

have studied. Time studies of machine operations are, of course, also included.

The next step is a depth discussion with floor supervisors on production methods and problems. Again, this depth interviewing technique has drawn out some unusual ideas and suggestions for improvement of processing methods and operations which will be valuable to this study.

As a fifth step, each item of productive equipment is thoroughly investigated from an engineering standpoint. We have, in most cases, contacted and discussed with the manufacturers of equipment the technical details of the machinery and have also discussed with them any plans they may have for improvement or the development of new equipment to be used in this shrimp processing industry.

Our final presentation to the Government will include, in general, the following information: First, a case history of each individual plant studied, describing in detail all of our findings, including a description of processes involved and time values for all elements of production. Number two will be a general summary of each segment of the study, including breeding, canning, freezing, or whatever the end product may be. In this summary the best features of production of each individual plant will be combined in what we will term a master or comprehensive report. This will be an integrated plan, making up what we consider to be the most effective operation attainable. Time values, comparing those of plants already in operation and of the ideal plant, will be presented, and this material will undoubtedly be valuable for individual plants checking their own operations against what we might term an ideal standard.

It is anticipated that this material will act as a base of fundamental information for manufacturers in the shrimp processing industry. There is no doubt in our minds but that individual processors, through ingenuity and inventiveness, may well improve upon any plant which we have studied and even upon our integrated ideal plant operation. On the other hand, it is quite possible that even the most inventive and ingenious may at some point have overlooked obvious and fundamental improvements in methods and operations. In obtaining a broad view of methods and equipment within their own particular field, some processors may well obtain ideas useful in their own plants. On the other hand, some may receive inspiration for further research and experimentation on their own.

We believe, too, that manufacturers of processing equipment may well find valuable suggestions for further research and development of equipment needed in the various processing methods.

Consumer Preferences for Breaded Shrimp

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IN 1948 BREADED SHRIMP PRODUCTS were introduced on a commercial scale for sale to consumers by enterprising processors of fishery products. These breaded shrimp products caught consumer acceptance very well and have since

increased in use. While their rise in volume of sales has not been as phenomenal as the rise which has occurred in the more recently introduced fish sticks, nevertheless, they are an important item in the fishery trade.

Last year 17 million pounds of breaded shrimp products were produced in the United States. This level of production was attained in 1952 and has since remained at approximately the same figure. The greater amount of this total annual production is of the uncooked variety. A few firms in the United States produce a cooked breaded shrimp product but this is a minor part of the total.

With the rise in the amount of commercial breaded shrimp products which occurred from 1948 to 1954 and also the more recent and more spectacular rise in the use of fish sticks, there developed a desire among industry and Government personnel to know more about the nature of consumers' desires for and use of these products. Such questions as the following were raised:

1. Do consumers who have served breaded precooked shrimp like them?
2. Has the use of frozen breaded precooked shrimp completely replaced the serving of other fishery products?
3. Has the use of frozen breaded precooked shrimp partly replaced the serving of other fishery products?
4. How much breading do consumers like on breaded shrimp?
5. What size package of breaded shrimp do consumers prefer?

Accordingly, it was decided in the Fish and Wildlife Service to conduct a survey of consumers to find the answers to these questions. In addition to the five listed above, quite a number of other questions were asked of consumers.

The persons who received and filled out the questionnaire which was developed for this study were predominantly housewives. All of the persons selected were members of two panels maintained by National Family Opinion, Inc. of Toledo, Ohio, the research firm which did the field work on the study. Each of the panels contained 1,000 members. A total of 2,000 questionnaires were mailed out to these panel members during the month of November, 1954, and 1,797 were returned for usable analysis. The households on the panels were selected to be closely representative of all the households in the United States. Certain controls were exercised in the selection of panels, so that each is composed of the same proportion of different classes of households as are existent in the makeup of all households in the nation. For example, approximately the same percentage of households will occur for each region as the percentage of all households in a region is of all the households in the United States. In addition, controls are exercised over distribution of the households among various sized communities, among various income groups for households and among homemakers of various ages. Thus the sample for this survey, as taken from the two panels, represents by judgment a close approximation of the make-up of all households of the nation.

It was found that only about one homemaker in five had served breaded shrimp during the year prior to November, 1954. Of those who had served this type of product, a high percentage of all homemakers trying either cooked or uncooked breaded shrimp become satisfied customers. Apparently the predominant marketing problem for breaded shrimp processors is to get consumers to try them, since such a small percentage of households have actually done so.

It is interesting to review the reasons given by respondents who did not try breaded shrimp products, to determine why they had not tried them. The

majority of such respondents listed no particular reason for both cooked and uncooked breaded shrimp. Of the remaining respondents who gave a definite reason, most stated they had a general aversion for such products or they preferred other types of fishery products. Only a minor percentage of the group indicated the products were not available and, what was most interesting, another small minority indicated that they had not tried such products because of price. While very few actually stated that price is not a major problem in getting people to try breaded cooked or uncooked shrimp, it is possible that of those who listed no particular reason many really were interested in price, since the survey indicated that breaded shrimp consumption is concentrated among middle and upper income groups. This would indicate that price does have some effects upon general use of the product.

It is notable that out of the households that had tried breaded shrimp a very high percentage liked the products in all communities in which respondents were questioned. In all groups over 85 per cent liked either breaded uncooked or cooked shrimp and in urban area communities of various sizes over 90 per cent liked the uncooked product.

It was also indicated that consumption of these products increase moderately as household size increases, and younger housewives bought breaded shrimp more than older housewives. Furthermore, families of white-collar workers used these products more than families of workers engaged in occupations requiring manual skills.

Household size was found to be related directly to the package size preferred by the housewife. Families of two persons prefer a 10-oz. size, whereas larger families, particularly those with four or more persons, would prefer a 12-oz. package if it would be available. It was also indicated that the latter type family prefers a somewhat smaller sized shrimp than the small two-person families, which preferred to obtain the very largest size of shrimp when buying breaded shrimp products.

Breaded shrimp consumption is concentrated in urban areas. Consumption in the cities is about twice as high as in rural areas. Among the cities consumption is slightly higher in the very largest cities as compared to the smaller ones.

DISCUSSION

Economic Session

Discussion Leader: HARDEN F. TAYLOR

Discussion Panel: DONALD MCKEE

The Economic Research Of The Fish And Wildlife Service Under The Saltonstall-Kennedy Act With Special Reference To The Gulf And Caribbean Area

RICHARD A. KAHN

- Q. McKee: Would you explain further your statement that some of the Latin American countries would possibly be receptive to the U. S. shrimp industry operating from those countries.