
Cornhusker Economics

Consumer Acceptance of Gene-Edited Food: The Role of Knowledge, Trust, and Information

Advances in gene-editing technology, such as the development and use of clustered regularly interspaced short palindromic repeats (CRISPR), have been gaining popularity in many fields including medicine and agriculture. In the medical field, CRISPR technology has shown promise in treating genetic disorders such as sickle cell anemia and cystic fibrosis as well as diseases such as cancer.¹ In agriculture, gene-editing technologies can be used to facilitate the development of climate-resilient and disease-resistant crops and food animals, improve the productivity and quality of staple crops, and improve animal welfare and food safety. Unlike genetic modification, which typically involves the introduction of foreign genetic material into an organism's genome to confer desired traits, gene-editing technology such as CRISPR focuses on precisely modifying specific genes within an organism's genome without necessarily introducing foreign DNA. Proponents of CRISPR argue that it 'mimics nature' in that the biochemical processes of editing are similar to processes that cause natural mutation. Consumer opposition to genetic modification and genetically modified (GM) foods is well documented in many studies. Whether consumer perceptions and attitudes toward CRISPR applications in the agri-food sector will mirror those toward GMOs will likely depend on the nature of the application and

the perceived benefits and risks of the use of CRISPR technology.

Previous studies have found that although consumers need to face a discounted price to buy both gene-edited and GM products, they are more accepting of gene-edited products (Muringai et al. 2020; Ortega et al. 2022; Shew et al. 2018; Marette et al. 2021; Caputo et al. 2025). Muringai et al. (2020) argued that consumer valuation for gene-edited products increases when there are direct health and environmental benefits. However, Paudel et al. (2023) finds that information about the health and environmental benefits of gene-editing increased consumers' willingness to pay (WTP) for some gene-edited products (soyabean oil) but not for others (apples), concluding that the effect is product-specific. Ortega et al. (2022) reached a similar conclusion when they evaluated WTP for gene-edited rice and pork in China. They found that information distinguishing transgenic modification from genome editing decreased WTP for both types of biotechnology rice products but increased WTP for both types of biotechnology pork products. Additionally, delivery methods of information can influence consumer acceptance. Hu et al. (2022) found that consumers showed a higher WTP for CRISPR-produced orange juice compared to GM alternatives when information was presented through infographics

¹In December 2023, the Food and Drug Administration approved the first CRISPR therapy for sickle cell anemia.

and videos. Caputo et.al (2025) found that consumers have a preference for conventional, organic and non-GMO products, however, information disclosure methods are important among information seekers; in their study bioengineered labels induced higher WTP for gene-edited and bioengineered products compared to conventional options.

Public attitudes towards CRISPR can also be influenced by whether the technology addresses a challenge that directly impacts the individual, such as a food safety enhancing application of a good they consume, versus whether it addresses an issue the individual cares about but does not affect them directly. It is important to note that, although consumers may value solutions to issues like food safety, climate change and food security, challenges that CRISPR technology could effectively address, they may also be apprehensive about the use of a technology they do not fully understand or perceive as risky. Research in the Department of Agricultural Economics at the University of Nebraska-Lincoln explores this trade-off, examining how consumers evaluate gene-edited food products.

The research aims to assess consumer preferences and attitudes toward CRISPR applications in the food sector and estimate consumer willingness to pay for a food product developed using CRISPR technology to enhance food safety and confer health benefits. Additionally, the research assesses the impact of information provision on perceptions, attitudes and willingness to pay. Specifically, we consider the potential effect of both the nature of information provided (i.e., whether it emphasizes the differences between GM and CRISPR technology or not) and the delivery format (i.e., text versus video) used to present content-equivalent information. In this context, we also assess consumer trust in various entities or institutions to (i) provide accurate information about CRISPR and its applications in the agri-food sector and (ii) develop safe and beneficial gene editing agri-food technologies. Among the factors we investigate as potentially influencing consumer preferences and WTP are consumers' subjective and objective knowledge of CRISPR technology, as well as its perceived benefits and

risks. The food product under consideration is wheat flour developed using CRISPR gene editing to produce lower levels of the potentially carcinogenic compound acrylamide when cooked at high temperatures.²

An online survey that included a stated choice experiment was developed to achieve study objectives. The survey was fielded by Dynata, an online survey firm, in the Fall of 2024 and included a nationally representative (with respect to key demographic characteristics) sample of 1,638 individuals. The first part of the survey assessed consumers' subjective and objective knowledge as well as their acceptance, beliefs and concerns regarding CRISPR gene-editing and GM technology. Following these questions, all participants received balanced information about CRISPR that included its potential benefits as well as concerns about the use of the technology. The choice experiment was designed to assess WTP for wheat flour with low acrylamide levels and included 24 choice sets. Each choice set included three attributes, namely, the production process (organic, conventional or gene-edited wheat flour), reduction of acrylamide levels (0% or 50% reduction) and prices. To assess the effect of information on preferences and WTP, participants were randomly assigned to one of three groups before the choice experiment. The *control* group received information about gene-edited wheat with reduced acrylamide levels in text format. The *treatment 1* group received the same text-based information as the control group, with additional information emphasizing the differences between gene-edited and GM plants. The *treatment 2* group received the same information as treatment 1, but in video format rather than text.

Preliminary results show that three-fourths of participants had heard little or nothing at all about CRISPR technology, despite its recent publicity in human health applications. Similarly, three-fourths of participants reported knowing very little or nothing at all about the difference between CRISPR and GM technology. The majority of participants scored low on both subjective and objective knowledge measures, yet over 80% chose to see the correct answers to the objective knowledge questions, demonstrating a strong interest in seeking additional

²This product was developed by scientists in the United Kingdom. Trials show a 50% reduction in acrylamide in heated flour (Kaur et al. 2024).

information. Interestingly, those with lower subjective and objective knowledge scores were more inclined to seek additional information, highlighting the potential for targeted educational interventions. Among respondents with high subjective and objective knowledge, 71% believed that the benefits of CRISPR gene-editing outweigh its risks, compared to only 33% of those with low subjective and objective knowledge. Results also reveal that use of CRISPR and GM technology in crop production was more acceptable to participants than its use in animals or humans. Furthermore, approximately 45% of participants believed that food crops and animals modified using CRISPR gene-editing technology were safe for consumption. However, 42% of the participants stated that they were not willing to pay more for food produced using CRISPR gene-edited technologies and this was particularly true for respondents with low subjective and objective knowledge. Participants most commonly cited concerns regarding the potential harm of CRISPR gene editing technology on animal health and the possibility that ownership rights might restrict its use, with these concerns being more pronounced among those with low subjective and objective knowledge. In addition to these concerns, respondents with high subjective and objective knowledge were also concerned about unintended negative impacts of CRISPR gene editing technology on traditional farming practices. Regarding trust in institutions, participants preferred universities and the United States Department of Agriculture (USDA) over multinational cooperations and domestic startups as developers of safe and beneficial gene-editing technologies. Furthermore, the majority of respondents trusted the USDA and medical professionals to provide accurate information about CRISPR technology. Analysis of the choice experiment data is ongoing, and findings will be shared in a future *Cornhusker Economics* article – stay tuned!

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