

Consumer Acceptance Surveys

samples of experimental food products submitted to public taste-testing in attempt to estimate consumer acceptance

Rose Marie Pangborn and Marion Simone

Unless the public accepts the taste of a food product—regardless of how carefully prepared, nutritious, packaged, priced and available—the food is a complete failure.

The flavor—and consequent public acceptance of a food—can not be defined or measured except in terms of human reactions, because flavors are what people perceive them to be.

Experimental samples of canned cling peaches—packed at various sweetness and acidity levels in the pilot canning plant at Davis—have been submitted to consumers visiting the California State Fair at Sacramento, each year since 1954.

The opinions of approximately 13,000 people—expressed over the three-year period—revealed that consumer acceptance of the peaches was based primarily upon the sweetness-acid-flavor relationship.

In 1956, more than 7,000 additional consumers evaluated vanilla ice cream made at Davis—from five sweetness formulas—by stating a choice between paired samples.

Each taste survey participant com-

pletes a questionnaire concerning age group, sex, height, weight, and frequency of use of the product. The information obtained is later correlated with sweetness preference and degree of acceptability of the product. Children between six and 12 years are admitted if accompanied by an adult. After the participant completes the questionnaire he is given a colored score card which he takes to one of the six sampling windows where he is served peaches or ice cream, in a specific combination determined by the color of his score card. He records the degree of his like or dislike on the card or—in some instances—simply a preference between two samples.

In addition to obtaining information on sweetness preferences and frequency of use, the surveys provide a medium for basic studies on the most efficient and accurate methods of collecting consumer opinions.

California food processors have submitted from 20 to 30 foods and beverages each year to the Consumer Reaction Council—operated by the State Fair Administration—for an unbiased estimate of the acceptability of their products that

have ranged from salami and chocolate creams to beer and cottage cheese. The processor pays an entry fee and attests that the food entered is a standard product and samples submitted are of regular quality.

An average of 1,200 evaluations have been made on each processed food during the consumer acceptance surveys. At the end of each test period, the score cards are correlated and gold medals awarded to products receiving above 93% approval and blue ribbons to products placing between 75% and 93%.

The program of public taste-testing at the California State Fair has provided an economical and satisfactory method for pre-testing a food product and seemingly conclusive results have been obtained from consumers on food preference. The prediction of consumer behavior remains a problem because liking may change on repeated tasting.

Rose Marie Pangborn is Assistant Specialist in Food Technology, University of California, Davis.

Marion Simone is Principal Laboratory Technician in Food Technology, University of California, Davis.

ing all drops were examined for pressure bruises. Fruit from all containers were rated for surface discoloration, however, as most of this damage occurred during the vibration phase of the test.

Surface discoloration injury was rated on a scale of 0-5. Zero indicated that no discoloration could be detected even upon careful examination and five represented almost total discoloration. Pressure bruise data were obtained by peeling a representative sample, usually 40 pears per container, and noting the number having bruises of 0.25" diameter, or larger. The latter data were not obtained for the Bartlett pears, however, because of the highly variable number of pressure bruises in the nontested check boxes.

Considerable variation in fruit damage occurred between varieties and between different fruit lots. With regard to pressure bruises, these differences can largely be explained by differences in firmness at the time of the test. With surface discoloration, however, the russeted variety, Winter Nelis, was found much less susceptible than other varieties tested. The

nonliving cork cells covering the surface evidently provide considerable protection against discoloration bruising. Furthermore, the dark surface color tends to mask the symptoms of damage that does occur. The extent of the protection provided appeared to be directly related to the amount of russetting. In this study, one lot of Winter Nelis was heavily russeted and discoloration was minor while

another was lightly russeted and damage was sometimes extensive.

The nonwrapped fruit in the cartons generally exhibited less surface discoloration and fewer pressure bruises than the wrapped fruit in the wooden box. Stem punctures were less consistent but the incidence was low and there was no indication of any major differences between containers. Evidently compression pads in cartons are—providing pressure is maintained—at least as effective as the bulge of the wooden box in preventing fruit movement.

The successful utilization of the jumble pack method will undoubtedly require careful attention to a number of factors. The inadequacy of any one of these will likely result in excessive transit damage to the fruit: The carton must be accurately filled to the proper level and settled by vibration to reduce further settling during transit; sufficient pressure must be applied—when fastening the lids—to ensure a tight pack; cartons must be used which will not materially bulge

Concluded on page 16

Container Failure During Simulated Transit and Handling Tests

Fruit	Cartons tested	Carton failures	Boxes tested	Box failures	Reason
A Bartlett	6	0	6	2	Broken lids
B Winter Nelis	4	0	4	2	Broken lids
C D'Anjou	6	0	6	2	Broken lid (1) side (1)
C Winter Nelis	6	0	6	4	Broken sides (3) lid (1)
D Comice	6	0	6	2	Ends split
Totals	28	0	28	12	