Canadian Consumers' Perception of and Willingness to Consume Gene-Edited Beef and Milk

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Introduction

Food production has adopted new technologies, including **gene editing**, in the early twenty-first century. Unlike the insertion of genes from other species, gene editing modifies specific genes within an organism; however, most consumers remain **unfamiliar with these technologies**. Many consumers are also **unaware that gene-edited foods can improve animal welfare and nutritional value**. In addition, **food technology neophobia and demographic characteristics** significantly influence **consumers' perceptions of, and willingness to consume, gene-edited products**. As a result, researchers have extensively studied consumer attitudes toward these foods.

Purpose & Research Question

- Do information treatments work for the people with new food technology neophobia?
- How demographic characteristics affect consumers' willingness to consume gene-edited milk/beef ?

Methodology

- Data were collected in 2024 through a nationally representative Canadian survey of 2,210 individuals that included detailed demographic information.
- Conditional Logit Model was used to estimate the probability of choosing products.

Model Structure

Both models include:

- **Choice:** conventional vs. gene-edited milk/beef
- **Attributes:** price, gene editing (GE)
- **GE interactions:** female, household size
- **Consumer trait:** food technology neophobia
- **Framing: animal-welfare and nutrition content (randomly assigned)**

Difference between models:

- **Model 1 — Average Framing Effects**
  - Audio
  - Video
  - Written
- **Model 2 — Neophobia-Moderated Framing Effects**
  - Neophobia × Audio
  - Neophobia × Video
  - Neophobia × Written

Demographic characteristics of food neophobic respondents

- **Income Groups:** More common in lower-income groups
- **Age Groups:** Less common among younger respondents
- **Gender:** Slightly more common among females
- **Education Levels:** More common among less-educated respondents

Conditional Logit Model Results

Coefficient estimates from the conditional logit models are presented for both models.

Gene-edited effects

Model 1	Model 2
Beef: -0.933***	Beef: -0.347***
Milk: -0.735***	Milk: -0.386***

High Food Technology Neophobia

Model 1	Model 2
Beef: -1.178***	Beef: -1.642***
Milk: -1.205***	Milk: -1.406***

Treatment: Audio

Model 1	Model 2
Beef: 0.798***	Beef: 0.599***
Milk: 0.456***	Milk: 0.183

Treatment: Video

Model 1	Model 2
Beef: 0.645***	Beef: 0.406
Milk: 0.474***	Milk: 0.226

Treatment: Written

Model 1	Model 2
Beef: 0.498***	Beef: 0.589***
Milk: 0.210***	Milk: 0.286

Willingness to Consume

Gender	Women are less willing to accept gene-edited beef and milk.
Food Neophobia	Neophobic consumers are much less willing to buy GE products.
Animal-Welfare Framing	Welfare information helps for milk but not for beef.
Income	Higher-income consumers are more accepting.
Education	Acceptance increases with education.

Conclusion

Consumers discount gene-edited foods and are highly price sensitive. Food neophobia and demographics strongly shape acceptance.

Policy implications:

- Provide **clear public information on gene-edited beef and milk** to reduce consumer neophobia.
- Regulators should support **transparent, consumer-friendly communication** about gene-edited foods.
- Health Canada and CFIA should allow and encourage **benefit-based claims** when scientifically justified.
- **Public communication** and regulatory outreach should be **targeted**, not uniform.

References

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