

# Researchers analyze consumer preferences for gene edits in the fruit industry

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In states such as California and Florida, the \$3 billion orange and citrus industry is big business. More than six in ten Americans drop oranges into their grocery carts. And when they peel that orange or drink a glass

of juice, they want it to taste sweet.

Enter citrus greening, a disease here to wreck your morning and the U.S. [citrus industry](#)'s bottom line. Spread by the invasive Asian citrus psyllid insect, the disease now affects every citrus growing region in the country, costing growers \$975 million annually. Once infected, a citrus tree produces small, bitter fruit, helps spread the disease and then dies prematurely.

While the disease is an incredibly serious threat to growers, scientists hope to counterpunch using gene editing. This technological solution can be applied in multiple ways—for example, making citrus trees resistant to disease or reducing the viability of this invasive insect. While these technologies show promise, consumers will have to determine if the technologies are acceptable.

In a study published in *Applied Economic Perspectives and Policy*, the University of Delaware's Brandon McFadden, Kelly Davidson and John Bernard as well as Brittany Anderton from iBiology examined [public attitudes](#) toward gene editing. The researchers analyzed how common communication strategies impacted support for using gene editing to reduce pests and disease. McFadden, Davidson and Bernard are professors in the Department of Applied Economics and Statistics within UD's College of Agriculture and Natural Resources.

"It is a technology that will be used to solve major societal problems in areas like the agriculture and medical fields," said McFadden. "But there is a low familiarity with gene editing because it is relatively new and a very technical subject."

More knowledge can assist the public in understanding the potential benefits and costs. The study's goal was to better understand consumers' concerns about the gene edited trees, which host the disease, and gene

editing insects, which spread the [disease](#).

"At the outset, we thought that there would be more general support for gene editing the tree; however, there was similar support for gene editing the insect or tree," said McFadden. "And in general, respondents were supportive of both gene-editing solutions to combat citrus greening."

This support for gene editing is good news for citrus growers and the scientists working on technological solutions. The results are also a positive forecast for other industries that will need to tap the technology in the future. But such support will require continued communication to the public.

Despite the promise of gene editing to address [citrus greening](#) and other threats to the food system, consumers receive mixed messages about the relationship between breeding techniques from advocacy groups and policymakers. In the survey, consumers had low familiarity with gene editing but linked it to [genetic modification](#), typically referred to as GM or GMO. Both solutions employ bioengineering to alter the genetic material of living organisms. However, unlike what is typically referred to as "genetic modification," gene editing can make much smaller, and more precise, changes to DNA. In some cases, these changes can accelerate the development of traits that could otherwise be obtained through natural genetic variation and conventional breeding.

Consumer acceptance may be a very different story for gene editing than what was experienced for GMOs.

"Public engagement with gene editing is occurring much earlier for gene editing; there is positive sentiment about potential human-health advancements," McFadden said. "To maintain the trust of the public, it is important to communicate the potential risks and benefits associated with a specific application. But that's not enough from a communication

standpoint, because we also need to communicate the risks and benefits relative to doing nothing as well as other potential solutions."

**More information:** Brandon R. McFadden et al. The effect of scientific information and narrative on preferences for possible gene-edited solutions for citrus greening, *Applied Economic Perspectives and Policy* (2021). [DOI: 10.1002/aepp.13154](https://doi.org/10.1002/aepp.13154)

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