Survey on consumer acceptance of CRISPR and other plant-breeding biotechnologies: Would consumers pay higher prices for tastier and fresher grapes?

Since genetically engineered crops were first introduced in the mid-1990s, they have faced considerable barriers to market acceptance. In these crops, genetic engineering tools are used to move genes from one non-closely related or sexually incompatible species to another. The scientific consensus has been that the risks from genetically engineered crops to human health, society, and the environment are no greater than those for varieties produced using conventional breeding techniques. Despite the scientific evidence, as discussed by Qaim various groups (notably the environmental NGOs, Green Peace, and Friends of the Earth) have actively opposed the technology and publicized counterclaims, and some consumers perceive genetic engineering technologies and the foods produced from them as risky, unethical, or unnatural.

Limitations on their public and market acceptance have prevented genetic engineering technologies from realizing their full market potential, and concerns have been raised that other new breeding technologies, such as gene editing, may face similar barriers and suffer similar consequences.

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In our case study, based on data elicited using an online consumer survey, we specifically examine consumer demand for table grapes produced with and without gene editing (i.e., using conventional modern breeding methods). We consider the differential demand response when these alternative plant breeding methods are used to improve various fruit quality attributes and agronomic characteristics.

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Results from this study suggest that respondents as consumers are willing to pay the highest price premiums for improvements in table grape taste and texture, followed by improvements in external appearance, and then reductions in the expected number of chemical applications. Also, most of the respondents would apply a discount to table grapes produced from varieties developed via CRISPR compared to those produced using conventional breeding.

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