

What Do Consumers Really Think about Vertical Farms?



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In today's debates about the advantages and disadvantages of [vertical farms](#), it's somewhat surprising to see that one important issue is rarely considered: that of consumer attitudes to vertical farms.

Vertical farm advocates and critics are quick to wrangle over whether or not these next-generation facilities really do offer a solution to the problems faced by conventional agriculture. However, they seem to give unexpectedly little thought to the question of whether consumers are actually willing to buy the produce grown there.



This point certainly deserves consideration. Many recent agricultural and food-related developments have been met by consumers with attitudes ranging from skepticism to outright hostility. Innovations like genetically modified (GM) crops, [food nanotechnology](#), and [food irradiation](#) all purportedly offer benefits and address particular food and agricultural issues. Yet they have struggled to find widespread consumer acceptance.

In an effort to determine whether vertical farms are likely to meet the same fate, two researchers from the Agricultural and Consumer Economics Department of the University of Illinois conducted a study in 2016 designed to examine consumer perceptions of vertically farmed produce. Their findings shed some important light on what consumers really think about vertical farms and the products they grow. Read on to learn more.

How was the study conducted?

University of Illinois researchers Bradford D. Coyle, a graduate student, and Brenna Ellison, an assistant professor, recruited 117 participants from the university campus and surrounding community. Eligibility criteria included being over 18 years of age and being a consumer of lettuce.

Each participant in the study attended a 20-minute research session (20 sessions were held across the study period). During these sessions, certain randomly selected participants received a handout with key information about three major types of farming — vertical farming, greenhouse farming, and field farming.

The handout included details like the farms' rates of electricity and water use and their annual production yields per acre. Participants were then given the opportunity to discuss the handout with a moderator and ask questions or get clarification on information they didn't understand. These participants were referred to as the "treatment group." Other participants, who did not receive any handouts or information, were referred to as the "control group."

In the next part of the session, treatment and control study subjects participated in an experimental lettuce auction. During the auction, participants placed bids on three different 5-ounce boxes of lettuce (each one produced by a different type of farm). The auction was designed to measure consumers' "willingness to pay" for the produce.



Participants then completed a survey where they responded to questions about how they perceived the safety, quality, and naturalness of the different lettuces; their level of knowledge of the different types of farming; and their opinion of how willing the average consumer would be to buy each of the different lettuces. They also answered questions about their attitudes toward farming in general and vertical farming in particular.

What were some of the study's key findings?

1. Consumers perceive vertical farms as “less natural.”

When comparing vertical farms, greenhouses, and conventional farms, survey participants gave the highest safety and quality rankings to lettuce from greenhouses, with vertical farms coming in second in both these categories.

When it came to questions of naturalness and the willingness of the average consumer to buy the lettuce in question, vertical farms fared the worst, receiving the lowest ranking of the three types of farms. Interestingly, control participants gave equal natural ratings to both vertically farmed and greenhouse grown lettuce. However, the treatment group, which had received information about vertical farming, perceived vertically farmed lettuce as significantly less natural.

2. Consumers would pay the least for vertically farmed lettuce.

Study participants were willing to pay an average of \$2.23 for a 5-ounce box of vertically farmed lettuce (for greenhouse grown lettuce, this figure was \$2.28, and for field-grown, \$2.36).

Again, differences were seen in the behavior of the control group versus the treatment group. Control participants were willing to pay an average of \$2.47 for the vertically farmed lettuce, while treatment participants were willing to pay just \$2.00 on average.

When asked to explain how they settled on their chosen price, treatment participants tended to focus on the high production rates for vertical farms mentioned in the information handout. The handout listed vertical farm production at 5 million heads of lettuce per acre per year, and field farming at just 50,000 heads.

The assumption seemed to be that a higher yield should be equated with lower-cost produce. However, this also indicates consumers' likely lack of knowledge about the true production costs of vertical farming.

3. Consumers view vertical farming positively.

Study participants ranked vertically farmed lettuce as the least natural option, as well as the option they were willing to pay the lowest amount for. Despite this, their responses to perception questions about farming indicated that they do view vertical farming in a positive light. In general, participants agreed that vertical farms could help solve environmental problems, lower the price of lettuce, and increase the standard of living for future generations.