

# CONSUMER ACCEPTANCE OF GRASS-FED BEEF USING DIFFERENT FEEDING SYSTEMS

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## I. OBJECTIVES

Growing consumer concern over issues of sustainability, animal welfare, and health have led to an increased demand for products like grass-fed beef. As consumers' interest in grass-fed beef continues to rise, so too does the need for research that evaluates the impacts that feeding methods have on the palatability of the final meat product. Therefore, the objective of this study was to evaluate consumers' preference on the sensory attributes of beef steaks from animals raised on conventional grain-fed (CON; n = 12), 20-mo grass-fed (GF20; n = 12), 25-mo grass-fed (GF25; n = 12), and 20-mo grass-fed 45-d grain-finished (GG; n = 9) feeding systems.

## II. MATERIALS AND METHODS

Consumer sensory panel evaluations were conducted at the University of California, Davis. At each panel day, steaks were thawed at 4°C for 24 h prior to cooking. They were then cooked to an internal temperature of 71°C using a George Foreman clamshell. Internal temperature was measured at the geometric center of each steak using a K thermocouple thermometer. Following cooking, steaks were rested for 3 min and then cut into ten 1.5 cm by 1.5 cm cubes. Samples were then placed into glass bowls pre-labeled with a unique 3-digit random number, covered with tin foil, and stored in an insulated food warmer. One hundred and twenty untrained participants evaluated samples over a period of 6 sessions. Each participant tasted and evaluated 4 samples per session meaning that each sample was evaluated by 10 consumers. At the beginning of each session, participants were asked to fill out a background survey. Each participant was given 2 pieces of steak cubes per sample and asked to cleanse their palate between samples using unsalted saltine crackers, apple juice, and water. They were then asked to evaluate the likeness of tenderness, flavor, juiciness, and overall acceptance using a 9-point hedonic scale (1 = dislike extremely and 9 = like extremely). All the data were analyzed using the Kruskal-Wallis test to determine the significance of the treatments in R. Dunn's test with *P* value adjustment following Bonferroni methods was used for post hoc pair-wise comparisons. The alpha level was defined as 0.05.

## III. RESULTS

Consumer scores for all sensory attributes ranged from 5.18 to 6.46 across all the treatment groups. However, the scores of likeness of all the attributes, namely tenderness, juiciness, and flavor, were rated higher ( $P < 0.05$ ) for beef steaks in the CON group when compared to both or at least one grass-fed group (GF20 and GF25). For instance, the mean score of steaks in the CON group was 6.45 compared to that of the steaks in GF20 (5.50) and GF25 (5.51). Additionally, consumers rated steaks in the CON group as having a significantly higher overall acceptance than either the GF20 or GF25 groups. No difference was detected by consumers between GG and the CON or either of the two grass-fed groups for any sensory attributes.

#### IV. CONCLUSION

The results suggested that consumers recruited in the current study prefer the striploin steaks of cattle raised on grain-finished diet (either conventional feeding system or grass feeding system with additional 45 d on grain-finished diet) compared to those from grass-fed systems regardless of length of feeding period. This would also indicate that there may not be a significant benefit to switching to grass feeding systems as consumers still prefer the taste of conventional beef to that of grass-fed.

Keywords: beef, consumer preference, grass-fed, taste panel