

Does Social Context Impact US Consumers' Willingness to Pay for Fresh Culinary Herbs?

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Abstract. The demand for fresh culinary herbs in the United States has grown significantly in recent years, driven in part by increasing consumer interest in healthy, flavorful food options. This study investigates US consumer preferences and willingness to pay (WTP) for three species of fresh culinary herbs [i.e., basil (*Ocimum basilicum*), cilantro (*Coriandrum sativum*), and parsley (*Petroselinum crispum*)] with different production methods, production origins, and packaging across three meal events (i.e., holiday, non-holiday, and meal at home). Data were collected from 2446 US herb purchasers in 2023. A discrete choice experiment and mixed logit models were used to estimate WTP. Consistent with prior literature, consumers were willing to pay premiums for organic, sustainably grown, local, and domestically produced herbs relative to their respective baselines (conventional, imported). Packaging and herb species impacted WTP. Precut herbs generated premiums relative to potted herbs, whereas pick-your-own did not. Parsley and basil generated premiums relative to cilantro. The meal events did not significantly impact WTP, suggesting stable preferences regardless of the meal context.

Introduction

Consumer demand for fresh culinary herbs in the United States has grown considerably in recent years. In 2023, the global value of fresh culinary herbs was \$5.37 billion, with projected growth to \$10.07 billion by 2030 (Grand View Research 2025). This growth is partially driven by increased consumer interest in healthy, flavorful, and sustainably produced foods (Trapp 2014; Warsaw et al. 2021). To date, no research has explicitly examined US consumer market and herbs' value-added attributes in different meal contexts. Meal context is

important given that it can impact food choice behavior, potentially leading to heightened customer interest in value-added options (see review by Enriquez and Archila-Godinez 2022; Hermans et al. 2013). Here, we assess how US consumers' WTP for three types of fresh culinary herbs [i.e., basil (*Ocimum basilicum*), cilantro (*Coriandrum sativum*), and parsley (*Petroselinum crispum*)] varies by production practice, origin information, and packaging when purchased for different meal contexts (i.e., holiday event, nonholiday event, or meals at home).

Social and consumption meal contexts impact food choices and purchasing behavior (Bearden and Etzel 1982; Boncinelli et al. 2019; Li et al. 2020). Consumption settings involving social gatherings often amplify perceived risk and leads consumers to prefer products with higher perceived quality or prestige, as demonstrated in contexts involving beer, wine, meats, and premium ingredients (Bearden and Etzel 1982; Boncinelli et al. 2019; Li et al. 2020); however, the extent to which these contextual influences

apply to culinary herbs remains unexplored. Using fresh culinary herbs as ingredients or garnishes in a meal may be perceived as elevating the meal through flavor and aesthetic benefits. In turn, this may influence their importance in different social contexts (e.g., meals with guests vs. meals at home). The products currently addressed in the food literature are often considered prestigious (e.g., wine, meats), which would reflect well on hosts or meal participants (Bearden and Etzel 1982; Boncinelli et al. 2019; Li et al. 2020). Currently, it is unclear whether consumer preferences for fresh culinary herbs vary based on social settings but there may be an opportunity to tout elevating meals using these products if social context affects choice behavior.

Several credence attributes (i.e., production methods, location, or origin) influence consumer preferences for fresh produce, which may extend into fresh culinary herbs. When considering production methods, consumers associate organic and sustainably produced foods with superior nutritional value, environmental benefits, and reduced chemical exposure, which increases their likelihood of buying organic options (Eyinade et al. 2021; Rizzo et al. 2020). However, it should be noted that the perceived benefits of organic production do not always align with scientific evidence (Dangour et al. 2009; Goldberger 2011; Smith-Spangler et al. 2012). It has been well documented that consumers are willing to pay premiums for organic produce (Alberto de Moraes Watanabe et al. 2023; Ansari et al. 2025; Bernabéu et al. 2022; Dewi et al. 2022). In culinary herb research, many production method studies focus on herbs paired with other species to account for different plant types when studying choice behavior. For instance, Lehberger and Grüner (2021) addressed German consumers' WTP for basil, heather (*Calluna vulgaris*), and orchids protected using beneficial insects or pesticides. They found higher WTP values for plants protected by beneficial insects compared with pesticides. A positive message framing (gain) had a more positive impact on WTP for heather and orchids (relative to loss framing), but framing did not influence WTP for basil. Yue et al. (2011) addressed US consumer preferences for organic, sustainable, or locally grown plants using basil, tomatoes (*Solanum lycopersicum*), and chrysanthemums (*Chrysanthemum × morifolium*). They found low interest in organic plants but higher interest in sustainably grown and local plants. Neither study solely employed herbs to identify what consumers value when considering different types of herbs, nor did they address harvested herbs (e.g., precut, packaged), but instead focused on live potted plants. Rihn et al. (2026) identified production methods (i.e., grown under high food safety conditions, grown without pesticides, grown organically) as important herb attributes to US consumers but did not elicit WTP values. Understanding how consumers perceive production methods for fresh culinary herbs and how that influences their value may aid industry stakeholders as they consider production

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methods to highlight using marketing strategies moving forward.

Origin strongly affects consumer preferences for fresh produce. Local and domestically grown products are often preferred over imports or nonlocal domestic products because of their perceived superior freshness, quality, support for local economies, and reduced environmental impacts associated with shorter transit distances (Warsaw et al. 2021; Yeh and Hirsch 2023). These preferences often translate into tangible premiums for local or domestic products (USDA ERS 2023). US consumers indicate that local and domestic production of fresh herbs is important (Rihn et al. 2026). In general, consumer research on herbs provides similar findings but are often location- or herb-specific. For instance, Mphafi et al. (2023) surveyed 385 South African individuals and found a strong preference for locally grown fresh parsley. In the United States, domestic turmeric (*Curcuma longa*) (Nguyen et al. 2024) and Georgia-grown lavender (*Lavandula angustifolia*) products (Berning et al. 2020) generate premiums over alternatives from farther distances. Conversely, a study conducted in Phoenix, AZ, USA, found no significant differences between Arizona Grown and Mexico Select Quality branded cilantro among Hispanic consumers (Patterson and Martinez 2004). The varying results may be related to the herbs investigated, targeted locations, study timing, or sampling procedures, but highlight the potential of origin information to potentially generate value. The current study builds on the existing literature by addressing US consumers' preferences and value for three specific herbaceous herbs grown in different locations (i.e., local, domestic, imported).

In addition, packaging format has emerged as a critical attribute influencing consumer choice, particularly for convenience-oriented products. Convenient packaging has been shown to affect purchasing behavior for sweet cherries (*Prunus avium*) (Koutsimanis et al. 2012), functional drinks (Rokka and Uusitalo 2008), and soups (Steenis et al. 2017). In the culinary herb context, precut herbs may appeal to consumers seeking convenience and time savings; however, increased environmental awareness has fostered interest in packaging formats that are perceived as more environmentally friendly (e.g., reduced packaging waste, reusable, recyclable) (Piracci et al. 2023). Fresh herbs come in several packaging options that may be perceived as more environmentally friendly (e.g., pick-your-own where no or limited packaging is used) or as a means of gaining more product for the value (e.g., potted herbs) relative to precut herbs. Package type does not appear to affect herb safety perceptions or use (Rihn et al. 2026). Thus, understanding consumer valuation of different packaging formats can help producers and retailers effectively meet consumer needs. To date, research is limited on the impact of herb packaging format on consumers' purchasing behavior.

This study addresses three key knowledge gaps in the fresh culinary herb literature. First, it explores how consumer preferences vary across three meal contexts: a holiday event, a

nonholiday gathering, and an everyday meal at home, to better understand the impact on choice and if marketing opportunities exist to promote fresh culinary herbs as "prestige" items. Second, many studies address production methods and origin in the fresh produce industry but are lacking in the fresh culinary herb context. Those that address herbs focus on potted plants relative to ornamental plants or vegetable transplants (Lehberger and Grüner 2021; Yue et al. 2011). Consequently, herbs were addressed but were not focused on within the studies. Here, three types of herbs are assessed to identify the impact of production and methods on choice and WTP. Last, the study addresses herb packaging format (e.g., precut, potted, pick-your-own), which varies from existing work that primarily focuses on credence attributes while holding the herb packaging or form constant (Lehberger and Grüner 2021; Mphafi et al. 2023; Yue et al. 2011). Existing work in lavender demonstrates that the form of the herb may affect value (Berning et al. 2020).

The main objective of this research was to examine US consumer preferences and WTP for fresh culinary herbs displaying different attributes (i.e., production methods, origin, packaging) and how that varies by the social context. By assessing credence and packaging attribute valuation in different social contexts, this research provides insights into consumer preferences and aids producers and marketers of fresh culinary herbs in aligning their products and marketing strategies with consumer expectations.

Materials and Methods

A discrete choice experiment (DCE) was conducted to evaluate US consumer preferences and WTP for fresh culinary herbs. An online survey was hosted in Qualtrics (Qualtrics XM, Provo, UT, USA) and a panel was purchased from the same company. The survey was launched in two rounds at 6-month intervals (May and Nov 2023) to capture seasonal variations. Potential participants were screened to ensure they were adults (18 years or older), living in the United States, and had purchased fresh herbs (in general) within the past 3 months. All study procedures and

protocols were approved by the University of Tennessee's institutional review board (IRB-23-07410-XM).

The final dataset consisted of 2446 valid responses. Participants were randomly assigned to one of the three meal event treatments: a holiday event (cooking and serving guests for a holiday celebration, e.g., Thanksgiving), which accounted for 32.8% of the sample (n = 803); a nonholiday event (cooking and serving guests for a get-together, e.g., a weekend dinner party), with 33.1% of the sample (n = 811); and a meal at home (cooking and serving the immediate household members), which accounted for the remaining 34.1% of the sample (n = 832). Demographic differences across treatments were assessed using analysis of variance and Tukey's honestly significant difference test (Abdi and Williams 2010).

DCE design. Culinary herb attributes were identified through reviewing the literature, industry consultation, and in-store and online observational data (e.g., online, grocery stores, farmer's markets, specialty stores), which identified commonly available attributes on fresh herbs. In total, five culinary herb attributes (herb species, package, production method, origin, price) were included in the study, each with three levels (Table 1). Brief definitions of the attributes were provided before the choice scenarios to ensure participants understood what each level entailed. The definitions are provided in Table 1.

The herb species consisted of basil, parsley, and cilantro, three of the most commonly consumed fresh herbs in the United States (USDA FAS 2025; USDA NASS 2025). These herbs share similar agronomic characteristics, such as herbaceous growth habits and relatively short cultivation cycles, which make them comparable in terms of packaging logistics and production requirements. However, despite the similarities at a production level, they have different flavor profiles and are normally used in different culinary contexts, making them not substitutable from a consumer preference and use perspective.

Three production practices were identified, including organic (i.e., farms that are USDA Organic Certified), sustainably grown [i.e., farms that use sustainable production methods,

Table 1. Discrete choice experiment attributes and corresponding levels.

Attribute	Definition	Attribute levels
Herb species	Type of herb.	Parsley Basil Cilantro ¹
Production practices	Herb was grown using organic production practices at a certified organic farm. Herb was grown using sustainable production practices. Herb was grown using conventional production practices.	Certified organic Sustainably grown Conventional ¹
Package	Entire herb plant in a 4-inch pot with soil. Herbs available along with scissors to cut and pay for what you cut. Herbs are precut by the farmer and packaged.	Potted Pick-your-own Pre-cut ¹
Origin	Herb was grown on a local farm. Herb was grown on a farm in the United States but not within the immediate area (i.e., not local). CHerb was grown outside of the United States and imported.	Local Domestic Import ¹
Price	Price for half (0.5) ounce of the herb in US dollars.	\$1.99 \$3.49 \$4.99

¹Indicates base value for comparison.

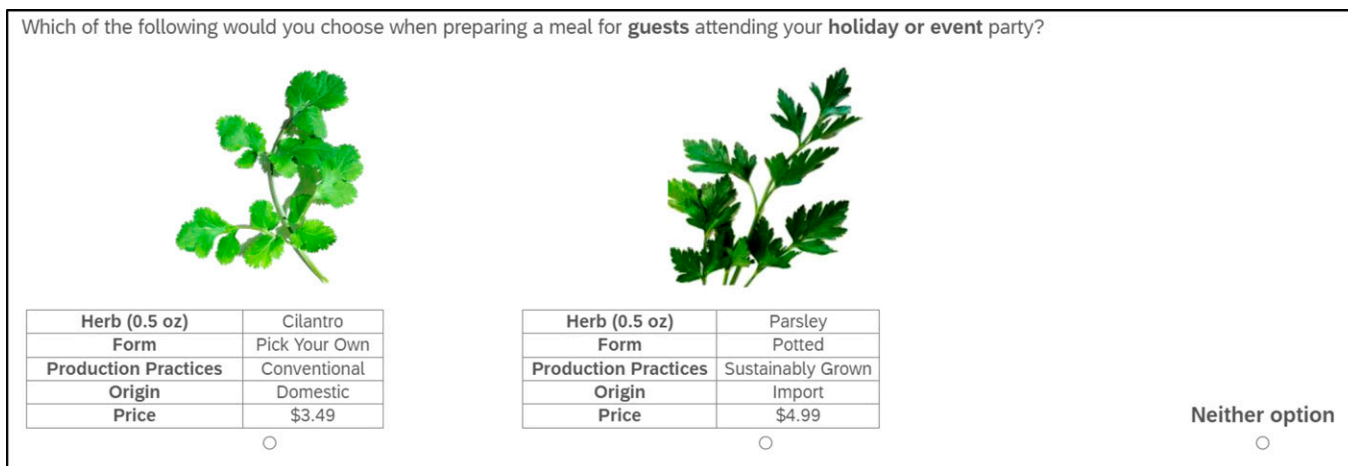


Fig. 1. Example choice scenario from a discrete choice experiment assessing US consumers fresh culinary herb preferences.

such as integrated pest management, crop rotations, and reduced water (USDA NIFA 2020)], and conventional (i.e., farms that use conventional production methods). Similar production method levels have been used in fresh produce literature to influence purchasing decisions and value (Yue et al. 2011).

The package attribute represented the types of herbs packaging available in the retail market, including precut (i.e., herbs are cut and packaged in plastic clamshells), potted (i.e., the full herb plant is in a 4-inch pot), and pick-your-own (i.e., customers cut the herb in-store from live plants and pay only for the ounces cut). Each option represents varying levels of convenience and customer involvement, which may affect preferences. For instance, the precut option is the most convenient, giving customers a “grab-and-go” option. Conversely, the potted option potentially gives greater longevity because it can be planted and cared for, which may provide psychological, aesthetic, or other gardening benefits beyond the primary culinary benefit (Hall and Dickson 2011; Hall and Knuth 2019). Last, the pick-your-own option may be viewed as fresher than the precut due to still being attached to the roots (Suo et al. 2021; Waitt et al. 2014), but it requires less responsibility and potential waste than the potted option. Regardless of package type, all herbs were the same quantity (0.5 oz), which aligned with common retail quantities sold. In the choice scenarios, package was listed in text with no visual differences (i.e., the images were of the herb leaves and stem, not the container). The visuals were kept consistent to reduce potential variance due to perceived volume differences by packaging type (e.g., potted herbs may be perceived as having more plant material than precut herbs that are often compressed in clamshells). Controlling the herb volume (0.5 oz) and visual differences encourages participants to view the herb packaging options as close substitutes.

The origin attribute indicated the geographical area where the herbs were grown relative to where they were sold. There were three options including local, domestic nonlocal, and imported. Local indicated that the herbs were grown nearby and had a short transportation

distance to the retailer. Domestic indicated the herbs were from the United States but were not locally grown. Import indicated the herbs were from another country besides the United States. Pick-your-own herbs were considered imported if the plants were imported from other countries and planted in the retail outlet, whereas the local and domestic pick-your-own herbs were plants that originated from local or domestic suppliers and were then planted in-store.

Last, three price points were used, including \$1.99, \$3.49, and \$4.99 per 0.5 oz of fresh herbs. These prices were selected based on online searches and retailer visits, generating a realistic range of market prices determined from available herbs (precut, potted, pick-your-own) in the United States.

A D-efficient experimental design was constructed using JMP software (Pro 17, Cary, NC). A total of 11 scenarios were generated with a D-efficiency of 87.7%. Consequently, each respondent engaged in 11 choice tasks. Each choice task included two alternatives with specified attribute levels and an opt-out option (Fig. 1).

Econometric procedures. The study draws on the Random Utility Maximization model (McFadden 1973) and Lancaster’s theory of consumer demand (Lancaster 1966) to estimate consumer preferences for these herb attributes across each treatment (holiday, nonholiday, meal at home). Specifically, a mixed logit model was used to estimate marginal utility estimates and WTP measures in a pooled and split-sample analysis.

The mixed logit model is among the most used models in consumer preference research, allowing researchers to incorporate random preference heterogeneity and overcome limitations associated with the more basic multinomial logit model (Train 2009). In this framework, the indirect utility that consumer i obtains from choosing alternative j in choice occasion t is modeled as follows:

$$U_{ijt} = V_{ijt} + \epsilon_{ijt}, \quad [1]$$

where V_{ijt} is the observable component of indirect utility respondent i receives from selecting herb j , and ϵ_{ijt} is an independent and

identically distributed type-I extreme value (Gumbel) error term (Train 2003). Given the experimental attributes and levels presented in Table 1, the observable component of indirect utility can be further defined as follows:

$$V_{ijt} = ASC_{ij} + \mu Price_{jt} + \beta_{11} Local_{jt} + \beta_{12} Domestic_{jt} + \beta_{13} Parsley_{jt} + \beta_{14} Basil_{jt} + \beta_{15} Organic_{jt} + \beta_{16} Sustainable_{jt} + \beta_{17} Potted_{jt} + \beta_{18} PickOwn_{jt}. \quad [2]$$

Here, ASC_{ij} is an alternative-specific constant capturing the mean utility of choosing the opt-out alternative. [In this study, the alternative-specific constant (ASC) for the opt-out option was modeled as a random parameter, which may lead to heterogeneous baseline utilities for not purchasing any of the offered herb options. In other words, the decision to opt out is not expected to be uniform across individuals and event treatments, as factors such as social pressure, food expectations, and personal norms may influence the utility derived from declining purchase. Modeling the opt-out ASC as random allows for capturing unobserved heterogeneity in participants’ general willingness to engage with herb products across varying social settings. This approach is supported by Train (2009), who highlights that any parameter can be modeled as random when individual variation is expected. Given that consumers adjust their preferences and risk tolerance based on the perceived social significance of the occasion (Jaeger and Rose 2008; Wakefield and Inman 2003), this specification provides a more flexible and realistic representation of consumer choice behavior in varied meal occasions. Thus, the random ASC specification reflects the potential variability in the psychological and situational drivers of opting out across different individuals and scenarios.] $Price_{jt}$ represents a continuous variable indicating the price level of alternative j in task t . All other variables are coded as binary variables (0, 1) for the attribute levels included in the experiment, with one attribute level omitted

per attribute to avoid multicollinearity and serve as the baseline (reference value). The baseline levels included import for origin (relative to domestic and local), cilantro for herb species (relative to basil and parsley), conventional for production practices (relative to organic and sustainably grown), and precut for packaging type (when compared with pick-your-own and potted). The coefficient μ represents the marginal utility of income and is assumed to be fixed across individuals, as is common in the literature. Last, β_{ik} represents the individual-specific marginal utility for attribute level k , and these coefficients are assumed to follow a normal distribution to account for unobserved taste heterogeneity across individuals.

Because utility is not observed directly, the probability that individual i selects alternative j on a given choice task can only be predicted. The unconditional choice probability is defined as follows:

$$P_{ijt} = \int \frac{\exp(V_{ijt})}{\sum_{k=1}^J \exp(V_{ikt})} f(\beta_i|\theta) d\beta_i, \quad [3]$$

where $f(\beta_i|\theta)$ represents the density function of the coefficients β_i , and θ is the parameter represented by the mean and variance. Eq. [3] lacks a closed-form solution, so the simulated maximum likelihood estimation procedures with 1000 Halton draws was used.

The WTP was estimated for each variable of interest. As WTP is a nonlinear function of random parameters, the Krinsky-Robb bootstrapping procedure (Krinsky and Robb 1986) was used with 1000 draws to ensure higher precision and reduce simulation noise in the confidence intervals (Hensher et al. 2015; Krinsky and Robb 1986). Where applicable, these intervals were then visually and numerically compared across event treatments. The absence of overlap confidence intervals was used as an indication of a statistically significant difference in mean WTP values between event treatments. The mixed logit models and bootstrapping procedures were estimated using Stata

(version 18.0; Stata Corp LLC, College Station, TX, USA) software.

Results

A total of 2446 valid responses were obtained, with 1219 and 1227 responses for the first (May) and second (November) rounds of data collection. Most of the sample (73%) was female, had a median age of 49.7 years, and a mean household income of \$66,594 (Table 2). The average household size was 2.6 people and nearly 37% of the sample had obtained a 4-year bachelor's degree or higher. The largest portion of the sample (55%) lived in suburban areas, followed by rural (23%) and urban areas (22%). Most participants (79%) were white/Caucasian, followed by black/African American, Native American, Hispanic, Asian, and Native Hawaiian. None of the demographic variables were significantly different between the event treatments at the 10% level.

Compared with the US Census Bureau (2023) data, the sample overrepresented women and was slightly older than the US population. The gender result may be related to the topic and screening for fresh herb purchasers. Generally, women are more involved in grocery shopping than men and gender affects the frequency of shopping and the decision-making process for food items (Bakewell and Mitchell 2003; Meyers-Levy and Loken 2015; Ünal and Ercis 2008). In addition, women exhibit slightly higher participation in herb gardening than men (Whitinger et al. 2024). The difference in median age may be explained by the national median age, which consists of individuals of all ages, including children. In contrast, respondents in this study had to meet the requirement of being 18 years or older. Given that individuals younger than 18 years are ~22.1% of the US population, the exclusion of children in the sample likely contributed to the higher observed median (US Census Bureau 2023). Regarding the sample's racial and ethnic composition, there are some deviations from the US population.

Although the sample closely matches the US population in terms of white/Caucasian (78.58% vs. 75.50%) and African American (13.12% vs. 13.60%) representation, it underrepresents Asian (2.37% vs. 6.30%) and, more notably, Hispanic (4.09% vs. 19.10%) populations. Also, 6.3% of respondents identified themselves as Native American, a proportion considerably higher than their representation in the general US population (1.3%) according to the 2023 US Census (US Census Bureau 2023). These deviations between the survey demographics and the US Census data are likely a result of the sampling methodology conducted by the online panel provider. Although the study was not designed to examine differences across racial groups, these differences should be acknowledged when considering the generalizability of the results. These discrepancies may be because of cultural differences in culinary herb usage or participation rates in online surveys. Given the differences described previously, the results are not generalizable across the population but only across the population included in the study.

Mixed logit model estimates. The coefficients from the mixed logit model for the pooled sample and by event treatment are presented in Table 3. Similarities in coefficient direction and magnitude were noted across the pooled and treatment models. Consequently, the results for the mixed logit models are discussed but align across models 1 through 4. Price had a significant negative effect on utility (i.e., the benefits consumers obtain from selecting that product), indicating higher utility for lower priced herbs. Basil and parsley showed strong positive effects on utility relative to cilantro. Certified organic and sustainably grown herbs increased utility compared with conventionally produced herbs. Local and domestic origins increased utility relative to imported, aligning with previous findings in preference for local sourcing (Berning et al. 2020; Mphafi et al. 2023; Nguyen et al. 2024; Yue et al. 2011). In the pooled model, the potted herbs negatively affected utility

Table 2. Summary statistics from an online consumer survey used to identify factors affecting fresh herb consumption in the United States (n = 2466).

Variable	Description	2023 Qualtrics survey ⁱ		US population ⁱⁱ
		Mean	SD	Mean
Age	Median	49.707	16.225	38.9
Gender	% Female	72.77	0.445	50.40
Income	Mean	\$66,594	54.37	\$75,149
Household size	Mean	2.61	1.384	2.57
Education	Bachelor's degree or higher, %	36.83	0.482	34.30
Urban	% of people living in urban areas	22.12	0.415	26.70 ⁱⁱⁱ
Suburban	% of people living in suburban areas	55.27	0.497	52.00 ⁱⁱⁱ
Rural	% of people living in rural areas	22.61	0.418	21.40 ⁱⁱⁱ
White/Caucasian	Mean %	78.58	0.41	75.50
African American	Mean %	13.12	0.338	13.60
Native American	Mean %	6.30	0.243	1.30
Native Hawaiian	Mean %	0.29	0.053	0.30
Asian	Mean %	2.37	0.152	6.30
Hispanic	Mean %	4.09	0.198	19.10

ⁱ Significance across meal treatments was estimated using analysis of variance and Tukey's honestly significant difference test. None of the demographic variables were significantly different across meal treatments at the 10% level. As a result, only the pooled results are reported. SD = standard deviation.

ⁱⁱ US Census Bureau 2023.

ⁱⁱⁱ Department of Housing and Urban Development 2017.

Table 3. Mixed logit model coefficients for fresh culinary herbs across event treatment.

Attribute	Model 1-pooled analysis coefficient (SE)	Model 2-holiday event coefficient (SE)	Model 3-nonholiday coefficient (SE)	Model 4-meal-at-home coefficient (SE)
Price	-0.539*** (0.014)	-0.519*** (0.024)	-0.496*** (0.024)	-0.606*** (0.025)
Opt out	-2.576*** (0.079)	-2.412*** (0.134)	-2.531*** (0.137)	-2.798*** (0.141)
Parsley	0.380*** (0.043)	0.440*** (0.077)	0.459*** (0.072)	0.266*** (0.073)
Basil	0.488*** (0.040)	0.445*** (0.070)	0.585*** (0.071)	0.440*** (0.069)
Potted	-0.187*** (0.031)	-0.169*** (0.055)	-0.311*** (0.055)	-0.068 (0.054)
Pick-your-own	-0.103 (0.033)	-0.112 (0.058)	-0.142** (0.056)	-0.067 (0.058)
Certified organic	0.778*** (0.043)	0.829*** (0.075)	0.689*** (0.075)	0.815*** (0.076)
Sustainably grown	0.461*** (0.039)	0.540*** (0.068)	0.365*** (0.067)	0.475*** (0.067)
Local	0.807*** (0.035)	0.795*** (0.062)	0.803*** (0.061)	0.836*** (0.060)
Domestic	0.755*** (0.033)	0.751*** (0.057)	0.740*** (0.057)	0.775*** (0.057)
	Standard deviations (SD of random coefficients)			
Opt out	2.103*** (0.058)	2.080*** (0.104)	2.152*** (0.112)	2.261*** (0.118)
Parsley	1.377*** (0.045)	1.511*** (0.083)	1.289*** (0.077)	1.389*** (0.080)
Basil	1.461*** (0.041)	1.450*** (0.072)	1.471*** (0.074)	1.431*** (0.068)
Potted	0.665*** (0.036)	0.657*** (0.062)	0.658*** (0.059)	0.640*** (0.065)
Pick-your-own	0.300*** (0.093)	0.359*** (0.131)	0.239 (0.140)	0.469*** (0.112)
Certified organic	0.449*** (0.036)	0.344*** (0.071)	0.475*** (0.060)	0.550*** (0.057)
Sustainably grown	0.018 (0.089)	0.008 (0.126)	0.004 (0.122)	0.012 (0.295)
Local	0.575*** (0.045)	0.639*** (0.075)	0.573*** (0.078)	0.518*** (0.085)
Domestic	0.058 (0.085)	0.003 (0.138)	0.139 (0.150)	0.024 (0.117)
n	2,446	803	811	832
LR chi-square (9)	5,572.220	1,818.610	1,823.480	1,920.280
Log-likelihood	-23,514.843	-7,747.781	-7,828.509	-7,926.632
AIC	47,067.690	15,533.560	15,695.020	15,891.260
BIC	47,244.360	15,689.070	15,850.720	16,047.450
Prob > chi-square	0.000	0.000	0.000	0.000

***, ** Indicate significance at 0.001 or 0.01, respectively, relative to the base attribute levels (cilantro, precut, conventional, imported).

SE = standard error; LR = likelihood ratio; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion.

relative to the precut herbs, whereas the pick-your-own option was not significant. The packaging attribute exhibited several variances within the event treatments. The holiday event mirrored the pooled sample with potted herbs decreasing utility relative to precut and the pick-your-own option was insignificant. In the nonholiday event treatment, both the potted and pick-your-own packaging negatively affected utility relative to the precut option. Last, in the meals-at-home treatment, none of the packaging options were statistically significant.

In the standard deviations, several coefficients were statistically significant, indicating heterogeneity in preferences across consumers. For example, attributes such as opt-out, parsley, basil, certified organic, local, and potted showed significant variation in utility across respondents.

WTP estimates. The WTP analysis revealed significant differences in consumer preferences for fresh culinary herb attributes and across different meal event treatments. To assess whether consumers' WTP estimates significantly differed across event treatments, confidence intervals were constructed using the Krinsky and Robb simulation method. If zero was not included within the bounds of the confidence interval, the difference was interpreted as statistically significant at the 5% level (Johnston et al. 2017). Statistically significant differences among treatments ($P < 0.05$) are indicated by different letters (Table 4).

The opt-out alternative showed a statistically significant and negative WTP in the pooled results ($-\$4.78$), indicating that consumers value selecting an herb alternative rather than the opt-out option. This behavior persisted between event treatments, with no significant differences

in the opt-out WTP estimates. When considering the herb species, in the pooled sample, the WTP estimates were positive and statistically significant for parsley ($\$0.71$) and basil ($\0.91) when compared with cilantro, indicating that consumers were willing to pay a premium for both herbs compared with the baseline (cilantro). When comparing across the event treatments, participants consistently had positive WTP values for parsley and basil relative to cilantro. No significant differences were observed, as indicated by the overlapping confidence intervals. This suggests that consumers value parsley and basil in a consistent manner regardless of the social context.

A similar trend was observed in the packaging attribute: consumers needed a discount for potted herbs when compared with precut herbs (baseline). In the pooled data, consumers expressed a negative WTP for potted herbs ($-\$0.35$), indicating a general preference for precut options. Among the meal event treatments, the greatest discount was observed in the nonholiday ($-\$0.63$), which was significantly different from both the meal-at-home ($-\$0.12$, $P < 0.001$) and the holiday ($-\$0.35$, $P = 0.048$) event treatments. In contrast, no statistically significant difference was found between the holiday and meal-at-home treatments ($P = 0.121$). These results suggest that potted herbs are particularly less desirable during nonholiday meal events and slightly more acceptable for home meals and holiday-related events. However, they are still less preferred than precut herbs across all event treatments.

For the pick-your-own packaging, the average WTP was negative ($-\$0.192$, pooled data) when compared with the precut option. Within the specific event treatments, tests indicated

that pick-your-own was significantly less valued than the precut option in both the holiday event and nonholiday groups ($P < 0.05$), but not in the meal-at-home treatment (no significant difference). However, no significant differences were observed across treatments. This overall trend suggests a general consumer preference for ready-to-use, precut herbs over potentially more labor-intensive formats.

Production practices affected WTP values. Compared with conventionally grown herbs (baseline), consumers were willing to pay a significant premium for both organically and sustainably grown herbs. In the pooled sample, organic herbs showed a higher WTP ($\$1.44$), followed by sustainably grown herbs ($\$0.86$), relative to conventionally grown herbs. None of the production method estimates were significantly different across treatments, suggesting that organic and sustainable herbs increase value regardless of the event treatment.

Last, regarding origin, both local and domestic herbs had significant, positive WTP in the pooled results. Local herbs had the highest WTP ($\$1.50$), followed by domestic herbs ($\$1.40$), when compared with imported herbs. These positive preferences remained consistent across event treatments, with no significant differences in WTP between treatments. This indicates that the preference for geographically closer sources is stable regardless of the event treatment.

Discussion

The findings of this research provide valuable insights into consumer preferences and WTP for fresh culinary herbs. The results are aligned with the existing literature on consumer behavior in the fresh produce market. Specifically,

Table 4. US Consumers' willingness-to-pay (WTP) estimates for fresh culinary herbs across event treatments.

Attribute	Pooled WTP		Holiday event		Nonholiday		Meal at home	
	Mean	95% CI	Mean ⁱ	95% CI	Mean ⁱ	95% CI	Mean ⁱ	95% CI
Opt out	-\$4.78	(-\$5.10 to -\$4.47)	-\$4.64	(-\$5.22 to -\$4.10)	-\$5.10	(-\$5.74 to -\$4.51)	-\$4.62	(-\$5.13 to -\$4.14)
Parsley	\$0.71	(\$0.55 to \$0.86)	\$0.85	(\$0.55 to \$1.14)	\$0.93	(\$0.64 to \$1.22)	\$0.44	(\$0.20 to \$0.67)
Basil	\$0.97	(\$0.77 to \$1.05)	\$0.86	(\$0.60 to \$1.11)	\$1.18	(\$0.91 to \$1.45)	\$0.73	(\$0.52 to \$0.94)
Potted	-\$0.35	(-\$0.46 to -\$0.23)	-\$0.33 a	(-\$0.53 to -\$0.12)	-\$0.63 b	(-\$0.85 to -\$0.41)	-\$0.11 a	(-\$0.28 to \$0.07)
Pick-your-own	-\$0.19	(-\$0.31 to -\$0.07)	-\$0.22	(-\$0.44 to \$0.01)	-\$0.29	(-\$0.52 to -\$0.05)	-\$0.11	(-\$0.30 to \$0.09)
Certified Organic	\$1.44	(\$1.30 to \$1.59)	\$1.60	(\$1.34 to \$1.87)	\$1.39	(\$1.12 to \$1.67)	\$1.35	(\$1.13 to \$1.58)
Sustainably Grown	\$0.86	(\$0.73 to \$1.00)	\$1.04	(\$0.81 to \$1.30)	\$0.74	(\$0.50 to \$1.00)	\$0.79	(\$0.59 to \$1.01)
Local	\$1.50	(\$1.38 to \$1.61)	\$1.53	(\$1.32 to \$1.74)	\$1.62	(\$1.40 to \$1.83)	\$1.38	(\$1.21 to \$1.55)
Domestic	\$1.40	(\$1.29 to \$1.52)	\$1.45	(\$1.24 to \$1.67)	\$1.49	(\$1.27 to \$1.72)	\$1.28	(\$1.11 to \$1.46)

ⁱ Different letters indicate statistically significant differences among treatments at the 5% level. Significance between treatments was estimated using the Krinsky-Robb method for mean comparison. If no letters are present, results were not statistically significant. CI = confidence interval.

the strong positive consumer preferences for organic and sustainably grown herbs confirm findings from prior research that consumers prefer these production methods, often associating these attributes with perceived health benefits, reduced pesticide residues, and environmental considerations (Eynade et al. 2021; Rihn et al. 2026; Rizzo et al. 2020). Similarly, the preference for local and domestically grown herbs over imported herbs resonate with establish consumer motivations, including perceived product freshness, quality, support for local economies, and a smaller environmental footprint (Rihn et al. 2026; Warsaw et al. 2021; Yeh and Hirsch 2023; Yue and Tong 2009). Together, this implies that consumer preferences for fresh culinary herb production methods align with fresh produce even though they are complementary products rather than main ingredients.

The packaging preferences showed that precut herbs were consistently preferred over potentially less convenient formats (e.g., potted, pick-your-own). The packaging preferences were consistent with previous studies emphasizing convenience as a critical factor in consumer decision-making among other products (Koutsimanis et al. 2012; Piracci et al. 2023). The negative premiums required for pick-your-own and potted options further underline the importance consumers place on ease of use and immediate usability in the fresh herb category. Further research could delve into the motivations behind these preferences and confirm the convenience perception within the culinary herb context.

Minimal differences were observed in consumer WTP for fresh culinary herbs across different social contexts, contrary to expectations based on the broader food choice literature (Bearden and Etzel 1982; Boncinelli et al. 2019; Li et al. 2020). This finding suggests that herbs, typically regarded as complementary rather than the central food item, may not evoke the same level of context-driven valuation changes or risk perceptions as observed in more prominent or status-linked food products such as wine or meat. Additional research could address the context-specific perceptions and whether they are consistent or vary based on the product evaluated. Further, the current study targeted end customers, whereas professional clientele (e.g., chefs) may be more selective of herb

characteristics depending on the context. Future work could incorporate professional and "foodie" sub-samples to explore how participants' level of expertise and involvement influence their preferences and value of fresh culinary herbs.

Despite the robustness of these findings, several limitations should be acknowledged. The online survey method may introduce selection bias toward respondents who are more comfortable with digital platforms. In addition, the demographic composition of the sample slightly deviated from the general US population, particularly underrepresenting certain racial and ethnic groups (Hispanic and Asian), which could affect the generalizability of these results beyond the surveyed population. Further research with more demographically diverse samples and varied purchasing scenarios could enhance the understanding of consumer behavior toward culinary herbs across different contexts. Last, to accommodate the experimental design and control herb volume in the choice experiment, the herb prices were based on ounces, which is inconsistent with how potted herb plants are priced (i.e., by plant). Further, the product images did not demonstrate the packaging (i.e., pre-cut, potted, pick-your-own). Research demonstrates that potted herbs and precut herbs are used similarly but may be perceived slightly differently (Rihn et al. 2026). As a result, future research could delve into fresh herb perceptions, purchasing motivations, and how these components vary by potted vs. pre-cut and packaged options.

Conclusion

This study provides evidence that US consumers place significant value on credence attributes such as organic certification, sustainable production, and geographic proximity (i.e., local, domestic) when purchasing fresh culinary herbs. Because credence attributes are not readily observed, the fresh culinary herb industry could use marketing communications to bring these attributes to consumers' attention before purchase, either at the point of purchase or in other marketing communications. Informing customers about these attributes can generate value among customers. The packaging results highlight that consumers prefer and value precut packaging

formats. Using convenient, ready-to-use packaging can attract customers by appealing to their convenience-driven needs. The consistent utility and value of the herb attributes across social contexts indicates that the presence of guests or composition of the company being served minimally affects purchase behavior and value. This suggests that the fresh culinary herb industry would likely benefit from touting production and origin information on precut packaged herbs rather than using marketing strategies that highlight the use of herbs in different social contexts. Future research could explore the effects of demographic diversity, consumer responses to emerging sustainable packaging solutions, and other customer groups of interest (e.g., chefs, foodies) to determine the impact on herb purchasing behavior and use.

References Cited

- Abdi H, Williams LJ. 2010. Tukey's honestly significant difference (HSD) test. In: Salkind N (ed). *Encyclopedia of research design*. Sage, Thousand Oaks, CA, USA.
- Alberto de Moraes Watanabe E, Alfinito S, Castelo Branco TV, Felix Raposo C, Athayde Barros M. 2023. The consumption of fresh organic food: Premium pricing and the predictors of willingness to pay. *J Food Products Marketing*. 29(2-3): 41-55. <https://doi.org/10.1080/10454446.2023.2185118>.
- Ansari AM, Khan MR, Sikandar MA. 2025. Consumers' willingness to pay a premium for organic vegetables: A quantitative analysis of influencing factors. *International Journal of Innovative Science and Research Technology (IJISRT)*. 10(10):1278-1286. <https://doi.org/10.38124/ijisrt/25oct879>.
- Bakewell C, Mitchell VW. 2003. Generation Y female consumer decision-making styles. *Int J Retail Distrib Manage*. 31(2):95-106. <https://doi.org/10.1108/09590550310461994>.
- Bearden WO, Etzel MJ. 1982. Reference group influence on product and brand purchase decisions. *J Consum Res*. 9(2):183. <https://doi.org/10.1086/208911>.
- Bernabéu R, Nieto R, Rabadán A. 2022. Effect of self-reported attitudes toward organic foods in consumer preferences and willingness to pay. *Renew Agric Food Syst*. 37(4):360-368. <https://doi.org/10.1017/S1742170522000035>.
- Berning J, Campbell B, Buttshaw J. 2020. Assessing consumer demand for Georgia lavender-based products. *J Agric Appl Econ*. 52(3):461-479. <https://doi.org/10.1017/aae.2020.10>.

- Boncinelli F, Dominici A, Gerini F, Marone E. 2019. Consumers wine preferences according to purchase occasion: Personal consumption and gift-giving. *Food Qual Pref.* 71:270–278. <https://doi.org/10.1016/j.foodqual.2018.07.013>.
- Dangour AD, Doodia SK, Hayter A, Allen E, Lock K, Uauy R. 2009. Nutritional quality of organic foods: A systematic review. *Am J Clin Nutr.* 90(3):680–685. <https://doi.org/10.3945/ajcn.2009.28041>.
- Department of Housing and Urban Development. 2017. The 2017 AHS Neighborhood Description Study. <https://www.huduser.gov/portal/AHS-neighborhood-description-study-2017.html>. [accessed 11 Feb 2026].
- Dewi HE, Aprilia A, Hardana AE, Pariasa II. 2022. Examining consumer preferences and willingness to pay for organic vegetable attributes: Using a discrete choice experiment. *HBT.* 33(2):112–121. <https://doi.org/10.21776/ub.habitat.2022.033.2.12>.
- Enriquez JP, Archila-Godinez JC. 2022. Social and cultural influences on food choices: A review. *Crit Rev Food Sci Nutr.* 62(13):3698–3704. <https://doi.org/10.1080/10408398.2020.1870434>.
- Eyinade GA, Mushunje A, Yusuf SFG. 2021. The willingness to consume organic food: A review. *Food Agric Immun.* 32(1):78–104. <https://doi.org/10.1080/09540105.2021.1874885>.
- Goldberger JR. 2011. Conventionalization, civic engagement, and the sustainability of organic agriculture. *J Rural Studies.* 27(3):288–296. <https://doi.org/10.1016/j.jrurstud.2011.03.002>.
- Grand View Research. 2025. Market analysis report – fresh herbs market (2024 – 2030). <https://www.grandviewresearch.com/industry-analysis/fresh-herbs-market-report>. [accessed 3 Oct 2025].
- Hall CR, Dickson MW. 2011. Economic, environmental, and health/well-being benefits associated with green industry products and services: A review. *J Environ Hort.* 29(2):96–103. <https://doi.org/10.24266/0738-2898-29.2.96>.
- Hall CR, Knuth MJ. 2019. An update of the literature supporting the well-being benefits of plants: Part 3 - social benefits. *J Environ Hort.* 37(4):136–142. <https://doi.org/10.24266/0738-2898-37.4.136>.
- Hensher DA, Rose JM, Greene WH. 2015. *Applied choice analysis*. Cambridge University Press, Cambridge, UK. <https://doi.org/10.1017/CBO9781316136232>.
- Hermans RC, Larsen JK, Lochbuehler K, Nederkoom C, Herman CP, Engels RC. 2013. The power of social influence over food intake: Examining the effects of attentional bias and impulsivity. *Br J Nutr.* 109(3):572–580. <https://doi.org/10.1017/S0007114512001390>.
- Jaeger SR, Rose JM. 2008. Stated choice experimentation, contextual influences and food choice: A case study. *Food Qual Pref.* 19(6):539–564. <https://doi.org/10.1016/j.foodqual.2008.02.005>.
- Johnston RJ, Boyle KJ, Adamowicz W, Bennett J, Brouwer R, Cameron TA, Hanemann WM, Hanley N, Ryan M, Scarpa R, Tourangeau R, Vossler CA. 2017. Contemporary guidance for stated preference studies. *J Assoc Environ Res Econ.* 4(2):319–405. <https://doi.org/10.1086/691697>.
- Koutsimanis G, Getter K, Behe B, Harte J, Almenar E. 2012. Influences of packaging attributes on consumer purchase decisions for fresh produce. *Appetite.* 59(2):270–280. <https://doi.org/10.1016/j.appet.2012.05.012>.
- Krinsky I, Robb AL. 1986. On approximating the statistical properties of elasticities. *Rev Econ Stat.* 68(4):715. <https://doi.org/10.2307/1924536>.
- Lancaster KJ. 1966. A new approach to consumer theory. *J Polit Econ.* 74(2):132–157. <https://doi.org/10.1086/259131>.
- Lehberger M, Grüner S. 2021. Consumers' willingness to pay for plants protected by beneficial insects – Evidence from two stated-choice experiments with different subject pools. *Food Policy.* 102:102100. <https://doi.org/10.1016/j.foodpol.2021.102100>.
- Li Z, Sha Y, Song X, Yang K, Zhao K, Jiang Z, Zhang Q. 2020. Impact of risk perception on customer purchase behavior: A meta-analysis. *JBIM.* 35(1):76–96. <https://doi.org/10.1108/JBIM-12-2018-0381>.
- Mcfadden D. 1973. Conditional logit analysis of qualitative choice behavior, p 105–142. In: Zarembka P (ed). *Frontiers in econometrics*. Academic Press, New York, NY, USA. <https://eml.berkeley.edu/reprints/mcfadden/zarembka.pdf>.
- Meyers-Levy J, Loken B. 2015. Revisiting gender differences: What we know and what lies ahead. *J Consum Psychol.* 25(1):129–149. <https://doi.org/10.1016/j.jcps.2014.06.003>.
- Mphafi K, Oyekale AS, Ndou P. 2023. Consumers' preferences for local and imported culinary herbs in Gauteng province, South Africa. *Res Agric Livest Fish.* 10(1):61–71. <https://doi.org/10.3329/ralf.v10i1.66221>.
- Nguyen L, Govindasamy R, Mentreddy SR. 2024. Turmeric trends: Analyzing consumer preferences and willingness to pay. *Front Sustain Food Syst.* 8:1359040. <https://doi.org/10.3389/fsufs.2024.1359040>.
- Patterson PM, Martinez SC. 2004. State and origin branding in Hispanic food markets. *J Food Distrib Res.* 35(3):7–18. <https://doi.org/10.22004/ag.econ.27553>.
- Piracci G, Boncinelli F, Casini L. 2023. Investigating consumer preferences for sustainable packaging through a different behavioural approach: A random regret minimization application. *Environ Resource Econ.* 86(1-2):1–27. <https://doi.org/10.1007/s10640-023-00785-3>.
- Rihn A, Behe BK, Walla A. 2026. US consumers' perceived safety of fresh culinary herbs: Impacts on use, attribute importance, satisfaction and post-purchase behavior. *HortTechnology.* 36(2):304–313. <https://doi.org/10.21273/HORTTECH05819-25>.
- Rizzo G, Borrello M, Dara Guccione G, Schifani G, Cembalo L. 2020. Organic food consumption: The relevance of the health attribute. *Sustain.* 12(2):595. <https://doi.org/10.3390/su12020595>.
- Rokka J, Uusitalo L. 2008. Preference for green packaging in consumer product choices – Do consumers care? *Int J Consumer Studies.* 32(5):516–525. <https://doi.org/10.1111/j.1470-6431.2008.00710.x>.
- Smith-Spangler C, Brandeau ML, Hunter GE, Bavinger JC, Pearson M, Eschbach PJ, Sundaram V, Liu H, Schirmer P, Stave C, Olkin I, Bravata DM. 2012. Are organic foods safer or healthier than conventional alternatives? A systematic review. *Ann Intern Med.* 157(5):348–366. <https://doi.org/10.7326/0003-4819-157-5-201209040-00007>.
- Steenis ND, van Herpen E, van der Lans IA, Ligthart TN, van Trijp HC. 2017. Consumer response to packaging design: The role of packaging materials and graphics in sustainability perceptions and product evaluations. *J Clean Product.* 162:286–298. <https://doi.org/10.1016/j.jclepro.2017.06.036>.
- Suo R, Wang W, Ma Y, Fu L, Cui Y. 2021. Effect of different root lengths for retaining freshness of hydroponic lettuce. *J Agric Food Res.* 4:100151. <https://doi.org/10.1016/j.jafr.2021.100151>.
- Train K. 2003. Mixed logit, p 138–154. In: Train K (ed). *Discrete choice methods with simulation*. Cambridge University Press, Cambridge, UK. <https://doi.org/10.1017/CBO9780511753930.007>.
- Train K. 2009. *Discrete choice methods with simulation* (2nd ed.). Cambridge University Press, Cambridge, UK. <https://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=304795>.
- US Census Bureau. 2023. U.S. Census Bureau QuickFacts: United States. <https://www.census.gov/quickfacts/> [accessed 3 Apr 2024].
- Ünal S, Ercis A. 2008. The role of gender differences in determining the style of consumer decision-making. *Bogazici J.* 22(1):89–106. <https://doi.org/10.21773/boun.22.1.6>.
- Trapp D. 2014. Why local food matters: The rising importance of locally-grown food in the U.S. food system. USDA AMS. <https://www.ams.usda.gov/sites/default/files/media/Why%20Local%20Food%20MattersThe%20Rising%20Importance%20of%20Locally%20Grown%20Food%20in%20the%20U.S.%20Food%20System.pdf>. [accessed 12 Jul 2023].
- USDA ERS. 2023. Rising consumer demand reshapes landscape for U.S. organic farmers. <https://www.ers.usda.gov/amber-waves/2023/november/rising-consumer-demand-reshapes-landscape-for-u-s-organic-farmers/> [accessed 16 Sep 2023].
- USDA FAS. 2025. Standard query. <https://apps.fas.usda.gov/gats/default.aspx>. [accessed 14 Feb 2026].
- USDA NASS. 2025. QuickStats ad-hoc query tool. <https://quickstats.nass.usda.gov/results/29C16A4D-B484-37F3-A7EB-BC81B19B135B>. [accessed 14 Feb 2026].
- USDA NIFA. 2020. Sustainable agriculture programs. <https://www.nifa.usda.gov/grants/programs/sustainable-agriculture-programs>. [accessed 14 Feb 2026].
- Waitt JA, Kuhn DD, Welbaum GE, Ponder MA. 2014. Postharvest transfer and survival of *Salmonella enterica* serotype enteritidis on living lettuce. *Lett Appl Microbiol.* 58(2):95–101. <https://doi.org/10.1111/lam.12170>.
- Wakefield KL, Inman J. 2003. Situational price sensitivity: The role of consumption occasion, social context and income. *J Retail.* 79(4):199–212. <https://doi.org/10.1016/j.jretai.2003.09.004>.
- Warsaw P, Archambault S, He A, Miller S. 2021. The economic, social, and environmental impacts of farmers markets: Recent evidence from the US. *Sustain.* 13(6):3423. <https://doi.org/10.3390/su13063423>.
- Whitinger D, Mora M, Feinson J. 2024. National gardening survey. The National Gardening Association, South Burlington, VT, USA.
- Yeh CH, Hirsch S. 2023. A meta-regression analysis on the willingness-to-pay for country-of-origin labelling. *J Agric Econ.* 74(3):719–743. <https://doi.org/10.1111/1477-9552.12528>.
- Yue C, Dennis JH, Behe BK, Hall CR, Campbell BL, Lopez RG. 2011. Investigating consumer preference for organic, local, or sustainable plants. *HortScience.* 46(4):610–615. <https://doi.org/10.21273/HORTSCI.46.4.610>.
- Yue C, Tong C. 2009. Organic or local? Investigating consumer preference for fresh produce using a choice experiment with real economic incentives. *HortScience.* 44(2):366–371. <https://doi.org/10.21273/HORTSCI.44.2.366>.