

PROVISIONGARD

Insect blocking package technology

Consumers Speak Out - UNC Study

Overview

Food packaging is constantly exposed to the risk of insect infestation, a possibility not all consumers are aware of until they encounter pest-ridden food. In a custom online research project conducted by a BSBA class at UNC Kenan-Flagler Business School (Chapel Hill), the majority of consumers confirmed that they prefer purchasing a brand with insect-resistant packaging and would leave their brand if they encountered an insect in the brand's packaged food products.

The Problem

Packaging has become increasingly important to today's consumer: it serves as advertising, has visual appeal, is eco-friendly and, most important, protects the quality of goods. Within the United States, food and beverage packaging make up \$70 billion worth of the packaging market, and the most commonly used materials are most susceptible to insect invasion.¹ Insect infestation control costs exceed \$7.8 billion annually² – a cost that could be significantly reduced with the use of insect-resistant packaging.

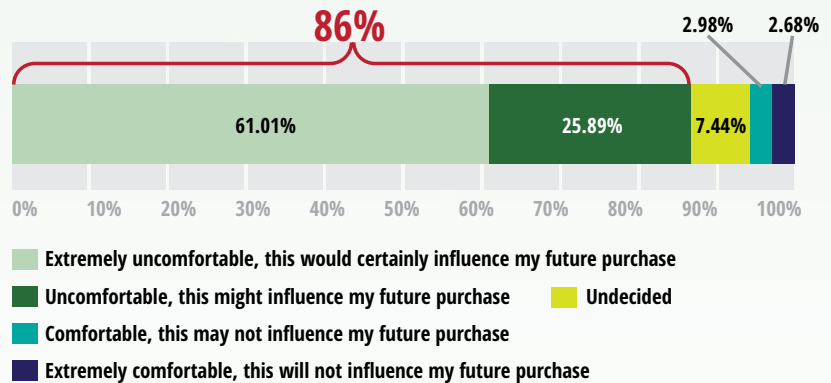
Consumer Study Aim

The aim of this study was to measure consumer acceptance of insect-resistant food packaging. Over 600 respondents were drawn from all demographics and regions of the United States. Consumers first were asked if they had ever found an insect in their food and how this would influence their purchases. The survey then gauged their attitudes towards insect-resistant packaging and their behaviors. (What do they purchase if they know certain packages keep insects out?) **The survey used ProvisionGard™ as an example of an insect-resistant food packaging brand.**

Infestation: Consumer Response

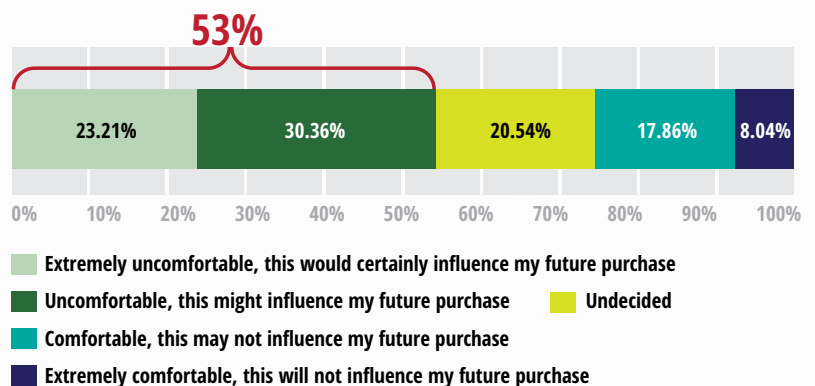
As an initial screening in this study, consumers were asked how they would feel about a food brand or category after experiencing insects in the packaging. As seen below, **86% of consumers would be uncomfortable with the product moving forward, and it would influence their future purchases.**³⁴

Infestation: Impact on Product Loyalty



As seen below, **53% of consumers would be uncomfortable with the entire food category moving forward, and it would influence their future purchases.**^{5 6}

Infestation: Impact on Category Loyalty



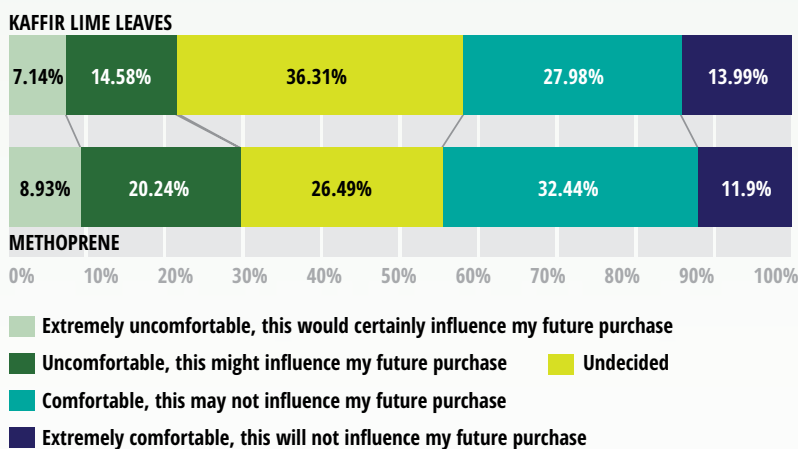
1 Wilkinson, "In Defense of Food." *Chemical and Engineering* (1998), 56: 26–32.
2 "Insect-Resistant Packaging." In *Stored Product Protection*, edited by David Hagstrom, Thomas Phillips, and Gerrit Cuperus, by Michael Mullen, Jade Vardeman, and Jim Bagwell, 135-142. Kansas State University, 2012.
3 Wang, Vivian, Kerry Chuanyuan, and Amanda Stewart. in *UNC Shopper Insights Study*. UNC Kenan Flagler

4 Sample size n = 336
5 Ibid
6 Sample size n = 336
7 Ibid
8 Sample size n = 336
9 Ibid
10 Sample size n = 310
11 Ibid
12 Sample size n = 310

Natural vs. Biopesticide?

Consumers in the attitude portion of the study were given two different prompts to explain insect-resistant packaging – both of which were true. The first prompt explained that the insect repellent was **naturally derived** from Kaffir lime leaves, which are commonly used in Asian cuisine. The second prompt stated that the insect repellent came from a **biopesticide**, Methoprene, which is EPA approved and FDA compliant for use on packaging coatings.

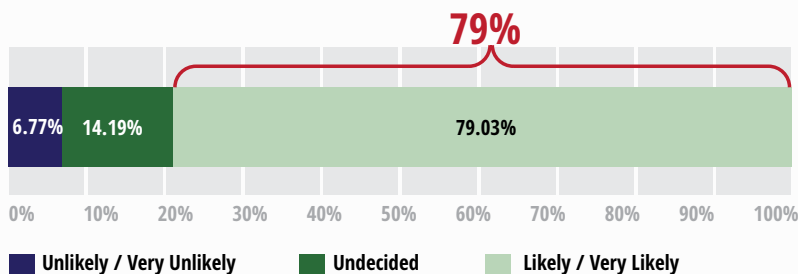
Reaction towards Kaffir Lime leaves and Methoprene descriptions



As seen above, **consumer acceptance was similar for both prompts (~60% comfortable or undecided.)**^{7 8}

However, there remained a large “swing” population who were undecided. For this reason, the second survey of the study was necessary to see what the consumer would ultimately buy.

Consumer Response: ProvisionGard™ Packaging



~80% of consumers were likely to purchase their favorite brand if it adopted ProvisionGard™ packaging.^{11 12}

What Will Consumers Buy?

In the second section of the study, consumers were asked to make a purchasing decision given the same information they would receive when grocery shopping. First, consumers were presented with a box of pasta (seen below), the only change being an additional leaf logo “Protected by ProvisionGard™.”

The results indicated that 67% of consumers said they would continue to purchase their favorite brand if it adopted the adjusted packaging.^{9 10}

Next, consumers were given the kind of information on ProvisionGard™ (insect-resistant packaging) that might be stated on the back of a food box. This blurb stated that ProvisionGard™ keeps out insects, leads to the highest quality, and does not impact food inside the packaging.

Considerations and Implications

Insect infestation provides a huge risk not only to brand sales, but also to sales within an entire food category. As seen in the study, one bad experience could prevent consumers from eating a type of food altogether. **This could mean that companies that are not willing to adopt insect-resistant packaging could cause product sales to drop across all brands.**

In addition, **no matter how insect-resistant packaging was marketed, a minority of consumers rejected the concept.** Both prompts noted ~60% of consumers who were undecided or supportive of insect-resistant packaging, whether the word biopesticide or natural was used.

There are a few key considerations to take into account when looking at the results of this survey. All respondents were informed about the role of insect-resistant packaging and its makeup. In everyday grocery shopping, insect protected and non-protected packaging look the same, and no logo or blurb is provided.

To further prove this idea, our group also screened the respondents on how likely they were to research the food packaging used on their products. **Results showed that 71% of consumers were unlikely to do any research, 40% of the respondents being extremely unlikely.**^{13 14}

While 20 – 30% of consumers were uncomfortable with the product, these numbers are significantly reduced if you take into account the number of respondents informed on food packaging. **However, insect-resistant packaging may not be appropriate for niche consumers who avoid packaging and regularly research food packaging technology.**

An experience with insect infestation has huge impact on consumer purchases: almost 90% of consumers confirmed that encountering an insect in their packaged food would influence their future purchases of this product.^{15 16} This could mean an increasing loss of market share for companies when consumers switch brands.

Ultimately, it is significant that a majority of consumers in the study accepted insect-resistant packaging, since respondents were more informed than the average shopper.

Considering majority acceptance and the shopping behaviors of the average consumer, insect-resistant packaging could provide a low risk solution to the problem of packaged food infestation.

¹³ Ibid
¹⁴ Sample size n = 310
¹⁵ Ibid
¹⁶ Sample size n= 336

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Jim Bagwell, President
336-392-0539
jim.bagwell@pvgard.com

415 Pisgah Church Road, PMB 200
Greensboro, NC 27455
www.provisiongard.com