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CONSUMER ACCEPTANCE OF THE PRRS-RESISTANT PIG AND GENE-EDITED PORK

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I. INTRODUCTION

Porcine Reproductive and Respiratory Syndrome (PRRS) is a devastating, often fatal virus that affects millions of pigs around the world and negatively impacts a producer's ability to realize genetic potential. From 2016 to 2020, it is estimated that PRRS resulted in $1.2 billion per year in losses in the United States alone [1]. To provide a solution for producers, PIC used gene editing technology to precisely delete a portion of the gene where the PRRS virus enters the pig. Without the binding site, the virus cannot infect the pig or its offspring, thus providing a solution to a challenge that affects pig farms of all types around the world. Although gene-edited crops are being developed worldwide and some gene edits are already approved in livestock and fish, understanding consumer perceptions and acceptance of this technology is necessary. As such, over the last two years, PIC has invested in market research to gain insight into the current consumer landscape, awareness, concerns, and perceptions related to gene editing in pork in the U.S.

II. MATERIALS AND METHODS

In this preliminary study, PIC partnered with Circana, a leading advisor on the complexity of consumer behavior to better understand consumers in the U.S. To our knowledge, this is the most comprehensive and current study on consumer perception of gene-edited protein to-date. The online questionnaire was conducted in December 2024 with participants (n = 1,052) ranging in age (18 - 70) and demographic (Table 1) and targeted consumers that are current buyers or are open to buying and consuming fresh pork products. Respondents first read a provided description of gene-edited pork and then evaluated purchase likelihood. Through a 14-question survey, participants were not asked about their individual preferences but rather to make a judgement on what the targeted consumer base would prefer. To achieve this, each participant received virtual currency or tokens to "invest" in concepts and questions where they have the best knowledge or judgement. Each response required the participant to "bet" or allocate a portion of their tokens followed by an explanation on their decision. Participants were allowed to change their responses at any time during the study. Having tested over 6,000 food concepts, Circana developed proprietary interpretation tiers for their Prediction Likelihood Index (PLI) based on normative benchmarks and the collective judgment of the participants over thousands of predictive questions. For trends and events, the PLI is an estimated probability of an event happening. For predicting preference, the PLI is a relative measure among the preferences being predicted.

III. RESULTS AND DISCUSSION

When asked about familiarity with gene editing, 37% of participants said they were at least somewhat familiar with the technology before taking the survey. After reading the provided description, gene-edited pork products had an average Purchase Likelihood score (81%) relative to Circana's normative benchmarks (Figure 1). Many respondents said these products would be purchased because there are health benefits that eliminate animal disease and sickness, and they believe the products are safe to consume. However, when respondents were asked, "Why won't people definitely buy pork products produced this way?", 1 in 10 did not like the idea of gene editing. Gene-edited

Sample sizes:	
Total Respondents	**n = 1052**
Males	n = 522
Females	n = 527
Gen Z / Millennials	n = 362
Gen X	n = 386
Boomers	n = 304
Light Pork Consumers	n = 158
Heavy Pork Consumers	n = 723
Healthy Eaters	n = 119
Mainstream Eaters	n = 765

Table 1. Respondent demographics.



Figure 1. Purchase likelihood of gene-edited pork.

pork products resonated strongest among healthy eaters (90%) and males (88%), as well as among Boomers (86%), heavy pork consumers (83%), and Gen Z / Millennials (82%). However, these products received a lower purchase likelihood among Gen X (74%), light pork consumers (74%), and females (71%). All segments of consumers agreed that they would want additional information about the safety of gene-edited pork and would want to see scientific studies about how animal welfare is improved. In a similar study looking at consumer attitudes, trust, and acceptance of gene-edited foods, respondents found gene editing applications targeting diseases in animals, humans, and crops to be the most important [2].

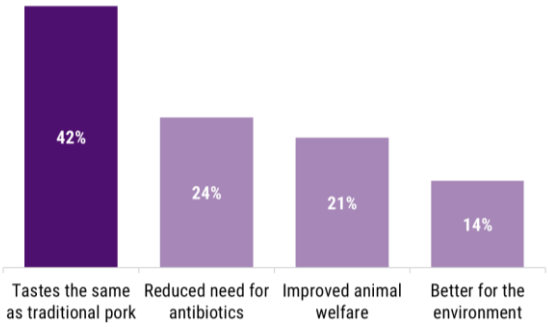


Figure 2. Most motivating benefit of gene-edited pork.

For gene-edited pork, “tastes the same as traditional pork” was the most motivating benefit followed by a “reduced need for antibiotics”, “improved animal welfare”, and “better for the environment” (Figure 2). About 90% of respondents said that Food and Drug Administration (FDA) approval was important for them to purchase gene-edited pork. Additionally, approximately 75% said it was important to them to know that countries outside of the U.S. have determined that gene-edited pork is safe for the animals and for human consumption. Market intelligence firm Mintel, and gene editing company Pairwise, both suggest that transparency about process and highlighting the benefits associated with gene editing technology are key to consumer acceptance [3, 4].

IV. CONCLUSION

Gene editing is a tool that has enabled the development of a solution for PRRS, an animal disease negatively impacting global swine productivity. Consumers value the benefits that come from gene editing, but a deeper dive into specific consumer segments may be necessary to better understand purchase drivers or barriers of gene-edited pork. Key findings reveal that consumers expect gene-edited pork to taste the same as traditional pork and recognize the benefits related to increased animal welfare, a decreased need for antibiotics, and reduced environmental impact. PIC plans to continually build upon these insights with additional research to track consumer awareness and acceptance.

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