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The Appeal of Biodegradable Packaging to Floral Consumers: Part 1

Charles Hall¹, Bridget Behe², Ben Campbell¹, Jennifer Dennis³, Roberto Lopez³, Chengyan Yue⁴
¹Texas A&M University, ²Michigan State University, ³Purdue University, ⁴University of Minnesota



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Phone: 703-838-5239

Fax: 703-838-5212

E-mail: afe@endowment.org

Website: www.endowment.org

BACKGROUND

Currently, one of the most widely discussed topics in the floriculture industry, which is promulgated by consumers exhibiting greater degrees of environmental awareness, is the issue of environmental sustainability. This 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 this has carried over to the greenhouse/floral sector in the form of biodegradable pots.

While various forms of these eco-friendly pots have been available for several years, their marketing appeal was limited due to their less-than-satisfying appearance. 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. The objective of this study 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.

METHODOLOGY

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

For this study, we consulted with industry experts in order to identify the attributes and their corresponding levels that were considered to be environmentally important 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%, 1-49%, >49%). A fractional factorial design yielded 14 different pot combinations to be used in the auctions.

We conducted 8 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 there 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 bidding forms as they studied each alternative. Afterward, each participant randomly drew his/her exclusive binding alternative. The price of an alternative was equal to the 2nd-highest bid for that alternative. If the participants had 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 minus the price for the alternative. If the participant did not win, he/she received the \$30.

RESULTS AND CONCLUSIONS

Table 1. Experimental auction WTP results for biodegradable containers.

Container attribute	WTP results
Plastic	base
Rice hull	\$0.58
Straw	\$0.37
Wheat (OP-47)	\$0.23
Carbon saving	
Carbon saving	\$0.17
Carbon neutral	base
Carbon intensive	-\$0.43
No waste	
No waste	base
1-49% waste	\$0.15
+50% waste	\$0.23



Figure 1. Base scenario using a standard black plastic pot.

Pots made from biodegradable materials each generated a positive WTP (Table 1) from consumers compared to standard black plastic pots.

This meant that consumers did exhibit a willingness to pay more for biodegradable pots.

Each pot type was compared against the traditional black plastic pot (Figure 1) 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 \$0.58 per 4” geranium. This was followed by a \$0.37/pot premium for the straw pot (Figure 2) and \$0.23/pot for the wheat (OP47) pot over the standard black plastic pot.



Figure 2. Example of a biodegradable pot.

Consumers also exhibited a willingness to pay a \$0.17 per pot premium for pots deemed to be carbon saving versus a penalty of \$0.43 for pots deemed to be carbon intensive, both relative to a carbon neutral pot. It is important to note that the pots were merely labeled as carbon neutral, saving, or intensive. This relationship 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% waste materials generating a \$0.23/pot price premium 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 prices effects of consumer perceptions.

IMPACT TO THE INDUSTRY

Through intelligent packaging and system design, it is possible to “design out” the potential negative impact of floral plant packaging on the environment and society – in this case, the prominent amount of virgin plastic produced as requisite to the greenhouse industry.

“Cradle to cradle” principles offer strategies to improve the material health of packaging and close the loop on packaging materials including the creation of economically viable recovery systems that effectively eliminate waste.

The use of biodegradable pots reflects these cradle to cradle principles. This research will greatly benefit the floral consumer by ensuring that environmentally-friendly products marketed to them in the future meets their “sustainability” needs and/or expectations.

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