The effects of differential benefit framing on consumer willingness to pay for gene edited canola

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Background

Climate change threatens canola production, reducing yield and seed quality through heat stress, increased nitrogen demands, and pest pressures. Projections suggest a 42% drop in yields by the year 2041 [1]. Current solutions, such as early seeding and higher nitrogen fertilizer use, have proven insufficient to fully address these challenges [1].

Gene editing offers a promising solution by enhancing resilience and productivity. However, low consumer acceptance of food developed using agrobiotechnology may prevent adoption [2].

For instance, animal welfare has been emphasized to promote gene-edited cows [4], while highlighting the role of genetically modified maize in combating global hunger has increased consumer valuation of GM corn [5]. Additionally, the study shows that improved texture and flavor can positively influence consumer appeal for gene-edited grapes [6]. However, there is a lack of research comparing these different types of benefits. It will help to determine the most effective methods for fostering acceptance of agrobiotechnology as a tool addressing agricultural challenges.

Methods

600 Canadian participants completed a survey and choice experiment in January 2025. The choice experiment had three attributes:
- **Price:** $4/litre, $5/ litre, $6/ litre
- **% change in benefit:** 25%, 33%, 50%
- **Production method:** Conventional, Gene editing, Plant breeding

The benefits of gene editing were presented as either **private** (increased levels of omega-3 fatty acids), **societal** (increased fertilizer efficiency) or **neutral** (increased farmers' revenue)

Research Question

Does framing benefits as either private, societal, or neutral affect consumer's premium for GE canola?

Is consumer's premium for an increase in the benefit of gene editing affected by how that benefit is framed?

Results

	Private benefit group	Societal benefit group	Neutral benefit group
mWTP for gene edited canola oil	$0.77	- $0.57	$0.05
mWTP for higher level of benefit from gene edited canola oil	$0.01	- $0.03	$0.00

- Result was obtained through the mixed logit model.

- Those who received **private benefit** was willing to pay a **premium** for gene edited canola oil.
- Those who received **societal benefit** asked for a **discount** for gene edited canola oil.
- Those who received **neutral benefit** showed **statistically insignificant** result on their premium for gene edited canola oil.

- Consumers did not show a willingness to pay a higher premium for increasing benefits if those benefits were achieved through gene editing. However, the societal benefit group demonstrated a statistically significant preference for a **discount** when a **higher level of societal benefits were attributed to gene editing**.

Policy Implications

- Design benefit-framing strategies to improve acceptance of gene-edited crops

- Address consumer concerns about gene-editing technologies

- Tailor communication to specific demographic and psychological profiles to maximize impact

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