.pinecones.com/>; Florabundance, Carpinteria, California, <https://florabundance.com/>; Dried Décor, West Jordan, Utah. Costs estimates do not include construction labor.

The foundations for garland designs A to E were constructed using an electric garland maker (Honey Bee) and associate wire manufactured by Northwoods Evergreen and Wire Company (Merrill, Wisconsin). Garland design F was constructed using wire (Smithers-Oasis, Kent, Ohio) and rope.

Table 1. Basic description of six garland designs used in the consumer survey.

Code	Name of garland design	Diameter	Construction time (seconds/2 ft (0.61 m))	Weight (lbs/2 ft (0.61 m))	Materials cost (\$/ft (0.31 m))
A	Corkscrew willow	4 in (10.2 cm)	10	0.2513 lb (0.114 kg)	\$5.00
B	Preserved magnolia	8 in (20.3 cm)	10	0.6327 lb (0.287 kg)	\$10.00
C	Fresh magnolia	9 in (22.9 cm)	10	0.4453 lb (0.202 kg)	\$8.50
D	Magnolia and pine	9 in (22.9 cm)	10	0.401 lb (0.182 kg)	\$6.25
E	Mixed row crop	9 in (22.9 cm)	25	0.6437 lb (0.292 kg)	\$25.97
F	Pinecone	7 in (17.8 cm)	225	1.263 lb (0.573 kg)	\$5.25

GARLAND SURVEY METHODS

In-person interviews and online surveys were used for this study. Interviews were conducted at a Mississippi Agricultural and Forestry Experiment Station (MAFES) field day held on October 6, 2022, in Poplarville, Mississippi. Respondents were recruited to participate in the in-person survey using the script in the recruitment letter (Appendix A).

All respondents who agreed to participate in the in-person survey were provided with a copy of the questionnaire (Appendix B) and photos of the six garland designs. They were requested to indicate their levels of liking for each of the six garland designs. They were also asked to state how much they were willing to pay for each of the garland designs for their home or to give as a gift (Appendix B). Additional information about the socioeconomic characteristics of the respondents was gathered. Respondent's characteristics included age, gender, formal education completed, household income, race, and household size.

The online survey used the same recruitment letter (Appendix A), questionnaire (Appendix B), and garland designs as the in-person group. The field day site used images of the garlands projected on a screen (10 ft x 7.5 ft.). The online survey used the same images in electronic form.

The online survey was designed and implemented using an online software platform (Qualtrics XM; Qualtrics, Provo, UT, U.S.A.). Email distribution lists and Facebook were used to promote the survey beginning November 2022. The survey link was accompanied by a description introducing the project's purpose and expressing gratitude for participation. Qualtrics automatically collected the participant's data. The online survey was closed, and the data were collected on January 31, 2023.

The socioeconomic characteristics of respondents included the following:

- YRBORN = age (yr.) was determined by asking respondents to state their birth year.
- GENDER = respondents were asked to indicate their gender.
- YREDUC = formal education (yr.) was determined by asking the respondents to indicate the years of formal education attained.
- HHSIZE = respondents were asked to state how many lived in the household, including themselves.
- INCOME = household income was reported in eight income groups: 1 – less than \$25,000; 2 - \$25,000 to \$50,000; 3–\$50,001 to \$75,000; 4–\$75,001 to \$100,000; 5–\$100,001 to \$150,000, 6–\$150,001 to \$200,000; 7–\$200,001 to 250,000; 8 – more than \$250,000; 9–No answer; and 10–No income.
- RACE = race was reported in 6 options: Native American, African American, Asian or Pacific Islander, Caucasian, Hispanic, and Other.

MEASURES OF CONSUMER PREFERENCES

LEVEL OF LIKING

The level of liking (L.O.L.) for each garland design ranged from 1 to 7, where 1 was the lowest, and 7 was the highest preference [Posadas and DelPrince, 2019; Posadas et al., 2006; Posadas et al., 2023]. Respondents were asked, "Please encircle one number from 1 to 7 for each garland design". The liking rankings are 1-3—strongly do not like this cultivar, 4—neither like nor dislike, and 5-7—strongly like this cultivar. A colored photograph of each garland design was shown to the respondents in in-person and online surveys.

WILLINGNESS TO PAY

The willingness to pay (W.T.P.) for each garland design was measured in dollars per foot. Respondents were asked, "How much are you willing to pay per foot of each garland design (\$/ft)? Colored photographs of garland designs were shown to the respondents during the in-person and online surveys.

STATISTICAL ANALYSIS

The analysis of survey data was performed using Stata 17 (StataCorp L.L.C., Lakeway Drive, College Station, Texas, U.S.A.). The level of liking and willingness to pay data were analyzed using one-way analysis of variance (ANOVA) and Scheffe test to determine any statistical differences among garland designs. There were 1,434 observations consisting of 239 respondents and six designs.

An econometric model was estimated to measure the individual and joint effects of garland design, previous purchases, and respondents' characteristics on the level of liking for garland designs (Posadas et al., 2006; Posadas and DelPrince, 2019; Posadas et al., 2023). The econometric model is defined as follows:

$$LOL_i = B_0 + B_1 \times GD_i + B_2 \times NO\# + B_3 \text{ Survey} + B_4 \times SEC + \check{E}, \quad \text{Equation. 1.}$$

Where B_i = coefficients, GD_i = garland designs included in the survey, $NO\#$ = number of live or fresh garlands purchased in 2021, SEC = respondents' socioeconomic characteristics, and \check{E} is residual error .

To determine the significant factors affecting willingness to pay for garland designs, the empirical model defined by Equation 1 was estimated by using the ordinary least square (O.L.S.) procedure preference (Posadas et al., 2006; Posadas and DelPrince, 2019; Posadas et al., 2023). The O.L.S. model for the willingness to pay for garland designs is as follows:

$$WTP_i = B_0 + B_1 \times GD_i + B_2 \times NO\# + B_3 \text{ Survey} + B_4 \times SEC + \check{E}, \quad \text{Equation. 2.}$$

where B_i = coefficients, GD_i = garland designs included in the survey, $NO\#$ = number of live or fresh garlands purchased in 2021, $S.E.C.$ = respondents' socioeconomic characteristics, and \check{E} is residual error.

The O.L.S. models (Equation 1 and 2) were estimated by using the robust variance procedure of Stata-17 (Williams, 2000). The variation inflation factor was calculated to detect the possible presence of multicollinearity (Rogers, 1993). The marginal impacts of disaster events were computed using the margins procedure.

RESULTS AND DISCUSSION

RESPONDENTS' SOCIOECONOMIC CHARACTERISTICS

A total of 239 respondents participated in our surveys: 26% contributed in-person whereas the remaining 76% participated online. Some respondents only partially completed their survey whether doing so in-person or online.

The socioeconomic and demographic structure of the participants appear to share some similarities and differences between the two survey types (Table 2). With the data provided, participants were principally female and Caucasian (Table 2). In-person respondents tended to be older, hold a high school diploma or bachelor's degree, and support a smaller

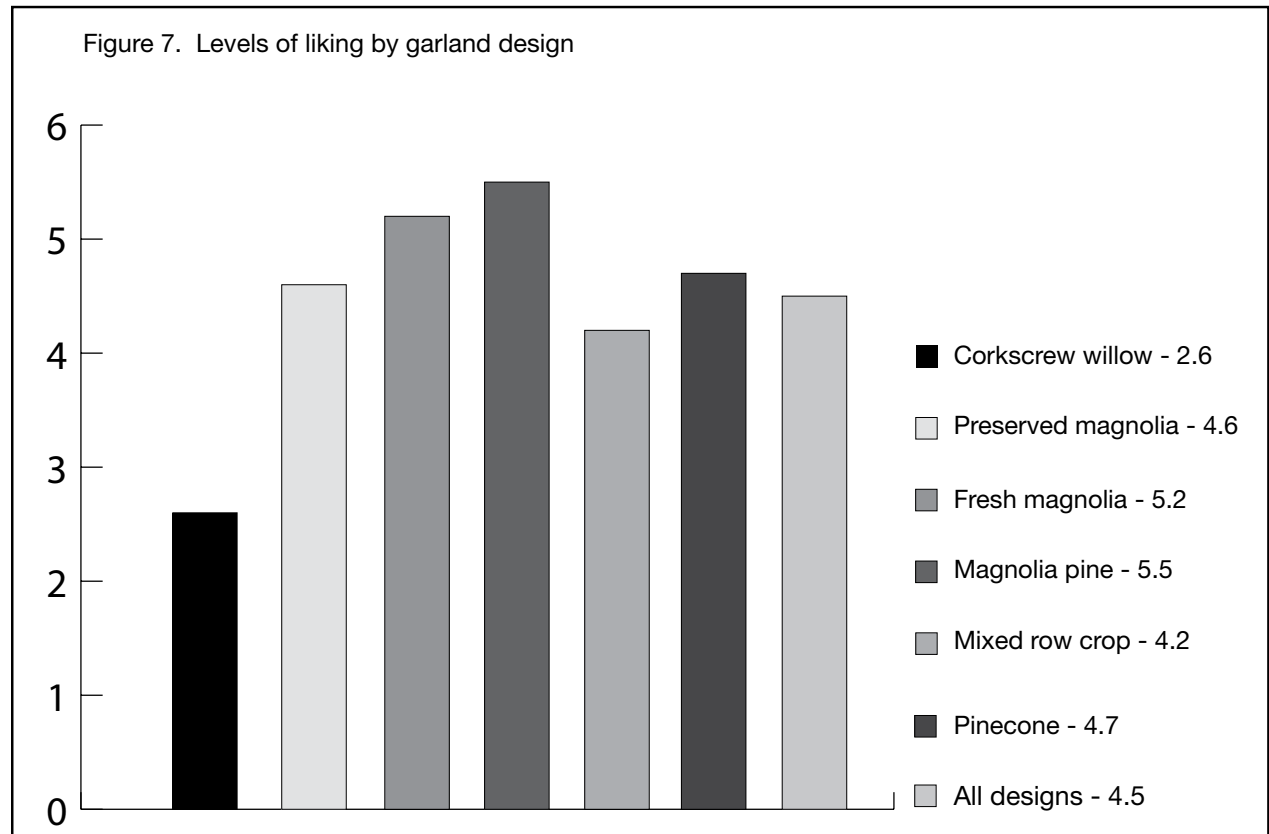
current household with a lower income. In contrast, online contributors tended to be about ten years younger on average, have achieved more formal education perhaps at the master's and/or Ph.D. level, support a slightly larger family on a larger income, and purchased about three times more garlands than did in-person attendees (Table 2).

Table 2. Socioeconomic characteristics of respondents by survey type.

Characteristic	In-person survey	Online survey	All respondents
Female respondents (%)	76	91	86
Age (yr)	67	56	59
Formal education (yr)	14	17	16
Household size (#)	2.1	2.4	2.3
Household income			
No income (%)	16	0	11
Less than \$100,000 per annum	71	47	55
Race			
Caucasian	96	88	94
Number of garlands bought ^a	0.33 (1.08)	0.91 (1.54)	0.72 (1.43)
^a Numbers in parentheses are standard deviations.			

LEVELS OF LIKING

With 98 percent of respondents answering this question, the levels of liking for the six garland designs ranged from 2.6 to 5.5 (Fig. 7). The most preferred designs which received levels of liking equal to or above 5 out of 7 are magnolia and pine (LOL=5.5), and fresh magnolia (LOL=5.2).



The regression results show the individual and joint effects on the level of liking of six garland designs by in-person and online survey respondents. The estimated equation is statistically significant and explained 31 percent of the variations of the level of liking for garland designs (Table 3).

There are significant differences in the level of liking for the garland designs by type of survey. Respondents of the online survey tend to like the garland designs less (-0.367 ± 0.130) than the in-person respondents (Table 3).

Significant differences are also observed among garland designs. When compared to the designated

base design, corkscrew willow, the marginal effects of the other five design are statistically significant (Table 3). For example, the marginal effects on the level of liking of preserved magnolia over corkscrew is 2.22 ± 0.181 .

The other independent variable included in Equation 1 did not show any significant effects on the levels of liking for the different garland designs (Table 3). These insignificant variables are the previous purchases, gender of respondents, years of formal education, household income, racial origins, and age of respondents.

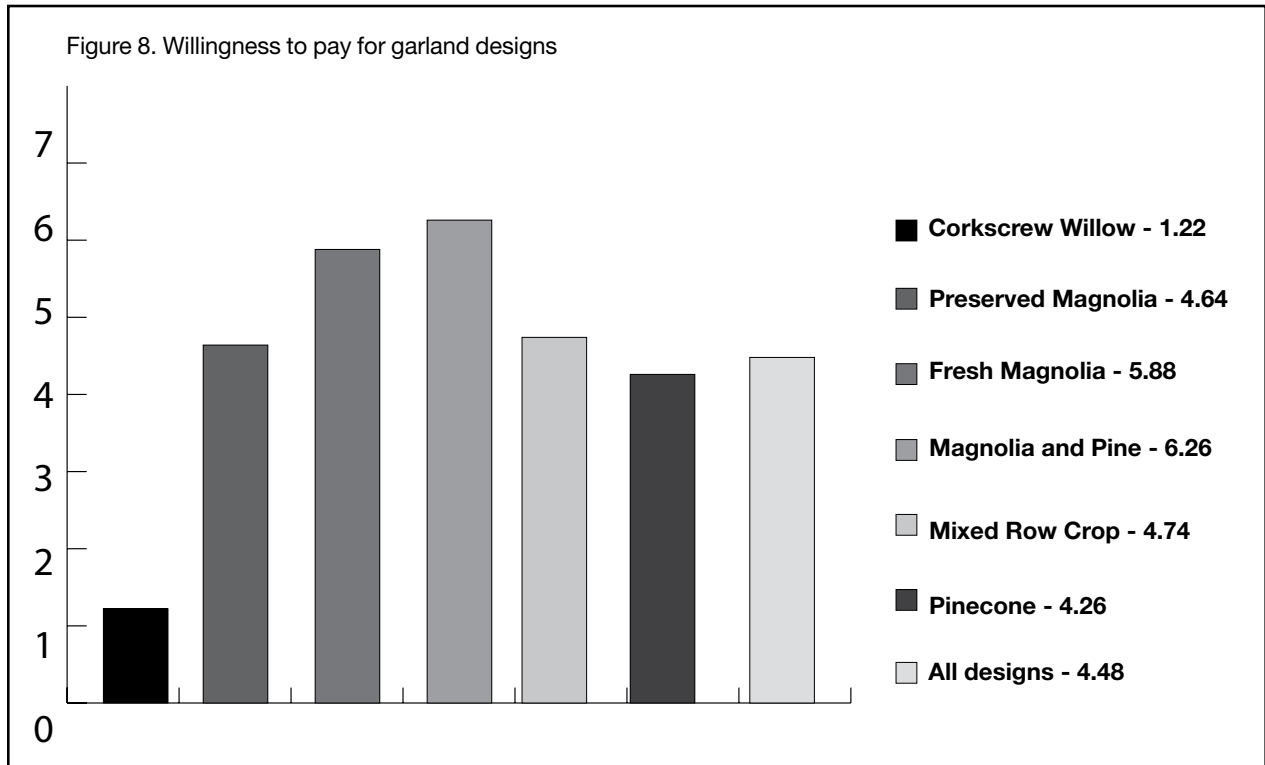
Table 3. Regression results with the level of liking as the dependent variable.

Variables	Robust coefficients	Standard error
Online survey **	-0.367	0.130
Number of garlands	-0.017	0.041
Female respondents	-0.011	0.147
Years of formal education	0.001	0.016
Household size*	-0.112	0.055
Household income less than \$100,000	-0.146	0.104
Caucasian respondents	-0.352	0.289
Age of respondents	-0.000	0.004
Design B - Preserved magnolia***	2.224	0.181
Design C - Fresh magnolia***	2.788	0.168
Design D - Magnolia and pine***	2.960	0.172
Design E - Mixed row crops***	1.858	0.199
Design F - Pinecone***	2.135	0.173
Constant***	2.925	0.595
Number of observations	863	
F-value***	31.110	
R-squared	0.315	

*statistically significant at 0.05; **statistically significant at 0.01; ***statistically significant at 0.01.

WILLINGNESS TO PAY

Six out of ten respondents were willing to pay for six garland designs. The willingness to pay was significantly different by garland design (Fig. 8). The average offer was \$4.48 per foot of garland. The most expensive design was magnolia and pine, while the cheapest was corkscrew willow. The most preferred design is also the most expensive. On the other hand, the least preferred design is also the cheapest garland design.



The regression results show the individual and combined effects on the willingness to pay for six garland designs by in-person and online survey respondents. The estimated equation is statistically significant and explained 12 percent of the variations of the willingness to pay for garland designs (Table 4).

There are significant differences in the willingness to pay for the garland designs by racial origin. Caucasian respondents offered more for the garland designs (2.327 ± 0.804) than the other racial groups (Table 4). Significant differences are also observed among garland designs. When compared to the designated base design, corkscrew willow, the marginal effects of the other five design are statistically significant (Table 4). For instance, the marginal effects on the willingness to pay for preserved magnolia over corkscrew is 2.862 ± 0.453 .

The other independent variable included in Equation 2 did not have significant impacts on the willingness to pay for the different garland designs (Table 4). These independent variables are type of survey, previous purchases, gender of respondents, years of formal education, household size and income, and age of respondents.

Table 4. Regression results with the willingness to pay as the dependent variable.

Variables	Robust coefficients	Standard error
Online survey	0.054	0.460
Number of garlands	0.182	0.134
Female respondents	-0.820	0.663
Years of formal education	0.058	0.068
Household size	-0.081	0.209
Household income less than \$100,000	0.543	0.448
Caucasian respondents**	2.327	0.804
Age of respondents	0.006	0.016
Design B - Preserved magnolia***	2.862	0.453
Design C - Fresh magnolia***	4.281	0.520
Design D - Magnolia and pine***	4.900	0.563
Design E - Mixed row crops***	3.155	0.614
Design F - Pinecone***	2.613	0.462
Constant***	-1.978	
Number of observations	626	
F-value***	14.210	
R-squared	0.120	

*statistically significant at 0.05; **statistically significant at 0.01; ***statistically significant at 0.01.

SUMMARY, LIMITATIONS, AND IMPLICATIONS

Garlands can be made from a wide array of plant materials, whether used singly or in combinations. With the proper materials, supplies, and practice, producers can create these and other garland designs. In this study, the magnolia/pine combination garland was both the most liked and the most expensive design with an average willingness to pay price of \$6.26/foot. Magnolia garland was slightly lower in score but still well-liked, valued at \$5.88/foot. Mixed row crop and preserved magnolia placed third and fourth in appeal, garnering nearly \$4.75/foot. The pinecone garland ranked fifth overall with a value of \$4.26/foot. The corkscrew willow design was last, with consumers willing to pay \$1.22/foot.

The in-person respondents are all from Mississippi. The online respondents were recruited through social media contacts, and their locations were not collected. It is possible that the designs' ranks and values may change if consumers were able to view actual garland samples rather than images. Demonstrations and displays showing how the garland could be used to decorate could also change consumer perceptions. For example, the pinecone garland could be painted gold while the willow garland could be used as an armature foundation for silk and dried flowers. Garlands are not only used for the holiday season. Magnolia garland is used by floral designers throughout the year for wedding and event decoration.

Producers, growers, harvesters, manufacturers, designers, wholesalers, and retailers of these value-added products will benefit from these findings. These groups include, but are not limited to, Christmas tree farms, cut flower farms, nurseries, garden centers, florists, and decorators. Producers should consider cost and labor inputs for these and other garland designs and test local markets for sales appeal. Electric garland machines retail around \$3,500 each, a big investment for farmers to make when speculating on value-added product sales, but necessary for bulk production. Farmers and manufacturers may find that consumers are willing to pay more for products than the respondents in this survey.

LITERATURE CITED

- AIFD, The American Institute of Floral Designers. 2022. The AIFD guide to floral design. Schiffer. Altglen, PA.
- Ball, L.H. 2019. Conducting online surveys. *J. Hum.* 35: 413–417.
- Curtin, T.R. 1982. Indicators of consumer behavior: The University of Michigan Surveys of Consumers. *Public Opin. Q.* 46: 340–352.
- Hunter, N.T. 2013. *The Art of Floral Design* (3rd ed.). Cengage Learning, Boston, MA.
- Minnesota Dept. of Agriculture (n.d.) Holiday greenery best management practices. <https://www.mda.state.mn.us/holiday-greenery-best-management-practices>. Last accessed: May 23, 2023.
- Lightcast. 2023. The global leader in labor market analytics. <https://lightcast.io/>. Last accessed: June 26, 2023.
- NAICS. 2023. North American Industry Classification System. United States Bureau of Census. <https://www.census.gov/eos/www/naics/>. Last accessed: May 23, 2023.
- Parveen, S., Bushra, I., Humaira, K., Shazia, S. and Azhar, M.A. 2014. Value addition: A tool to minimize post-harvest losses in horticultural crops. *Greener Journal of Agricultural Sciences*, 4: 195-198.
- Posadas, B.C., and DelPrince, J. 2019. Consumer preferences and willingness to pay for wreath designs. *Mississippi Agricultural and Forestry Experiment Station Bulletin 1227*, Mississippi State, Mississippi.
- Posadas, B.C.; Fain, G.; Coker, C.C.H.; Knight, P.R. Consumer survey of selected garden chrysanthemum cultivars in Mississippi. 2006. *HortTechnology*, 16, 539–543.
- Posadas, B.C., Coker, C.E., Jackson, C., Knight, P.R., DelPrince, J.M., Langlois, S.A. and Ryals, J.B. 2023. Online survey of consumer preferences for poinsettia cultivars. *Horticulturae*, 9: 449.
- Rogers, W.H. 1993. Regression standard errors in clustered samples. *Stata Technical Bulletin*, 13:19–23. Reprinted in *Stata Technical Bulletin*, 3:88–94.
- Singh, A. 2017. *Flower arranging and designing. Commercial ornaments crops: Traditional and loose flowers*, pp. 569-580. London: Kruger Brentt Publisher UK Ltd.
- Williams, R.L. 2000. A note on robust variance estimation for clustered-correlated data. *Biometrics*, 56: 645–646.

APPENDIX A. SURVEY OF CONSUMER PREFERENCES OF GARLAND DESIGNS. RECRUITMENT MATERIALS

To better understand the markets for garland designs by local florists, MSU Extension Service invites you to complete this survey. The information you provide will allow MSU Coastal Research and Extension Center to learn more about various market segments of potential buyers of locally made garlands.

This survey is completely voluntary and will take approximately 5-10 minutes to complete. You do not have to answer all the questions. Your responses will be anonymous and identification such as your name or email address will not be collected. Your name will never connect to your answers. Your privacy will be carefully protected, and your answers will be combined with those of the other people who are participating in this project. If you choose not to participate, you will not be penalized.

James M. DelPrince

Ph.D., AIFD, PFCI, Assistant Professor,
Horticulture Specialist, MSU Coastal
Research and Extension Center,
1815 Popps Ferry Road, Biloxi, Mississippi 39532,
Phone: (228) 546-1011,
j.delprince@msstate.edu

Benedict Posadas

Ph.D., Extension/Research Professor,
MSU Coastal Research and Extension Center,
1815 Popps Ferry Road, Biloxi, MS 39532,
Phone: 228-546-1024,
ben.posadas@msstate.edu

Tricia Knight

Ph.D., Research Professor,
MAFES South Branch Experiment
Station, 810 MS-26,
Poplarville, MS 39470,
prk3@msstate.edu

Anthony Bowden

Research Associate I,
MAFES South Branch,
810 MS-26, Poplarville, MS 39470,
Ab1001@msstate.edu

Jenny Ryals

Research Associate II,
MAFES South Branch,
810 MS-26, Poplarville, MS 39470,
j.ryals@msstate.edu

Christine Coker

Ph.D., Professor, MSU Coastal
Research and Extension Center,
1815 Popps Ferry Road,
Biloxi, Mississippi 39532,
cec117@msstate.edu

APPENDIX B. SURVEY OF CONSUMER PREFERENCES OF GARLAND DESIGNS

By completing this survey, you agree to the contents of the CONSENT FORM.

Please look at the garlands on display, identified by a letter on each design. For each design, please circle the number which indicates how much you personally like it. A response of 1- would indicate that you strongly dislike it or a 7- would indicate that you strongly like it. A rating of 4- means you neither strongly like nor strongly dislike the plant. Please state how much you are willing to pay for these garland designs for your home or to give as gift?

Design	Strongly do NOT LIKE this design			Neither like nor dislike	Strongly LIKE this design			How much are you willing to pay per foot of this design? (\$/ft)
A	1	2	3	4	5	6	7	
B	1	2	3	4	5	6	7	
C	1	2	3	4	5	6	7	
D	1	2	3	4	5	6	7	
E	1	2	3	4	5	6	7	
F	1	2	3	4	5	6	7	

We would like to have some additional information about yourself.

Your responses are anonymous and are very helpful to us when interpreting results.

How many fresh/live garlands did you buy last year (2021) for your home and to give as gifts?
_____ garlands (NO#)

In what year were you born? _____ (YRBORN)

Are you _____ 1 male _____ 0 female? (GENDER)

How many years of formal education have you completed? (ex., 12 years = High School Graduate) _____ years (YREDUC)

Counting yourself, how many people live in your household? _____ persons (HHSIZE)

What is your approximate household income last year (2021 before taxes? (INCOME)

- | | |
|----------------------------------|----------------------------------|
| _____ 1 - less than \$25,000 | _____ 2 - \$25,000 to \$50,000 |
| _____ 3 - \$50,001 to \$75,000 | _____ 4 - \$75,001 to \$100,000 |
| _____ 5 - \$100,001 to \$150,000 | _____ 6 - \$150,001 to \$200,000 |
| _____ 7 - \$200,001 to \$250,000 | _____ 8 - more than \$250,000 |
| _____ No answer | _____ 9 - No income |

Please indicate your race: (RACE)

- | | |
|-------------------------------------|---------------------------------|
| _____ 1 - Native American | _____ 2 - Caucasian |
| _____ 3 - African American | _____ 4 - Hispanic |
| _____ 5 - Asian or Pacific Islander | _____ 6 - Other, please specify |



**MS AGRICULTURAL AND
FORESTRY EXPERIMENT STATION**

The mission of the Mississippi Agricultural And Forestry Experiment Station and the College Of Agriculture And Life Sciences is to advance agriculture and natural resources through teaching and learning, research and discovery, service and engagement which will enhance economic prosperity and environmental stewardship, to build stronger communities and improve the health and well-being of families, and to serve people of the state, the region and the world.

Scott Willard, Director

mafes.msstate.edu

Mention of a trademark or proprietary product does not constitute a guarantee or warranty of the product by the Mississippi Agricultural and Forestry Experiment Station and does not imply its approval to the exclusion of other products that also may be suitable.

Mississippi State University is an equal opportunity institution. Discrimination in university employment, programs or activities based on race, color, ethnicity, sex, pregnancy, religion, national origin, disability, age, sexual orientation, gender identity, genetic information, status as a U.S. veteran, or any other status protected by applicable law is prohibited. Questions about equal opportunity programs or compliance should be directed to the Office of Civil Rights Compliance, 231 Famous Maroon Band Street, P.O. 6044, Mississippi State, MS 39762, (662) 325-5839.