

# Demand For Sustainability, Part 1: How Appealing Are Biodegradable Containers?

Understanding consumer preferences is the key to turning your sustainable actions in the greenhouse into real dollars.

by **CHARLIE HALL, BRIDGET BEHE, BEN CAMPBELL, JENNIFER DENNIS, ROBERTO LOPEZ** and **CHENGYAN YUE**

**O**NE of the most widely discussed topics in the floriculture industry stemming from consumers exhibiting greater degrees of environmental awareness is the issue of environmental sustainability.

The sustainability movement has led to a desire for products that not only solve the needs of consumers, but are also

produced and marketed using sustainable production and business practices. Consumers increasingly place a greater emphasis on product packaging, and the emphasis has carried over to the greenhouse and floral sectors in the form of biodegradable pots.

Although various forms of eco-friendly pots have been available for several years, their marketing appeal has been limited. But with the recent availability of more attractive biodegradable plant containers, a renewed interest in their suitability in the floriculture sector and their consumer acceptance has emerged.



## About The Series

What, if anything, makes biodegradable containers attractive to consumers? Researchers share details from their container study in the Demand For Sustainability series.

**Part 1: Consumer willingness to pay for biodegradable containers (January)**

**Part 2:** Container style preferences (February)

**Part 3:** Floral consumer recycling behaviors (March)

**Part 4:** Producer sustainability adoption rates (April)

**Part 5:** Levels of interest in local/organic plants (May)



## The Study

The objective of our study, funded by the American Floral Endowment and the Horticultural Research Institute, was to determine the characteristics of biodegradable pots that consumers deem most desirable, and to solicit their willingness to pay (WTP) for this type of product.

A recently developed analysis tool (called experimental auctions) was used to elicit the consumer's WTP and to distinguish what consumers "say they will do" against what they "actually will do" in their purchasing decisions. These auctions were conducted in Minnesota and Texas in order to capture any regional differences that may be present among northern or southern respondents.

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For this study, we consulted industry experts to identify attributes and their corresponding levels considered to be of environmental importance to consumers, while directly controlling other attributes considered to be of lesser importance.

Attributes (and levels) identified were container type (plastic, wheat, rice hull, straw), carbon footprint (neutral, saving,

intense) and percent of waste products used to make the pots (0 percent; 1 to 49 percent; greater than 49 percent). A fractional factorial design yielded 14 different pot combinations to be used in the auctions.

### Findings

Pots made from biodegradable materi-

als each generated a positive WTP from consumers compared to standard black plastic pots. This means consumers did exhibit a willingness to pay more for biodegradable pots. Each pot type was compared against the traditional black plastic pot that was used as the base to determine how much of a price premium consumers were willing to pay.

The rice hull pot generated the greatest price premium, with consumers paying, on average, an additional 58 cents per 4-inch geranium. This was followed by a 37-cents-per-pot premium for the straw pot and 23 cents-per-pot for the wheat (OP47) pot over the standard black plastic pot.

Consumers also exhibited a willingness to pay a 17-cents-per-pot premium for pots deemed to be carbon saving, versus a penalty of 43 cents for pots deemed to be carbon intensive – both relative to a carbon neutral pot. It is important to note that pots were merely labeled as carbon neutral, saving or intensive. This relation-



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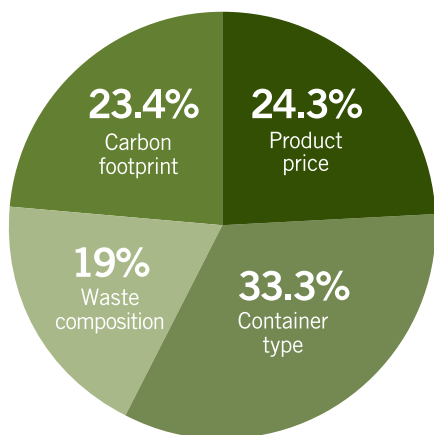
### How The Auction Works

We conducted eight sessions with a total of 113 participants. In each of the auctions, there was simultaneous bidding on the 14 alternatives, which were put on a large table. Beside each alternative was a label indicating the container type, percentage of waste materials used to make the pot and carbon footprint levels.

Participants randomly walked around the table and placed their bids on forms as they studied each alternative. Afterward, participants randomly drew their exclusive binding alternative. The price of an alternative was equal to the second-highest bid for that alternative. If the participants bid more than the price for their binding alternative, they had to buy the alternative.

At the end of each session, participants were given \$30 to compensate for their time. If a participant won an alternative, they would get the alternative they won and get \$30 off the price for the alternative. If participants did not win, they received the \$30.

**Table 1. Relative importance of factors making up the buying decision for potted flowering plants.**



ship has not been established by scientific research regarding any given pot type.

Lastly, consumers were also willing to pay a price premium relative to the amount of waste materials used to manufacture the pots, with pots made from more than 50 percent waste materials generating a 23 cents-per-pot price pre-

mium relative to the black plastic pot.

Again, this was only labeled according to the research design and not based on actual waste ingredient composition. In this manner, we were able to ascertain the price effects of consumer perceptions.

### Consumer Types

After assigning respondents to a cluster, a multinomial logit model was used to identify any relationships between cluster membership and the explanatory variables. Variables that helped explain the differences consisted of demographic and socioeconomic variables, recycling behaviors and respondent recycling behaviors and beliefs.

For all survey respondents, the single-most important factor influencing the buying decision was container type, followed by price, carbon footprint and waste composition, respectively. While these results were true for all respondents, we were able to segment consumers into seven distinct clusters:

1. Those who were extremely price conscious (13 percent of the population). Price made up slightly more than half (55 percent) of the overall buying decision.

2. Those who demonstrated environmentally conscious behaviors (10 percent) and were sensitive to carbon footprint but still cognizant of price.

3. Those who were extremely sensitive to the carbon footprint label (only 4 percent of the population). A small segment, but one in which carbon footprint made up slightly more than half of the buying decision (53 percent).

4. Those who demonstrated a strong liking to the straw pot (8 percent of the population). In this segment, container type made up almost 50 percent of the buying decision.

5. Those who demonstrated a strong liking to the rice hull pot (20 percent of the population). In this segment, container type made up almost 41 percent of the buying decision.

6. Those who demonstrated a strong

*Mutual confidence!*

**P** = 'Protected variety, Propagation prohibited'

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disliking to the straw pot (8 percent of the population). A small group, but container type was very important to them (comprising almost 52 percent of the buying decision).

7. Those who were non-discriminating in their preferences (37 percent of the population). For this catch-all segment, 23 percent of the buying decision was based on carbon footprint, 24 percent was based on price and 32 percent was based on container type.

liked straw pots, as are consumers who are married or live with a partner. Having more adult members per household and living in a metro area increased the probability of being in this segment. Consumers who always recycle their plastic containers are also more likely to be in this segment.

The segment that dislikes straw pots is most likely comprised of people who do not purchase flowering annuals but do purchase indoor flowering plants. This segment is also more likely to agree that

helped improve the awareness among consumers and industry professionals with regard to the number and type of alternative container materials available on the market today or coming to the market in the near future.

In terms of merchandising strategies for biodegradable containers, industry firms need to be consistent with their message, communicating information about biodegradable containers across all media – including websites, catalogs,



### Demographic Analysis

The price-conscious segment tended to be more educated and married. However, higher levels of expenditures on outdoor lawn and garden products resulted in a lower probability of being in this segment. Furthermore, this segment is more likely to have interest in conventional, locally produced bedding plants.

The environmentally conscious segment exhibited an acute level of concern or consciousness about the environment. They do not have a concise demographic profile other than they are more likely to be younger consumers, but they do have a specific set of recycling views that set them apart.

For instance, they are more likely to disagree that sorting household waste is too inconvenient; however, they generally do not check if a package is made of recycled material before making a purchase.

Consumers who like rice hull pots were more likely to be younger consumers with higher incomes living in a non-metro area with fewer adults per household. As incomes increase, the likelihood of being in this segment increases at a higher rate.

African-Americans and Hispanics are less likely to be members of the group that

sorting household waste is too inconvenient, which implies they are less likely to be active in recycling efforts. They do, however, have an interest in locally produced bedding plants and plants grown in recyclable pots.

The non-discriminating segment does not have any distinguishable preferences that can be easily targeted by a marketing campaign. In general, this segment was made up of older consumers with less education and income. This segment also lives in metro areas.

A consumer profile for the carbon sensitive segment could not be well defined because no statistically significant differences were found. This is most likely a direct effect of the small size of the market segment, but a mixture of varying beliefs or knowledge regarding carbon intensive footprints could also play a role. However, they are easily targeted by their liking of higher waste compositions and extreme disliking of a carbon intensive footprint.

### Takeaways

In summary, visibility of containers made from non-virgin plastic continues to increase. At a minimum, the study

consumer advertising and store shelves.

Additionally, the value proposition of these products has to be clear and devoid of greenwashing (the misrepresentation of sustainable product attributes). Consumers have demonstrated a reluctance to purchase low-quality products, even if they do have green attributes. They must perform as well or better than non-green competing products.

Lastly, understanding why customers are buying green products and the premiums they are willing to pay for more sustainable options will most assuredly influence firm-level pricing strategies. **GG**

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