

Engine Power

The importance of power was investigated. Five larger vessels, each powered by a total of 330 horsepower, were compared with a similar number of vessels of the 67 foot class, powered by a total of 170 horsepower. The catches for Campeche ranged from 415 to 496 pounds per night, headless, by the larger vessels, while the lower powered vessels had catches ranging from 291 to 342 pounds. These were non-owner vessels. A captain-owner with a large vessel powered by 330 horsepower produced 725 pounds, while a similar smaller vessel with half as much power produced 278-417 pounds per night. Higher production does not mean that they operated more efficiently or economically.

Most of the vessel owners interviewed agreed that the skill of the crew was the most important single factor in obtaining efficient vessel operation. They claimed that owner-operated vessels, as a rule, fished more days per year, thus increasing their catch, and had lower maintenance costs through proper handling and care of their gear. This is borne out by the fact that the smallest vessel of the group with the least horsepower, but owner-operated, produced the best total catch per night in a certain area.

Comparisons were made of fuel consumption by Key West, Biloxi, and Brownsville fleets. The lowest daily fuel consumption was recorded by the Biloxi fleet, the highest by Brownsville. It was of interest to note that the Brownsville fishing vessels used nearly twice as much fuel as the Key West vessels, even though the engines used were similar. Shrimp production in the Brownsville area was considerably higher, however, thus nearly equalizing the cost of production. Apparently the vessels fished harder and/or more efficiently.

In conclusion, our preliminary survey indicates that improvements in vessel maintenance will increase the life of the vessels. A detailed study of this complex problem of design and construction would point out to the prospective vessel owner what to demand in construction, the hull shape and power best suited for shrimp fishing. It is also felt that in order to obtain a comprehensive picture of the efficiency of the different elements in the vessel, one important fishing area be selected for detailed study. Records for several years should be obtained on more vessels to confirm the indications presented in this paper.

A Study of the Efficiency of Domestic Shrimp Processing Plants

EARL T. VAN SCIVER

*Executive Vice President, First Research Corporation,
Miami, Florida*

THIS WORK, carried on for the Fish and Wildlife Service, is specifically an industrial engineering survey, designed to check the efficiency of operations and processes in shrimp processing plants throughout the United States. The project, along with a similar one which First Research Corporation is carrying on aboard shrimp fishing vessels, is an integral part of the over-all Fish and

Wildlife program designed to shed light upon the wide varieties of methods used in shrimp processing and, where possible, to suggest improvements which would increase the efficiency of shrimp processing and in turn reduce costs and increase profits on shrimp products at this level.

The results of these studies will be released through the Fish and Wildlife Service when the study has been completed, but a brief outline of the work done and the benefits which may be anticipated from this study are in order.

Our field work has carried us from the Atlantic Coast areas in Morehead City, in Thunderbolt and Brunswick, Georgia, through Jacksonville, Key West and Tampa. In Louisiana, we have studied plants in New Orleans, Harvey, Westwego, Houma, Dulac and Chauvin. In Texas, our work has carried us to Harlingen, Port Isabell and Brownsville. In our studies aboard fishing vessels, our engineers have worked out of all of these areas and have spent a number of days in the Campeche fishing grounds. In all, we have made comprehensive studies in some fourteen processing plants and have observed operations in some twenty-five plants, in order to get the most comprehensive coverage possible. In terms of products, our studies have included breaded shrimp, canned shrimp, cooked and peeled shrimp, fresh shrimp, dried shrimp and fresh frozen shrimp.

As one might expect, one of the more difficult problems in a study of this kind is that of gaining entry into these individual plants and finding the proper people at hand with whom to discuss the various problems. In some areas, we have received excellent cooperation and a definite willingness of plant owners and operators to cooperate to the fullest extent in giving us details of their operations. In other areas, we have found some decided reluctance to reveal any information concerning operating characteristics and details of the business. We, of course, have kept completely confidential our findings made in the various plants concerned.

Our procedure in following through these studies has involved a combination of depth interviewing techniques, with detailed time studies of operations and an engineering investigation of equipment and processes.

The first step in a typical plant study consists in interviews with the plant managers or owners. This has generally taken the form of a general discussion of problems and methods, with particular orientation to the drawing out of any new ideas or new methods being tried out or considered, or any new ideas or methods about which the plant manager or owner may have knowledge over and above our own. This technique has led to some fertile fields of investigation and analysis.

The second step has consisted in a thorough study and delineation of the actual operation of the plant itself. This includes, for instance, a study of the floor plan and the operational flow of all materials. This study of operation and flow, with each operation fully described, has been put into graphic form, to be included in the study.

The next step in the plant study includes a comprehensive analysis of all processing methods, whether they be machine or hand methods. In each case, the operation is described in complete detail; the operating characteristics, production rate and efficiency of each machine or hand method is studied and fully described, so that it may be compared in cost and effectiveness with operations found in other plants.

Time studies are made of each individual operation, particularly hand operations which we find to be generally in use throughout the plants we

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

WALTER H. STOLTING

*Assistant Chief, Economics and Cooperative Marketing Section
Fish and Wildlife Service
Washington, D.C.*

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