# IMPACT OF TRAINING PROGRAMME ON HYGIENIC MEASURES FOLLOWED IN PEELING SHEDS

By

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## THESIS

Submitted in partial fulfilment of the
requirement for the degree

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Mannuthy, Trichur

1989

Dedicated to my father

# DECLARATION

I hereby declare that the thesis entitled "IMPACT OF TRAINING PROGRAMME ON HYGIENIC MEASURES FOLLOWED IN PEELING SHEDS" is a bonafide record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship, or other similar title of any other University or Society.
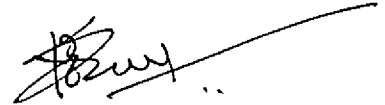
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# CERTIFICATE

Certified that the thesis entitled "IMPACT OF TRAINING PROGRAMME ON HYGIENIC MEASURES FOLLOWED IN PEELING SHEDS" is a record of research work done independently by Kumari Daisy. C. Kappen under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship, or associateship to her.

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# Introduction

# INTRODUCTION

Fishing industry plays a vital role in the national economy of India. Besides its role as a foreign exchange earner, it serves as livelihood for a major section of the population. India stood 8th among the fish producing countries of the world with a total fish production of 2.66 million tons in 1984-85 (Statistics of Marine Products Exports,1985). The export of fish and fishery products is well established in the country and it constitutes over four per cent of overall export earnings every year. The marine products export from India has shown a steady increase since 1974, irrespective of the fluctuations in production. The export has increased from 15,752 tons worth Rs.3.91 crores in 1961-62 to 99,777 tons worth Rs.597.85 crores in 1988-89 (Marine Products Export Development Authority, Pattern of Marine products from India, 1989).

Among the maritime states of India, Kerala contributes 23.7 per cent to the total fish production. The State's share in total seafood export earnings was approximately 52 per cent during 1987-88 (Statistics of Marine Products Export - 1987, MPEDA).

The important fish and fishery products exported from the country include frozen shrimp, lobster tails, cuttle fish, frozen squid, fresh frozen fish, canned shrimp, dried fish, dried shrimp, shark fins and fish maws. Of these prawn

constitute about 80 per cent of the export value of fish and fishery products.

Until the introduction of freezing preservation of fish in early 50's, sun drying and salt curing were the only methods employed for fish preservation. The first freezing plant unit established in India was "F.S. KHER and Company" in the year 1953. The export of frozen marine products also started in the same year with the first consignment of 39,000 lbs of frozen shrimps sent to USA. This was the dawn of Indian seafood exports. The unwholesome demand abroad for marine products, especially for prawns and the very high price it fetches called the attention of many new entrepreneurs and industrialists to this sector. As a result, in the succeeding years there was a bloom of freezing plants in the country. In line with this fast developments in processing sector, the capture sector also made tremendous advancement. A large number of mechanised boats, mainly shrimp trawlers were introduced all along the coast line of India to tap the hitherto underexploited prawn resources. The Government also took active interest in the subject.

The institutional assistance for these developmental activities on the technological and biological side were provided by Central Institute of Fisheries Technology (CIFT), Central Marine Fisheries Research Institute (CMFRI) and Indo Norwegian Project (INP) - a joint venture programme for fisheries development by Government of India and Norway. A separate

agency known as Marine Product Export Development Authority
(MPEDA) for the promotion of seafood exports was established
in the year 1972, with the following objectives:

1. Development, Conservation and Management of Offshore
   and deep sea fishing

2. Regulation of marine products export

3. Registration of exporters and processing plants

4. Laying down standards and specifications

5. Rendering financial assistance to processors and
   exporters

6. Helping the industry in relation to market intelli-
   gence, export promotion, trade enquiries and the
   import of essential items.

7. Providing training in different aspects of the marine
   products industry with special reference to quality
   control, processing and marketing

8. Promotion of commercial prawn farming for export
   production

9. Promotion of deep sea fishing ventures, particularly
   export oriented projects.

Till 1985, India was first among prawn exporters in
world market. But in the subsequent years the scene changed.
India was pushed back by Indonesia and China, which emerged
as strong competitors for Indian products in foreign market.

During this period, though there was marginal increase in the quantity exported every year there was a decline in demand for Indian products. This decline in demand was mainly due to the low quality of Indian products compared to the products from other countries. There had been instances when Indian shrimps were rejected by the importers owing to the detection of typhoid and cholera germs. These incidences brought down the reputation of Indian products in foreign markets, especially in USA.

Lack of availability of raw material for processing was another important problem faced by the industry. Since 1974 there was a decline in prawn production from the marine sector. This led to the present situation where only 20 per cent of the plant capacity could be used. This decline in material availability, together with declining demand for the products among foreign buyers put the industry in an economically insecure situation.

Various efforts have been initiated to save the industry from this crisis. With the objective of making raw material available for industry, programmes were begun for popularisation of prawn farming and exploitation of offshore resources by increasing the fleet strength. Attempts were also made to improve the quality of the products through strict enforcement of quality standards and intensive extension activities.

Earlier the quality standards of the exporting seafood items were not strictly in conformity with the International

standards. Most of the time we were depending on the buyers'
specifications for standardisation of the quality of the
products. Moreover we had our own limitations regarding well
equipped laboratories and suitably trained personnel for main-
taining international standards accepted by foreign buyers.

The quality for acceptance of frozen shrimp by the
importers is based on the organoleptic and bacteriological
criteria. Organoleptic criteria includes general appearance,
colour and texture which must be satisfactory. Dehydration,
discolouration of shell and meat, deterioration with spoiled
pieces, black spot on shell and meat etc. must be nil for the
frozen shrimps exported to other countries.

The admissible limits of the various factors for the
acceptance of frozen shrimp in the International market are
given below:

Table 1. Admissible limits of the various factors for the
acceptance of frozen shrimp

| Sl. No. | Product | Permissible limits for different factors | | | |
|---|---|---|---|---|---|
| | | *TPC at 37°C/g max. | E. coli at 37°C/g max. | Staphylo- coccus at 37°C/g | Salmonella and Arizona |
| 1 | Frozen shrimp vis. whole type head- less shell on type, peeled and undeveined, peeled deveined and butterfly types | 10,00,000 | 20 | 100 | Nil |
| 2 | Cooked and peeled frozen shrimp | 1,00,000 | Nil | 100 | Nil |

* Total plate count

The processing of prawns for export includes steps as pre-processing, processing or freezing and packing. The prawns caught from the sea or from brackish water areas are iced and brought to the pre-processing centres or peeling sheds. This is pre-processed based on the style of product desired and sent to the freezing plants for final processing and packing.

The important factors affecting the quality of the product are the environment from which it is caught, the methods of handling, preservation, processing and the hygiene kept at all these stages. The bacteriological spoilage of the product can be from the environment, the water used for washing the utensils used or through individuals handling the product.

Since freezing involves only processing at low temperatures, the microbes once entered the product cannot be eliminated by way of processing. Hence the spoilage once occurred cannot be rectified. This suggest the need for a thorough control over the quality right from the point of capture. In the freezing plants which are much sophisticated and the quality aspects are strictly observed as per Government regulations, the chances of the product getting spoiled is much less. But it is at the primary level where most of the quality deterioration takes place. The local peeling sheds are kept unhygienic and the pre-processing is done by untrained and less educated fisherfolk, who keep very little hygienic standards.

The methods of handling, preservation and hygiene main-
tained at this primary level are the most crucial factors
determining the quality of the final product. At this pri-
mary level if quality standards are not maintained, the
products are sure to come out as 'sub-standard'. Hence atten-
tion should be focussed in improving the quality standards at
primary levels. With this objective of improving the quality
of the pre-processed material through better handling, preser-
vation and hygienic practices, MPEDA organises training pro-
grammes for peeling shed workers all over the State since
1984 onwards. Other organisations giving training in the
field of fisheries are CIFT, Krishi Vignan Kendra (KVK) under
CMFRI and Fish Farmers Development Agency (FFDA). CIFT is
giving training in net making, improved fish curing practices
and preparation of byproducts, KVK is imparting training on
prawn farming in brackish water areas and FFDA stresses train-
ing on fish farming in inland areas.

The main idea behind training is to develop adequate
skills and workable knowledge among the trainees. A systema-
tically arranged training programme aids in the production of
desirable changes in the behaviour of the trainees. Training
on something is a learning process and it enables a person to
do the same more effectively. Armstrong (1977) defined
training as "a systematic development of the knowledge, skills
and attitudes required by an individual to perform adequately
a given task of job". According to him training would involve

learning of various kinds and in various situations. At present a wide gap exists between technology available and technology utilized in the field of fisheries. Hence transfer of knowledge in fish handling and processing as well as adoption of this knowledge by the workers, peeling shed owners and exporters have got special significance in developing this industry. It was with this aim the MPEDA started the training programme.

## Importance of the study

At present MPEDA is organising training programmes for the peeling shed workers in Kerala to give technical knowledge related to fish handling practices in an easily assimilable manner to the illiterate class of workers. Huge amounts of money and effort are involved in the implementation of these programmes. Attempts have not so far been made to assess the worthiness of these programmes. Unless follow up studies on the effectiveness of these training programmes are conducted, the impact of such programme will remain unassessed. A feed back from peeling shed workers can clearly serve as an indication for the effectiveness. The present study is aimed towards this end. Results arrived at can help in designing, with suitable modifications, the future training programmes for peeling shed workers. With the above background the present study was undertaken to assess the impact of the training programme organised by MPEDA on hygienic measures to be followed in peeling sheds. The impact is measured in terms of knowledge

and perception of the respondents about the quality of the
product. Thus the specific objectives of the present study
could be formulated as follows:

1. To study the level of knowledge about hygienic measures
   of trained peeling shed workers in comparison with those
   who have not attended the training programme.

2. To study the perception of the trained peeling shed
   workers about the quality of the product.

3. To compare the association if any existing between the
   socio-psychological and economic factors of trained and
   untrained peeling shed workers with the level of knowledge
   and extent of perception.

4. To study the motivational factors responsible for attend-
   ing the training programme by the peeling shed workers.

Limitations of the study

This study forms a part of the requirement for the M.F.Sc.
programme. It was not possible to cover all the persons who
had attended the training programme conducted by MPEDA due to
lack of time and finance. The study was confined to one dis-
trict purposively selected and to that extent the generalisa-
tion is likely to be affected. More over a study with pre and
post-training measurement would have yielded more valid and
reliable data. But this was not possible as the MPEDA is not
giving the training regularly at present. The adoption
studies were not included in this because the trainees were

only the workers. Though the personnel hygienic measures
could be adopted by them individually the adoption of general
hygienic measures require the consent and co-operation of the
peeling shed owners.

However, care was taken to make the study as systematic
as possible and it is expected that the result would contri-
bute valuable information about the impact of training pro-
gramme organised by MPEDA.

# Review of Literature

# REVIEW OF LITERATURE

Studies on the impact of training programme in the field of fisheries are scarce. Hence literature depicting impact of training in the fields of Agriculture and Animal Husbandry are reviewed. A brief review of the relevant literature is made under the following sub-heads.

I. Impact of training on the level of knowledge of

of the trained poultry farmers had high level of knowledge while only 11 per cent of the untrained farmers had high level of knowledge.

Singh and Singh (1974) from their study on impact of National Demonstrations reported that the respondent from the villages where National Demonstrations were conducted had significantly higher knowledge scores about high yielding varieties of wheat than those from the villages where no National Demonstrations were conducted.

Supe and Salode (1975) reported that the National Demonstrations conducted by the change agents were effective in increasing the level of knowledge about improved agricultural practices of the participant farmers who were educated, scientifically oriented and had high socio-economic status.

Bala and Roy (1979) found that the trained farm women had more household knowledge than untrained farm women.

Pathak et al. (1979) observed significant difference in the levels of knowledge between farmer demonstrators and neighbouring farmers in relation to improved practices of jute and wheat crops but in the case of rice cultivation it was not significant.

Venugopal and Jalihal (1979) after studying the influence of training at Indo-Japanese Centre on the knowledge and performance of Agricultural Extension Officers regarding rice cultivation, reported that 46 per cent of Agricultural Extension Officers trained at the training centre had high overall

knowledge regarding rice cultivation, as against six per cent of Agricultural Extension Officers who were not trained.

Ramakrishna (1980) revealed that there was significant change in knowledge among farmers in all the trained practices of paddy cultivation.

Joshy and Rao (1981) in their studies on the impact of National Demonstration Programme on paddy cultivation found that the neighbouring farmers of the demonstration plots were superior to the control farmers in respect of their level of knowledge about demonstrated practices.

Kamarudeen (1981) in his study on the impact of National Demonstration Programme on paddy cultivation found that the neighbouring farmers of the demonstration plots were superior to the control farmers in respect of their level of knowledge about demonstrated practices.

Meera (1981) reported that there was significant difference in the level of knowledge about improved agricultural practices between trained and untrained farm women.

Uma (1982) conducted a critical analysis of the impact of training on Mahila Mandal members with reference to nutrition and home gardening aspects and reported that the improvement in knowledge level of the participant in the training was statistically significant.

Pachori and Tripathi (1983) from their study on impact of Intensive Agricultural Extension and Research Programme

reported that among the contact farmers quite a high percentage of respondents had high and medium knowledge whereas, amongst the non-contact farmers, a majority had low knowledge in 'Intensive Agriculture Extension and Research Programme'.

Vijayakumar (1983) in his study on impact of special Agricultural Development Units on the agricultural development of rural areas in Kerala reported that the beneficiaries had significantly higher level of knowledge than non-beneficiaries on improved practices of coconut cultivation.

Hiravenkanagoudar et al. (1984) reported that the participant farmers of National Demonstration had significantly higher knowledge about the demonstrated practices than the non-participants.

Joshy and Thorat (1984) revealed that nutrition training had positive impact on home-makers with regard to knowledge about recommended practices in nutrition education.

Nikam and Singh (1984) found that the demonstrating farmers had possessed good knowledge about all the items in agricultural practices whereas non-demonstrating farmers had poor knowledge.

Kalaichelvan (1984) studied the transfer of farm technology through training and visit system and found that the increase in knowledge on different aspects of the subject matter was due to the training given to the village extension workers.

Verma et al. (1984) observed tremendous increase in
knowledge about the production technologies after imparting
training to sugarcane development workers.

Das and Sharma (1985) reported that the training had
helped the participants in increasing their knowledge about
agro-forestry plantation.

Verma and Verma (1985) reported that the rural woman and
adolescent girls have acquired sufficient level of knowledge
regarding improved home practices after training.

Babu and Singh (1986) found that the gain in knowledge
about the technology imparted through national training course
for young farmers at Indian Agricultural Research Institute
was 20.28 per cent.

Sohal and Pulsale (1986) revealed that the training
programme was very effective in improving the knowledge of
trainees as well as in retaining the knowledge about dairying
fodder and cereal crops to a considerable level.

Jesuraja et al. (1987) in their study on acquisition of
skill by the fishermen through training reported that the
training had helped the trainee either to learn new skill or
to sharpen their existing skill in different techniques related
to modern fishing technique. New skills were acquired in four
techniques by majority of the respondents. They were, use of
compass and charts (96.66 per cent), operation of marine
diesel engine (90.89 per cent), repairing and servicing of

marine diesel engine (90.83 per cent) and preparation of sinkers and anchores (68.33 per cent). In "building and servicing of nets" the training helped about 56 per cent of the respondents to sharpen their existing skill.

Ramkumar (1987) studied the impact of correspondence course in dairying and revealed that the knowledge level of participants was significantly higher than non-participants.

Sanjeev (1987) reported that trained farmers had significantly higher knowledge on improved paddy cultivation practices than other farmers.

Sankaran (1987) in his study on impact of minikit programme on knowledge and adoption of groundnut technologies reported that the beneficiaries had higher knowledge than non-beneficiaries about all the recommended practices.

Santhi (1987) after studying the inservice training programme for the personnel from the Department of Agriculture, revealed that all the three categories of trainee respondents namely Agricultural Demonstrators, Agricultural Officers and Assistant Directors showed significant gain in knowledge due to the training programme.

Syamala (1988) found that the National Demonstration conducted in Quilon district was effective in changing the knowledge of the farmer demonstrators. The programme could not achieve the end of reaching out to the neighbouring farmers to the desired extent.

All the above studies revealed that training is an
effective medium in increasing the knowledge level of res-
pondents.

II. Impact of training programme on the perception of the
respondents about the quality of the product.

Bhilegaonkar and Dakh (1978) reported that 54.17 per
cent of the farmers perceived high utility of mobile farm
advisory service.

Nandakumar (1980) reported that majority of the partici-
pants were satisfied about the working condition of Drought
prone area programme. Only a meagre per cent had neutral idea
and none expressed dissatisfaction.

Singh and Singh (1980) reported that profitability was
the best perceived characteristic of high yielding varieties
of wheat for both farm men and women, whereas cultural compati-
bility and physical compatibility were least perceived ones
for farmers and farm women respectively.

Chakravarthy (1981) reported that small farmers perceived
the indigenous farm practices to be more simple, profitable,
cheap, physically compatible and flexible than the medium and
big farmers.

Muthukrishnan (1981) found that majority of the users
(93 per cent) of biogas plants had better perception towards
the attributes of biogas plants.

Thiruthuvadas (1981) reported that the attributes of

multicrop thresher were perceived better by users than non-users. He also indicated that there was significant difference in the perception of all the attributes of sugarcane crusher by users and non-users except trialability.

Shivakumar (1983) studied the perception of farmers about research stations and research workers and found that there was significant difference in perception about research stations and research workers between the surrounding farmers and distant farmers. A more favourable perception was found to be associated with neighbouring farmers than the distant farmers.

Pawar et al. (1984) reported that 62 per cent farm youth leaders had medium to high perception for all the role items while 38 per cent had low perception.

Balan (1987) reported that majority of the farmers have got medium perception about the utility of soil test recommendations.

Haque and Ray (1987) reported that fish farmers perceive silver carp as the most profitable one followed by Catla, Rohu and grass carp. With respect to the taste three indigenous species of fish were considered to be superior than three exotic species and their order of preference was Rohu, Catla and Mrigal respectively.

Sanjeev (1987) found that majority of the trained farmers perceived the training to be satisfactory with regard to

the time of training, venue of training, use of audio-visual
aid, opportunity for field visit and arrangements made at the
venue.

Santhi (1987) reported that the agricultural Demonstra-
tors and Assistant Directors had the highest perception about
the training methodology aspect "Timeliness of information
about the training" whereas the Agricultural Officers had
highest perception about the "Selection of subject matter for
training" in the pre training stage. Opportunities for clari-
fication of doubts and opportunities for trainees participa-
tion were given highest perception scores respectively by the
Agricultural and Assistant Directors in the in-training stage.
In the post-training stage all the three categories of res-
pondents had the highest perception about the 'monitoring and
evaluation of training'.

Sudha (1987) revealed that majority of the non-tribal
and tribal participants had higher perception about the lab-
to-land programme.

III. Motivational factors responsible for the respondents
     in attending the training programme

Heera (1981) revealed that economic motive was an impor-
tant factor which motivated farm women to participate in
training.

Sanjeev (1987) found that the major motives for farmers
in attending the training were economic motive, innovative-
ness prestige motive and affiliation motive.

The above studies indicate the importance of economic
gains as a motivational factor for farmers in attending the
training programme.

IV. Relationship between the selected independent
variables and knowledge level of the respondents.

Age, education, experience, occupation, income, marital
status, home, family, mass media exposure, extension orienta-
tion, indebtedness and level of aspiration were the indepen-
dent variables selected for the study. The relationship of
these variables with level of knowledge explored by different
authors are quoted below.

4.1. Age.

Bala and Roy (1979) reported positive and non-significant
relationship of age with utilization of household knowledge.

Ahammed (1981) observed non-significant relationship
between age and knowledge of farmers.

Kamarudeen (1981) found negative and non-significant
association between age and knowledge about demonstrated
practices of neighbouring farmers.

Dachori and Tripathi (1983) found significant association
between age and knowledge about Intensive Agricultural Exten-
sion and Research Programme.

Vijayakumar (1983) reported that age of non-beneficiary
farmers had negative and significant relationship with their
level of knowledge in improved practices of coconut cultiva-
tion.

Kalaichelvan (1984) stated that the age of the extension personnel had positive and significant relationship with their gain in knowledge about different aspects of subject matter.

Sanjeev (1987) reported that age of the trained farmers did not have any significant relationship with their knowledge about improved paddy cultivation practices.

Santhi (1987) observed non-significant association between age and knowledge about plant protection, pulses and oil seed production and use of audio-visual aids and techniques for Agricultural Demonstrators, Agricultural Officers and Assistant Directors respectively.

Syamala (1988) reported that age of the farmer demonstrators and neighbouring farmers was positively and non-significantly associated with knowledge about demonstrated cultivation practices.

4.2. Education

Bala and Roy (1979) found that education was negatively and non-significantly related with the use of household knowledge.

Kamarudeen (1981) reported positive and significant relationship between education and knowledge of neighbouring farmers about demonstrated practices.

Kalaichelvan (1984) observed positive and significant relationship between education and knowledge about different

aspects of subject matter of village extension workers.

Santhi (1987) reported significant association between education and knowledge about plant protection methods of Agricultural Demonstrators.

### 4.3. Total experience

Jha and Sharma (1973) indicated that the experience had positive and significant relationship with level of knowledge about applied nutrition practices.

Kalaichelvan (1984) reported that experience had positive and significant relationship with gain in knowledge about different aspects of subject matter.

Sanjeev (1987) found significant relationship between farming experience and knowledge about improved paddy cultivation practices.

Santhi (1987) reported non-significant association between experience and knowledge.

### 4.4. Occupation

Sankaran (1987) observed positive association between occupation and level of knowledge.

### 4.5. Annual income

Bala and Roy (1979) reported that income had positive and significant association with knowledge about food preservation and grain storage.

Kamarudeen (1981) observed negative and non-significant

association between income and knowledge of neighbouring far-
mers about demonstrated practices.

4.6. Mass media exposure

Sankaran (1987) reported positive association between
mass media exposure and level of knowledge about 22 recommended
practices. Syamala (1989) observed positive and significant
association between mass media exposure and level of knowledge
about demonstrated cultivation practices.

4.7. Extension orientation

Kamarudeen (1981) reported that contact with extension
agencies had positive and significant relationship with level
of knowledge of neighbouring farmers about demonstrated
practices.

Sanjeev (1987) found that extension orientation had no
relationship with knowledge about improved paddy cultivation
practices.

Sankaran (1987) observed positive relationship between
extension orientation and knowledge about recommended practices

Syamala (1988) reported positive and significant associa-
tion between extension orientation and level of knowledge
about demonstrated cultivation practices.

4.8. Level of aspiration

Pachori and Tripathi (1983) reported significant asso-
ciation between level of aspiration and knowledge of contact
farmers.

Even after an indepth thorough review for the impact of the training programme in many journals and thesis, the literature highlighting the relationship between marital status, home, family and indebtedness with the level of knowledge of the respondents were not available.

V. Relationship between selected independent variables and perception of the respondents about the quality of the product.

The relationship of the selected independent variables with the perception about the quality of the product given by different authors are furnished below.

5.1. Age

Shilegaonkar and Dakh (1978) reported that there was no significant relationship between age and utility perception of mobile farm advisory service.

Nandakumar (1980) found negative and significant relationship between age and perception about impact of Drought prone area programme.

Sudha (1987) reported that age was positively and non-significantly associated with perception about lab-to-land programme.

5.2. Income

Nandakumar (1980) reported positive and significant relationship between economic status and perception about the impact of Drought prone Area Programme.

Sudha (1987) found that income was positively and significantly associated with perception about lab-to-land programme in tribal participants.

## 5.3. Extension orientation

Shivakumar (1983) reported a significant and positive association between farmers degree of contact with research station and research workers and their perception about research station and research workers.

Sudha (1987) found that extension orientation was positively and significantly related with perception about Lab-to-land programme in both tribal and non-tribal participants.

## 5.4. Level of aspiration

Sudha (1987) reported that level of aspiration was positively and non-significantly related with perception about Lab-to-Land programme.

The literature indicating the relationship between education, experience, occupation, marital status, home, family, mass media exposure and indebtedness with perception were not available.

## Hypotheses developed for the study

1. There will be significant difference in the knowledge about the hygienic measures to be followed in the peeling sheds and in the perception about the quality of the product between the trained and untrained peeling shed workers.

2. Age, education, total experience, occupation, annual income, marital status, home, family, mass media exposure, extension orientation, indebtedness and level of aspiration of the trained and untrained peeling shed workers will have significant association with level of knowledge about the hygienic measures to be followed in peeling sheds.

3. Age, education, total experience, occupation, annual income, marital status, home, family, mass media exposure, extension orientation, indebtedness and level of aspiration of the trained and untrained peeling shed workers will have significant association with perception about the quality of the product.

4. Of the five motivational factors selected for the study, economic motive will be the factor which induce the peeling shed workers in attending the training programme.

# FIG 1    CONCEPTUAL  FRAMEWORK  OF  THE  STUDY
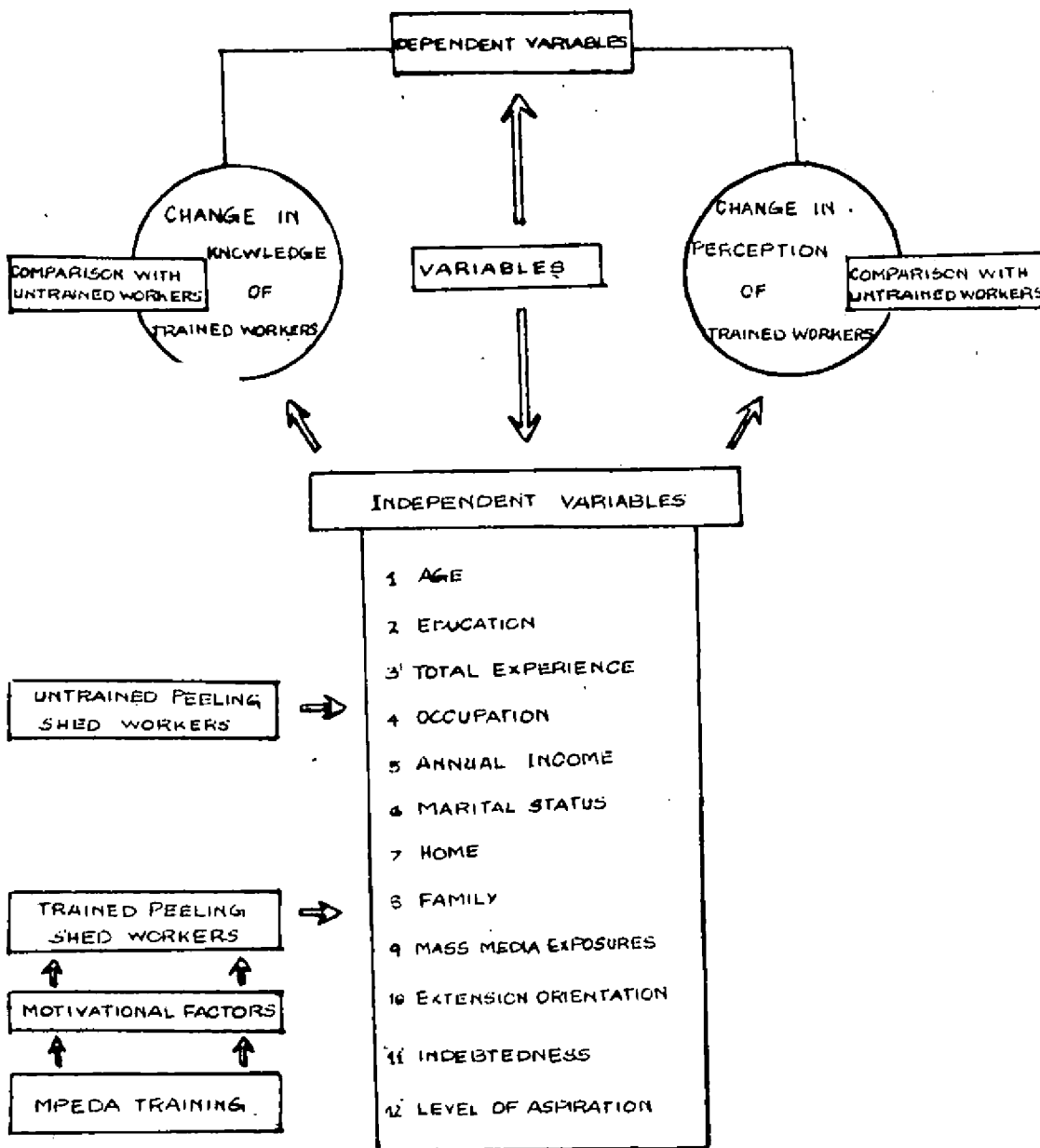
# Materials and Methods

## MATERIALS AND METHODS

The materials and methods used in the study are given under the following sub-heads.

1. Location of the study

2. Selection of samples

   a) Selection of trained peeling shed workers

   b) Selection of untrained peeling shed workers

3. Selection and measurement of variables

4. Methods of investigation

5. Statistical tools used

6. Operational defenitions of the terms used.

## 1. Location of the study

Marine products Export Development Authority (MPEDA) has given training to peeling shed workers in Trivandrum, Alleppey, Quilon, Ernakulam, Trichur, Calicut and Malappuram districts in Kerala. Out of these seven districts Quilon was selected purposively, as the number of peeling shed workers who had attended the training programme was more when compared to other districts. Besides, this district contributes a significant share in the total fish production of Kerala.

## 2. Selection of sample
a) Selection of trained peeling shed workers

The purpose of the study was to measure the impact of training in knowledge about scientific fish handling practices

and perception about the quality of the product. It was
decided to select three groups of respondents based on imme-
diacy of training. The details of the training conducted
and number of peeling shed workers attended the training
programme are given below:

Table 2. Details of training programme conducted at
Quilon district

| Sl. No. | Place | Date | Number of trainees attended |
|---|---|---|---|
| 1 | Neendakara | 11, 12 and 13 November 1986 | 35 |
| 2 | Sakthikulangara | 28, 29 and 30 January 1987 | 42 |
| 3 | Ashtamudi | 17, 18 and 19 March 1987 | 39 |
| 4 | Kureepuzha | 25, 26 and 27 March 1987 | 36 |
| 5 | Kavanad | 10, 11 and 12 November 1987 | 23 |
| 6 | Mathilil | 1, 2 and 3 December 1987 | 31 |
| 7 | Neendakara | 23, 24 and 25 February 1988 | 24 |
| 8 | Sakthikulangara | 29 and 30 November 1988 | 30 |
| 9 | Sakthikulangara | 12 and 13 January 1989 | 25 |
| 10 | Sakthikulangara | 21 and 22 March 1989 | 25 |

The last three groups of respondents were taken for the
study based on immediacy of training. Thus the total population

size for the study was 80. From this 80 trained peeling shed workers 60 were selected adopting simple random sampling technique.

b) Selection of untrained peeling shed workers

The study required a sample of untrained peeling shed workers as a control group. For this a list of untrained peeling shed workers in the study area were obtained from the peeling shed owners and from this list 60 untrained peeling shed workers were taken as a matched pair, considering the following criteria:

1. The untrained peeling shed workers should not have participated in the training programme conducted by MPEDA.

2. They should have more or less the same economic status as that of trained workers.

3. They should possess more or less the same educational status as that of trained workers

4. They should have least chance of interaction with trained workers.

3. Selection and measurements of variables

Based on the objectives of the study and after discussion with experts in the Department of Veterinary Extension, Central Institute of Fisheries Technology (CIFT) and MPEDA a list of variables were prepared. The variables selected for the study are given below.

a) Dependent variables

    1. Knowledge about hygienic measures

    2. Perception about the quality of the product

b) Independent variables

    1. Age

    2. Education

    3. Total experience

    4. Occupation

    5. Annual income

    6. Marital status

    7. Home

    8. Family

    9. Mass media exposure

    10. Extension orientation

    11. Indebtedness

    12. Level of aspiration

c) Motivational factors

3.a. Dependent variables

3.a.1. Knowledge

Shankariah and Singh (1967) measured the knowledge of farmers on improved method of vegetable cultivation based on teacher made test.

Equal weights were given to all items included, presuming that they are equally difficult to understand, apply and recall. Then they calculated the knowledge index as follows:

$$\text{Knowledge Index} = \frac{x_1 + x_2 + \cdots\cdots\cdots + x_n}{N} \times 100$$

$x_1$ = Number of correct answers of one practice which includes more than one question

$x_2$ = Number of correct answers of second practice

$N$ = Total number of questions put to a respondent to test her/his knowledge.

Singha et al. (1969) adopted the method of self-appraisal to determine the level of knowledge of Agricultural Extension Officers. It was based on the assumption that the individual will improve only if he recognises his own capacities and needs for improvement.

Jha and Sharma (1973) in order to know the amount of knowledge gained after training compared the scores of the respondents before-after and difference between these scores for each respondent was worked out. Per cent increase in knowledge was computed for each of the respondent using the formula $\frac{B-A}{A} \times 100$, where A and B were the scores before and after the training respectively.

Singh and Prasad (1974) measured knowledge by working out knowledge quotient as follows:

$$\text{Knowledge quotient} = \frac{\text{Obtained knowledge score}}{\text{Actual total score}} \times 100$$

This scoring technique was adopted for the present study.

Singh and Singh (1974) measured the knowledge of farmers using the following formula.

$$\text{Total score for each respondent} = \frac{x_1}{n} \times 100$$

$x_1$ = number of correct answers

n = Total number of questions

Gill and Sandhu (1981) measured the knowledge of farmers by calculating the average knowledge score of each area/ sub-area using following formula:

$$\text{Average knowledge score} \atop (\text{out of 1.00}) = \frac{\text{Total knowledge score}}{\text{Number of questions x Number of respondents}}$$

Here a correct answer was assigned a score of one and wrong answer was assigned a score of zero.

Popat et. al. (1985) developed a test to measure knowledge of farmers about groundnut production and this procedure was adopted in this study with slight modifications as given below:

The experts of the Kerala Agricultural University who wrote the script of the lessons and Assistant Directors of MPEDA who gave training to the peeling shed workers were consulted and the complete content of the course was obtained to compile question bank. Finally a set of 53 questions for knowledge test in the objective form were prepared. The questions were dichotomous with correct/incorrect type and yes/no type.

Item analysis: Thirty experts from College of Fisheries, CIFT and CMFRI were selected as judges for relevancy rating. They were asked to differentiate these 53 questions into three categories as most relevant, somewhat relevant and not relevant with weights 3, 2 and 1 respectively. The judged materials were

tabulated. The range of relevancy ratio was 1.2 to 3. The items with relevancy ratio above 2.1 (mean) were selected (Appendix I). In this way 30 items were selected for pretesting and were administered to 30 respondents prior to the preparation of the final schedule. The respondents were selected at random from other batches of trained peeling shed workers in Ernakulam district.

Item analysis yielded two kinds of information viz., index of item difficulty, index of item discrimination. The index of item difficulty indicated the extent to which an item was difficult, while the index of discrimination indicated the extent to which an item discriminates the well informed individual from the poorly informed ones.

Scores of value one and zero were given to correct and incorrect responses respectively for the dichotomous question. The maximum score was 30 and minimum was zero (Appendix II). After computing the total score obtained by each of the respondent for 30 items, they were arranged in the descending order of magnitudes on the basis of total scores. These 30 respondents were divided into three equal groups. Thus each group consisted of ten respondents and the groups were named as $G_1$, $G_2$ and $G_3$ respectively. For the purpose of item analysis the middle group was eliminated keeping the two extreme groups with high and low scores. The score range of these three groups was as follows:

$G_1$ = 28 to 24

$G_2$ = 24 to 20

$G_3$ = 20 to 14

The data pertaining to correct responses for all the items in respect of the two groups $G_1$ and $G_3$ were tabulated and difficulty and discrimination indices calculated.

Table 3. Calculation of difficulty and discrimination indices of knowledge items

| Item No. in the initial list | Frequencies of correct answer | | Total frequencies *$S_1$+$S_2$+$S_3$ | Percentage of respondents giving correct answer (p) | $E^{1/3}$ |
|---|---|---|---|---|---|
| | $S_1$ | $S_3$ | | | |
| 10 | 10 | 4 | 22 | 73.33 | .6 |
| 17 | 10 | 6 | 24 | 80 | .4 |

* $S_1$, $S_2$ and $S_3$ are frequencies of correct answer in the group $G_1$, $G_2$ and $G_3$ respectively

where, p = Index of item difficulty

$E^{1/3}$ = Index of item discrimination

$$E^{1/3} = \frac{S_1 - S_3}{N/3}$$

N = Total number of respondents in the sample

$E^{1/3}$ for the item 10 = $\frac{10-4}{30/3}$ = .6

Final selection of items: The selection of items in the format of the knowledge test was based on the following two criteria

a) Difficulty index - p

b) Discrimination index - $E^{1/3}$

The index of item difficulty was worked out as the percentage of the respondents answering an item correctly. The assumption in item index of difficulty was that the difficulty is linearly related to the level of respondent's knowledge about hygienic measures. The item with P-value ranging from 50 to 83.33 were considered for final selection of the knowledge test.

b) Discrimination index - $E^{1/3}$

For this the items with $E^{1/3}$ value between 0.3 to 0.8 were considered for the final format of knowledge test.

Thus final selection of items for knowledge test about the hygienic measures was made on the aforesaid criteria and finally out of 53 items, 20 items were selected which formed the actual format of the knowledge test (Appendix III).

Reliability: The split half method was used to test the reliability of the test. The 20 items of knowledge test were divided into two halves with odd numbered in one half and even numbered in the other. These were administered to 25 respondents randomly selected from the population exclusively for this purpose. Two sets of knowledge scores were obtained. The correlation co-efficient between these two sets of scores was computed (r = 0.83) which was found significant at one per cent level.

Scoring: The test consisted of 20 items. Each correct answer was given a score of one and the wrong answer a score of zero. The summation of scores for the correct answers for

all items of a particular respondent indicated his level of knowledge in scientific fish handling practices.

$$\text{Knowledge index} = \frac{\text{Total score obtained by respondent}}{\text{Total number of statements}} \times 100$$

Based on mean knowledge index and the standard deviation obtained by the trained peeling shed workers, the respondents were classified into three groups as follows:

| Sl.No. | Category | | Knowledge index |
|--------|----------|--|-----------------|
| 1 | Low | (mean -1 SD) | 71 and below |
| 2 | Medium | (mean ± 1 SD) | Between 72 and 92 |
| 3 | High | (mean + 1 SD) | 93 and above |

3.a.2. Perception about the quality of the product

Here the various factors that influence the final quality of the product were identified and statements which will reflect the influence of these factors on the final quality of the product were prepared. Perception of the peeling shed workers was measured using an arbitory scale developed for this purpose. The scale was formulated as follows:

Based on the review of relevant literature and discussion with experts in the field, six statements were constructed depicting the influence of various factors like quality of raw material, storage conditions, methods of handling, quality of water used in the plant, personnel hygiene of workers and general cleanliness in and around the peeling sheds, on the final quality of the product. The statements were rated for their degree of importance on a three point continum as follows:

| Category | Score |
|----------|-------|
| Most important | 3 |
| Important | 2 |
| Not important | 1 |

The score obtained for each item was added together to get the total perception score of a respondent. The mean perception scores for the participants and non-participants of the training programme were compared using t-test to answer for any significant difference.

An attempt was also made to find out which item is perceived as most important by all the respondents. For this the total score for each item of all the respondents were added and ranked based on their magnitude.

To find out whether the pattern of thinking was same for both trained and untrained group, rank correlation was also worked out.

On the basis of the mean perception score obtained by the trained peeling shed workers the respondents were classified as follows:

| Sl.No. | Category | Perception score |
|--------|----------|------------------|
| 1 | High | 17 and above |
| 2 | Low | Below 17 |

3.b. Independent variables

3.b.1. Age

The chronological age of the respondent was calculated

on the number of years completed from his/her date of birth
to the date of interview.

3.b.2. Education

For this study, education is operationalised as the level
of formal education undergone by the respondent till the time
of investigation.

Education was measured using the socio-economic status
scale developed by Trivedi (1963).

| Education | Score |
|---|---|
| Illiterate | 0 |
| Can read only | 1 |
| Can read and write | 2 |
| Primary | 3 |
| Middle school | 4 |
| High School | 5 |
| College and above | 6 |

3.b.3. Experience

Experience was considered as the number of years the
respondent had been engaged in peeling and related works.
Here the experience was divided into two as the experience
in peeling and experience in fish processing and total
experience was taken by adding both. In the present study
the total years of experience was taken as score.

3.b.4. Occupation

Occupation was considered as primary and secondary based

on the following criteria. Peeling was considered as the primary occupation and all other works except peeling were classified under the secondary occupation. Those respondents engaged in peeling as primary occupation were given a score of two and an additional score of one was given to persons who engaged in secondary occupation during the off season.

### 3.b.5. Income

Annual income has been operationally defined as the total earning of the respondent in an year, expressed in rupees obtained from both primary and secondary sources. The primary sources include the income from primary occupation and secondary sources include the income from other occupations. The gross annual income was taken and respondents were classified using the scale developed by Bawajir and Nandapurkar (1985) with slight modifications as given below:

| Category | Income scores |
|---|---|
| Upto Rs.1800 | 1 |
| 1801 to 2400 | 2 |
| 2401 to 3500 | 3 |
| 3501 to 4800 | 4 |
| 4801 and above | 5 |

### 3.b.6. Marital status

The scores assigned for marital status was as follows:

| Category | Score |
|---|---|
| Married | 1 |
| Not married | 2 |

3.b.7. Home

The scale developed by Bawajir and Nandapurkar (1985) was used.

| Type of home | Score |
|---|---|
| A. Mixed house | 1 |
| Kucha house | 2 |
| Pucca house | 3 |
| Constructed by stones | 4 |
| B. Lighting facilities | Score |
| Kerosene lamp with glass shade | 1 |
| Electricity | 4 |
| C. Ownership of house | Score |
| House of rent | 1 |
| Own house | 2 |

The score obtained for this variable was the total of the scores obtained for A, B and C.

3.b.8. Family

For measuring this variable the scale developed by Bawajir and Nandapurkar (1985) was used.

| A. Family type | Score |
|---|---|
| Single | 1 |
| Joint | 2 |
| B. Family size | Score |
| Upto 5 | 1 |
| 5 and above | 2 |

The score obtained for this variable was the total of the scores obtained for A and B.

3.b.9. Mass media exposure

To find out mass media exposure the following mass media sources were listed and the respondents were asked to indicate as to how often they used each of these sources.

1. Newspaper

2. Radio

3. Radio (rural)

4. T.V.

5. Magazines and other publications

Scores given based on the frequencies were as follows:

| Frequency | Scores |
|---|---|
| Two or more times a week | 4 |
| Once in a week | 3 |
| Once in a fortnight | 2 |
| Once in a month | 1 |
| Never | 0 |

Mass media score for each respondent was calculated by summing up the scores obtained depending on frequencies of utilisation of these media.

3.b.10. Extension orientation

Extension orientation refers to the extent of contact of a peeling shed worker with different extension agencies and his/her participation in various extension activities or

programmes like seminars, group discussion, meetings, etc.

For the present study the procedure developed by Balan (1987) was used with slight modifications.

The extension orientation was measured by summing up the scores for extension contact and extension participation. The extension contact was computed by assigning scores of 8, 4, 2, 1 and 0 for responses as once in a week, once in a fortnight, once in a month, once in an year and never respectively with regard to his contact with each extension personnel such as fisheries officer, Assistant Directors, Supervisors and others. The scores for all the items were added up for arriving at the total extension contact score.

The extension activities selected to evaluate extension participation and the pattern of scoring based on the frequency of participation are given below:

### Extension activities

Campaign

Seminar

Film

Group meetings

Others

| Frequency of participation | Scores |
|---|---|
| Whenever conducted | 3 |
| Frequently | 2 |
| Sometimes | 1 |
| Never | 0 |

The scores were added up for all the extension activities, on the basis of frequencies for arriving at the total extension participation score for each respondent.

3.b.11. Indebtedness

Indebtedness was operationally defined as the total loan in terms of money a peeling shed worker owes to various money lending sources at the time of investigation.

A simple schedule was developed to measure the indebtedness. The respondents were categorised into the following groups on the basis of the total debt they had at the time of interview and the scores assigned are as follows:

Item

| No debt | - 0 |
| Debt upto Rs.250 | - 1 |
| Debt upto Rs.500 | - 2 |
| Debt upto Rs.1000 | - 3 |
| Debt upto Rs.2000 | - 4 |
| Debt above Rs.2000 | - 5 |

3.b.12. Level of aspiration

Level of aspiration was operationally defined as the peeling shed workers level of wishes and hopes to attain higher standards of living.

Scale developed by Muthaya (1971) and adopted by Sudha (1987) was used in this study with necessary modifications. It was a seven point ladder scale, step seven indicating high satisfaction and step one indicating low satisfaction. Seven

statements reflecting the peeling shed workers' wishes and hopes to attain higher standards of living were prepared. The individual was asked where on the ladder he/she felt stood at present and where he/she thought would stand after five years for each of the seven statements. The steps were given score ranging from one to seven. Thus for each respondent two types of scores, one for the present and one for the future were obtained. The average of these two respective scores for the seven statements were taken and the difference between these two averages represent level of aspiration.

c. Motivational factors

For the present study five motives, economic motive, affiliation motive, innovativeness motive, prestige motive and achievement motive were selected. Statements reflecting the different motives were prepared. These statements were given to experts to check the suitability of the statements. Based on their opinion the statements were modified and finalised as follows.

Economic motive - I participated in training programme because I hoped to get more money in those days.

Affiliation motive - I participated in training because I can influence other people.

Innovativeness motive - I participated in training programme because I will get more knowledge about scientific fish handling practices.

Prestige motive - I participated in training programme because I consider it as a prestige factor.

Achievement motive - I participated in training programme because I expect to get other jobs by attending the training programme.

Paired comparison technique was used to find out the relative position of the motives of the respondent. From the responses of the paired statements frequency matrix (f-matrix) proportion matrix (p-matrix) and Z-matrix were framed. Then the scale value for each statement was obtained to order the different motives along a continum.

4. Methods of investigation

The draft interview schedule was pre-tested and with necessary modifications it was used for the investigation. The data were collected from the peeling shed workers by personal interview using this structured interview schedule prepared for the purpose. The schedule was translated into Malayalam before administering to the respondents. The schedule is given in Appendix IV.

5. Statistical tools used

Percentage

Simple comparisons were done using percentage values.

t-test

Student's t-test was employed to compare the mean scores on knowledge and perception about the quality of the product

of trained and untrained peeling shed workers using the following formula

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\dfrac{n_1 s_1^2 + n_2 s_2^2}{n_1 + n_2 - 2} \left(\dfrac{1}{n_1} + \dfrac{1}{n_2}\right)}}$$

where

$\bar{x}_1$ = mean of sample 1

$\bar{x}_2$ = mean of sample 2

$s_1$ = standard deviation of sample 1

$s_2$ = standard deviation of sample 2

$n_1$ = size of sample 1

$n_2$ = size of sample 2

$t$ = computed value for t

## Simple correlation analysis

Linear correlation co-efficient was calculated to find out the association between the dependent variables (y) and independent variables (x). The formula used was

$$r = \frac{\sum xy - \dfrac{(\sum x)(\sum y)}{n}}{\sqrt{\left[\sum x^2 - \dfrac{(\sum x)^2}{n}\right]\left[\sum y^2 - \dfrac{(\sum y)^2}{n}\right]}}$$

The significance of r was also tested.

x = Independent variables

y = Dependent variables

n = Number of observations

## Rank order correlation

Rank order correlation was computed to find out whether the pattern of thinking with regard to the perception about the quality of the product by the trained and untrained group are the same or not.

The following formula was used.

$$r = 1 - \frac{6 \le d^2}{n(n^2-1)}$$

where

d = difference between the ranks

n = size of sample

## Multiple correlation and regression analysis

The multiple correlation co-efficient (R) represented the zero order correlation between the actual dependent variable scores and predicted dependent variable scores obtained from the independent variables under consideration. If the predicted dependent variable score for each peeling shed worker would exactly correspond to his/her actual dependent variable score obtained in the study, the multiple correlation coefficient would be unity.

The square of the multiple correlation coefficient ($R^2$) indicated the proportion of the total variation explained by the independent variables in the regression equation taken together.

Since simple relationship of variables could not give an evidence of how much they actually contribute to the dependent

variable, the multiple regression analysis was worked out.

The partial regression coefficients or partial b's were obtained for the variables included in the regression equation. The following prediction equation was used to determine the multiple regression.

$$y_i = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + b_7 x_7 + b_8 x_8 + b_9 x_9 + b_{10} x_{10} + b_{11} x_{11} + b_{12} x_{12}$$

i = 1, 2. in the case of trained and untrained peeling shed workers

where,

a = constant

bi = the coefficient which appears in the equation which represents the amount of change in $y_i$ (i=1,2) that can be associated with unit increase in $x_i$ (i = 1, 2, 3 ...... 12) with the remaining independent variables held fixed. This is referred to as partial regression coefficient or partial 'b'.

$y_1$ = knowledge about the hygienic measures

$y_2$ = perception about the quality of the product

$x_1$ = Age

$x_2$ = Education

$x_3$ = Total experience

$x_4$ = Occupation

$x_5$ = Annual income

$x_6$ = Marital status

$x_7$ = Home

$x_8$ = Family

$x_9$ = Mass media exposure

$x_{10}$ = Extension orientation

$x_{11}$ = Indebtedness

$x_{12}$ = Level of aspiration

## Step-wise regression analysis

This was done to find out the relative effect of the independent variables in predicting the dependent variable and for elimination of unimportant variables. The best fitting regression equation of dependent variables on independent variables was predicted by applying step-wise regression as suggested by Draper and Smith (1966).

## Operational defenitions of the terms used

Training programme:  In this study training programme is
operationally defined as the training conducted by the
MPEDA for the peeling shed workers on hygienic measures
to be followed in peeling sheds.

Peeling sheds:  Peeling sheds are the primary processing
centres where the freshly caught prawns are brought from
landing centres, washed, iced, peeled and deveined for
sending it to the processing plants for export.

Trained peeling shed workers:  Trained peeling shed workers
are operationally defined as the workers of the peeling
sheds who participated the training programme offered
by MPEDA.

Untrained peeling shed workers:  Untrained peeling shed wor-
kers are the workers of the peeling sheds who have not
participated in training programme conducted by MPEDA.

Knowledge:  Knowledge is operationally defined as the knowledge
of the peeling shed workers about different subject
matter areas in fisheries included for the training
programme.

Perception:  Perception is defined as the meaningful sensa-
tion of the peeling shed worker about the importance of
various factors that will determine the quality of the
final product.

Quality of the product: It is the degree of excellence of
the product that have significance in determining the
degree of acceptability of that product to the buyer.

Black spot: Is an enzymatic change in which the aromatic
amino acid tyrosine is oxidised into a very highly
insoluble dark pigment called melanine.

Motivational factors: The various factors which induces the
peeling shed workers to attend the training programme
organised by MPEDA.

# Results

# RESULTS

The results of the study in accordance with the objectives are presented under the following sub-heads in this chapter.

I. Level of knowledge of the trained peeling shed workers about hygienic measures and its comparison with untrained peeling shed workers.

II. Perception of the trained peeling shed workers about the quality of the product and its comparison with untrained peeling shed workers.

III. Influence of socio-psychological and economic characters of peeling shed workers on their level of knowledge about hygienic measures.

IV. Influence of socio-psychological and economic characters of peeling shed workers on their perception about the quality of the product.

V. Motivational factors responsible for attending the training programme by the peeling shed workers.

I. Level of knowledge of the trained peeling shed workers about hygienic measures and its comparison with untrained peeling shed workers

The trained and untrained peeling shed workers were classified according to their knowledge levels into low, medium and high, taking into account the mean knowledge score and standard deviation. It is evident from table 4 that out of the total trained peeling shed workers only 15 (25 per cent)

came within the group of low knowledge level while all (100 per cent) the untrained peeling shed workers belonged to this level.

Table 4. Distribution of trained and untrained peeling shed workers on level of knowledge

| Sl. No. | Category | Trained peeling shed workers | | Untrained peeling shed workers | |
|---------|----------|------------------------------|-----------|--------------------------------|----------|
| | | Frequency | Per cent | Frequency | Per cent |
| 1 | Low (71 and below) | 15 | 25 | 60 | 100 |
| 2 | Medium (72-92) | 32 | 53.33 | 0 | - |
| 3 | High (93 and above) | 13 | 21.66 | 0 | - |

Majority of the trained peeling shed workers (53.33 per cent) came under the category of medium knowledge level. The remaining 13 (21.66 per cent) came under high knowledge level. The diagrammatic representation is given in figure 2.

The mean knowledge score of the trained peeling shed workers was 81.53 with a standard deviation of 10.94 and that of the untrained workers was 20.42 with a standard deviation of 9.0. The difference between the two mean values was compared using t-test which revealed a significant difference at one per cent level which means that the knowledge level of the trained and untrained peeling shed workers differed significantly, the trained workers scoring a higher knowledge.

FIG : 2    KNOWLEDGE LEVELS OF TRAINED AND UNTRAINED

PEELING SHED WORKERS

TRAINED PEELING SHED
WORKERS (n = 60)

UNTRAINED PEELING SHED
WORKERS (n = 60)

SCALE 1CM = 10 PERCENTAGE

PERCENT

100
90
80
70
60
50
40
30
20
10

LOW        MEDIUM        HIGH
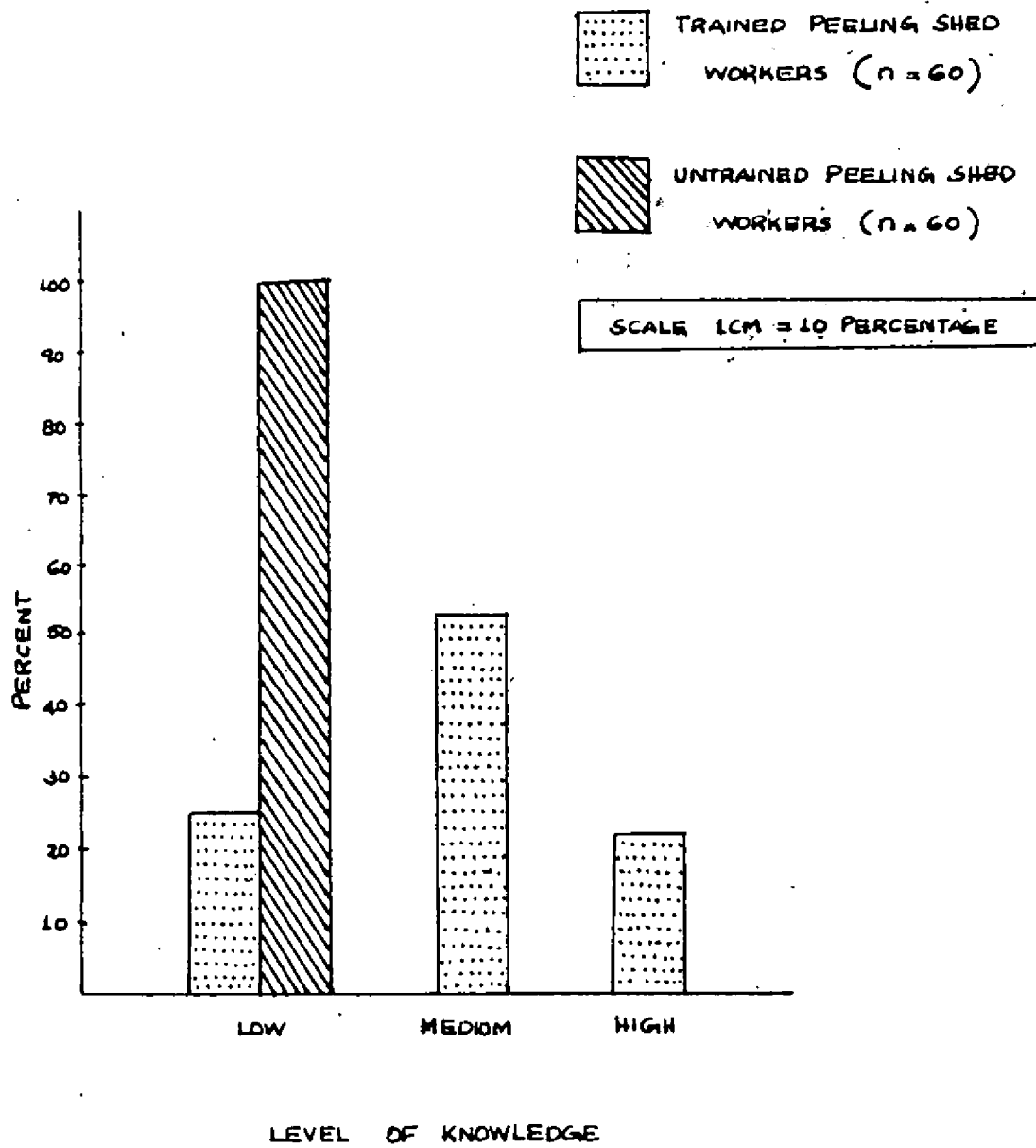
LEVEL OF KNOWLEDGE

Table 5. Comparison of mean knowledge levels of trained
and untrained peeling shed workers

| Variable | Mean score ± S.D. | | t value |
| | Trained peel-ing shed wor-kers n=60 | Untrained peeling shed workers n=60 | |
| Knowledge | 81.55 ± 10.94 | 20.42 ± 9.0 | 33.16** |

** Significant at 1 per cent level

II. Perception of the trained peeling shed workers about
the quality of the product and its comparison with
that of the untrained workers

Based on the mean perception score of the trained

peeling shed workers, the respondents were classified into

high and low perception level groups.

It could be seen from Table 6 that 40 (66.67 per cent)

of the trained peeling shed workers and 5 (8.33 per cent) of

untrained peeling shed workers belonged to high perception

group.

Table 6. Distribution of trained and untrained peeling shed
workers based on level of perception about the
quality of the product

| Sl. No. | Category | Trained peeling shed workers (n=60) | | Untrained peeling shed workers (n=60) | |
| | | Fre-quency | Per cent | Fre-quency | Per cent |
| 1 | High (17 and above) | 40 | 66.67 | 5 | 8.33 |
| 2 | Low (below 17) | 20 | 33.33 | 55 | 91.67 |

Majority of the untrained workers 55 (91.67 per cent) belonged to low perception group while only 20 (33.33 per cent) of the trained workers belonged to this group. The diagramatic representation of these facts is given in Figure 3.

Table 7. Comparison of mean perception scores of trained and untrained peeling shed workers

| Variable | Mean score ± S.D. | | t value |
| | Trained peeling shed workers (n=60) | Untrained peeling shed workers (n=60) | |
| --- | --- | --- | --- |
| Perception | 16.95 ± 1.36 | 13.52 ± 2.66 | 8.8189** |

** Significant at one per cent level

The mean perception score of the trained peeling shed workers was 16.95 with a standard deviation of 1.36 and that of untrained peeling shed workers was 13.52 with a standard deviation of 2.66. The t-test gave a value of 8.8189 indicating a significant difference in the perception about the quality of the product between trained and untrained peeling shed workers.

The peeling shed workers perceived the factor 'quality of the raw material' as the most important in determining the final quality of the product. This was followed by other factors, such as 'storage conditions', 'methods of handling' and 'general cleanliness in and around the peeling sheds'.

Rank correlation was worked out to find out the similarity if any, in the pattern of thinking by the trained and untrained group.

FIG :3  LEVEL OF PERCEPTION OF THE TRAINED AND UNTRAINED PEELING SHED
WORKERS ABOUT THE QUALITY OF THE PRODUCT



TRAINED PEELING SHED
WORKERS  (n = 60)

UNTRAINED PEELING SHED
WORKERS  (n = 60)

SCALE  1 CM = 10 PERCENTAGE

PERCENT

100
90
80
70
60
50
40
30
20
10

LOW        HIGH

LEVEL OF PERCEPTION
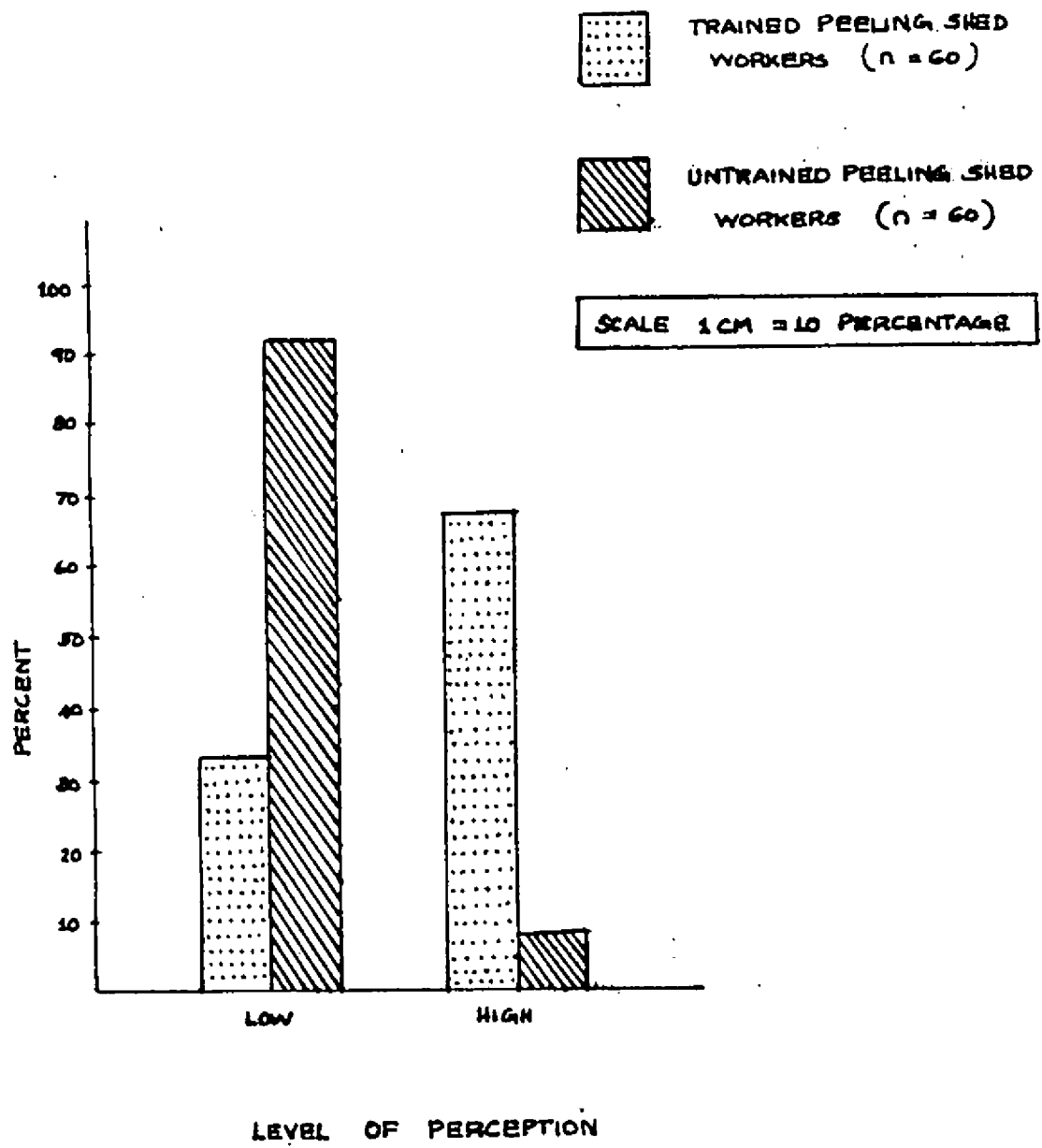
The results are furnished in Table 8.

Table 8. Rank correlation showing the pattern of thinking
of trained and untrained peeling shed workers

| | Statement numbers | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Trained peeling shed workers (n=60) | 1 | 2 | 2.5 | 2.3 | 5 | 6 |
| Untrained peeling shed workers (n=60) | 1 | 2 | 3 | 4.5 | 4.5 | 6 |

$r^2 = 0.999^{**}$

** Significant at one per cent level

The rank order correlation was significant ($r^2 = 0.999$) showing thereby that the pattern of thinking are same for both trained and untrained peeling shed workers.

III. Influence of socio-psychological and economic characters of peeling shed workers on level of knowledge about hygienic measures

The correlation co-efficients showing the relationship between knowledge of peeling shed workers about the hygienic measures and the twelve independent variables are furnished in Table 9.

Age showed negative and significant association with the knowledge level in the case of trained peeling shed workers whereas it had nonsignificant association with that of the untrained peeling shed workers.

Education was found to have positive and significant association with the level of knowledge about hygienic measures

of trained peeling shed workers, while in the case of untrained workers it did not show any significant association with the level of knowledge.

Table 9. Correlations between the independent variables and the level of knowledge of the peeling shed workers about the hygienic measures

| Variable No. | Variable | Correlation coefficient 'r' | |
| --- | --- | --- | --- |
| | | Trained Peeling shed workers | Untrained Peeling shed workers |
| $x_1$ | Age | -0.305* | 0.053[NS] |
| $x_2$ | Education | 0.400** | 0.040[NS] |
| $x_3$ | Total experience | -0.088[NS] | 0.013[NS] |
| $x_4$ | Occupation | -0.286* | 0.063[NS] |
| $x_5$ | Annual income | -0.126[NS] | 0.183[NS] |
| $x_6$ | Marital status | 0.233[NS] | -0.018[NS] |
| $x_7$ | Home | 0.234[NS] | -0.017[NS] |
| $x_8$ | Family | -0.330** | -0.028[NS] |
| $x_9$ | Mass media exposure | 0.114[NS] | -0.073[NS] |
| $x_{10}$ | Extension orientation | -0.056[NS] | 0.514** |
| $x_{11}$ | Indebtedness | -0.026[NS] | 0.100[NS] |
| $x_{12}$ | Level of aspiration | 0.010[NS] | 0.082[NS] |

* Significant at five per cent level of probability
** Significant at one per cent level of probability
NS = Not significant

Occupation and family were found to have negative and significant association with the level of knowledge of trained peeling shed workers, whereas it showed non-significant association with that of untrained peeling shed workers.

FIG 4 : DIAGRAMMATIC REPRESENTATION OF CORRELATION BETWEEN LEVEL OF KNOWLEDGE AND INDEPENDENT VARIABLES OF RESPONDENTS



POSITIVE SIGNIFICANT

NEGATIVE SIGNIFICANT

POSITIVE NONSIGNIFICANT

NEGATIVE NONSIGNIFICANT
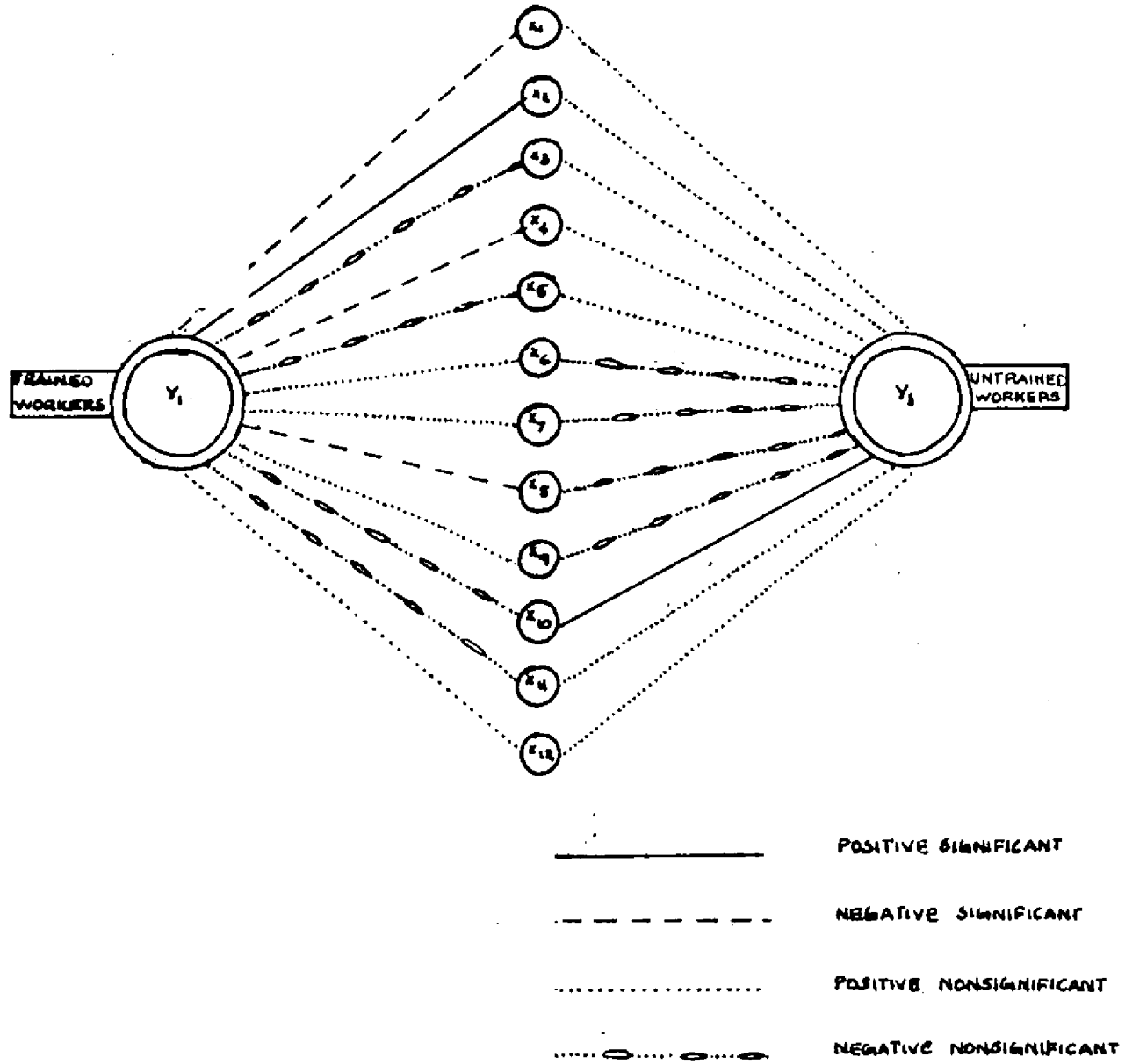
Extension orientation indicated non-significant relation-
ship with level of knowledge of trained peeling shed workers
whereas in the case of untrained workers it had a positive
and significant relation.

Experience, income, marital status, home, mass media
exposure, indebtedness and level of aspiration were found to
have non-significant association with the level of knowledge
of both trained and untrained peeling shed workers.

The correlation co-efficients between independent varia-
bles taken two at a time, of trained and untrained peeling
shed workers are given in Tables 10 and 11 respectively.

Multiple linear regression analysis, showing the contri-
bution of the independent variables acting together, in the
variations in knowledge of trained peeling shed workers were
also worked out and the results are furnished in Table 12.

It was found that 47.01 per cent of the variation in the
knowledge of the trained peeling shed workers was due to
12 variables included, as indicated by the co-efficient of
determination ($R^2$). This variation was found to be signifi-
cant as explained by the F-value.

The regression equation is $Y_1 = 104.899 + -0.224 \ x_1 +
1.400 \ x_2 + 0.023 \ x_3 + -2.595 \ x_4 + -1.244 \ x_5 + 0.104 \ x_6 +
1.893 \ x_7 + -5.752 \ x_8 + 0.392 \ x_9 + -0.089 \ x_{10} + -0.152 \ x_{11} +
-0.197 \ x_{12}$

The best fitting regression equation was obtained through
the step-wise regression analysis, the results of which are
given in Table 13.

Table 10. Correlation coefficients between the independent variables of trained peeling shed workers

| Attributes | $x_1$ | $x_2$ | $x_3$ | $x_4$ | $x_5$ | $x_6$ | $x_7$ | $x_8$ | $x_9$ | $x_{10}$ | $x_{11}$ | $x_{12}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x_1$ | 1.000 | -0.637** | 0.467 | 0.143 | -0.049 | -0.585** | -0.107 | -0.187* | -0.453** | 0.016 | 0.211 | 0.012 |
| $x_2$ | | 1.000 | -0.250* | -0.494** | -0.019 | 0.585** | 0.052 | 0.025 | 0.388** | -0.266* | 0.124 | 0.127 |
| $x_3$ | | | 1.000 | -0.183 | 0.147 | -0.446** | -0.125 | -0.260* | -0.126 | -0.120 | 0.270* | 0.058 |
| $x_4$ | | | | 1.000 | 0.166 | -0.274* | 0.006 | 0.115 | -0.251* | 0.038 | -0.078 | -0.103 |
| $x_5$ | | | | | 1.000 | 0.081 | 0.236 | 0.182 | -0.123 | -0.144 | 0.213 | -0.023 |
| $x_6$ | | | | | | 1.000 | -0.000 | 0.123 | 0.136 | -0.090 | 0.063 | -0.064 |
| $x_7$ | | | | | | | 1.000 | 0.221 | 0.493** | 0.103 | 0.031 | 0.002 |
| $x_8$ | | | | | | | | 1.000 | 0.247 | -0.049 | -0.034 | 0.009 |
| $x_9$ | | | | | | | | | 1.000 | 0.037 | -0.030 | 0.096 |
| $x_{10}$ | | | | | | | | | | 1.000 | -0.206 | -0.201 |
| $x_{11}$ | | | | | | | | | | | 1.000 | 0.161 |
| $x_{12}$ | | | | | | | | | | | | 1.000 |

* Significant at five per cent level    ** Significant at one per cent level

$x_1$ = Age

$x_2$ = Education

$x_3$ = Experience

$x_4$ = Occupation

$x_5$ = Income

$x_6$ = Marital status

$x_7$ = Home

$x_8$ = Family

$x_9$ = Mass media exposure

$x_{10}$ = Extension orientation

$x_{11}$ = Indebtedness

$x_{12}$ = Level of aspiration

Table 11. Correlation coefficients between the independent variables of untrained peeling shed workers

| Attri-butes | $x_1$ | $x_2$ | $x_3$ | $x_4$ | $x_5$ | $x_6$ | $x_7$ | $x_8$ | $x_9$ | $x_{10}$ | $x_{11}$ | $x_{12}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x_1$ | 1.000 | -0.182 | 0.493** | -0.052 | 0.300* | -0.592** | 0.087 | 0.152 | 0.017 | 0.224 | 0.226 | -0.235 |
| $x_2$ | | 1.000 | -0.164 | -0.196 | -0.029 | 0.153 | 0.409** | 0.153 | 0.577** | -0.039 | -0.105 | -0.332** |
| $x_3$ | | | 1.000 | 0.080 | 0.485** | -0.290* | -0.003 | 0.058 | -0.045 | 0.206 | 0.464** | -0.116 |
| $x_4$ | | | | 1.000 | 0.163 | -0.013 | -0.151 | -0.050 | -0.102 | -0.205 | 0.012 | 0.286* |
| $x_5$ | | | | | 1.000 | -0.235 | 0.282* | -0.088 | 0.271* | 0.377** | 0.272* | -0.203 |
| $x_6$ | | | | | | 1.000 | -0.044 | -0.092 | 0.012 | -0.151 | -0.081 | 0.212 |
| $x_7$ | | | | | | | 1.000 | 0.077 | 0.425** | 0.174 | -0.055 | -0.297* |
| $x_8$ | | | | | | | | 1.000 | 0.127 | 0.026 | 0.083 | -0.150 |
| $x_9$ | | | | | | | | | 1.000 | 0.081 | 0.064 | -0.339** |
| $x_{10}$ | | | | | | | | | | 1.000 | 0.399** | -0.297* |
| $x_{11}$ | | | | | | | | | | | 1.000 | 0.270* |
| $x_{12}$ | | | | | | | | | | | | 1.000 |

\* Significant at five per cent level of probability
\*\* Significant at one per cent level of probability

Table 12. Regression coefficients for the level of knowledge of the trained peeling shed workers and independent variables (n=60)

| | Variables | Regression coefficients | S.E. of 'b' | t value |
|---|---|---|---|---|
| $x_1$ | Age | -0.224 | 0.147 | 1.513[NS] |
| $x_2$ | Education | 1.400 | 1.170 | 1.197[NS] |
| $x_3$ | Experience | 0.023 | 0.281 | 0.085[NS] |
| $x_4$ | Occupation | -2.595 | 4.169 | 0.622[NS] |
| $x_5$ | Income | -1.244 | 1.267 | 0.981[NS] |
| $x_6$ | Marital status | 0.104 | 4.107 | 0.025[NS] |
| $x_7$ | Home | 1.893 | 0.571 | 3.317[**] |
| $x_8$ | Family | -5.752 | 1.499 | 3.837[**] |
| $x_9$ | Mass media exposure | -0.392 | 0.288 | 1.358[NS] |
| $x_{10}$ | Extension orientation | -0.085 | 0.145 | 0.584[NS] |
| $x_{11}$ | Indebtedness | -0.152 | 0.689 | 0.220[NS] |
| $x_{12}$ | Level of aspiration | -0.197 | 1.351 | 0.146[NS] |

$R^2 = 0.4701$  $F = 3.474[**]$

S.E. = Standard error  b = Regression coefficient

\* Significant at five per cent level

\*\* Significant at one per cent level

NS Not significant

Table 13.  Step-wise regression analysis showing the final
step with all the significant variables included
in the study of level of knowledge of the trained
peeling shed workers about the hygienic measures

| | Variables | Partial regression coefficients | S.E. of 'b' | t value |
|---|---|---|---|---|
| $x_2$ | Education | 2.4095 | 0.6290 | 3.831** |
| $x_7$ | Home | 1.3808 | 0.4633 | 2.980** |
| $x_8$ | Family | -5.8552 | 1.3434 | -4.352** |

$R^2 = 0.4062$ $\qquad$ $F = 12.7738$

* Significant at five per cent level of probability
** Significant at one per cent level of probability

Of the total variation of 47.01 per cent explained by
all the variables together, 40.63 per cent was contributed by
three variables namely education ($x_2$), Home ($x_7$) and family
($x_8$). The variations contributed by these three variables
were significant as indicated by the F-value.

The final regression equation is as follows:

$Y_1 = 84.78 + 2.4095 \, x_2 + 1.3808 \, x_7 + -5.8552 \, x_8$

The results showed that a unit increase in the education
of peeling shed workers resulted an increase of 2.4095 unit of
their knowledge about the hygienic measures, other factors
being kept constant. Similarly with a unit increase in home
their knowledge would increase by 1.3808 unit and a decrease
of 5.8552 unit in the knowledge would be brought by a unit
increase of family.

The relationship between the independent variables and the knowledge of the untrained peeling shed workers and the efficiency of these variables in predicting the variations on the dependent variable are presented in Table 14.

Twelve variables taken together for the multiple regression analysis jointly explained 41.82 per cent of the variation in the knowledge of the untrained peeling shed workers which was found significant as explained by F value.

Table 14.  Regression coefficients for the level of knowledge of the untrained peeling shed workers and independent variable (n=60)

| | Variables | Partial regression coefficients | S.E. of 'b' | t value |
|---|---|---|---|---|
| $x_1$ | Age | -0.083 | 0.121 | 0.684 |
| $x_2$ | Education | 1.734 | 0.784 | 2.211* |
| $x_3$ | Experience | -0.169 | 0.188 | -0.900 |
| $x_4$ | Occupation | 2.696 | 2.264 | 1.191 |
| $x_5$ | Income | 0.979 | 1.327 | 0.738 |
| $x_6$ | Marital status | 0.475 | 3.741 | 0.127 |
| $x_7$ | Home | 0.528 | 0.551 | -0.958 |
| $x_8$ | Family | 0.110 | 1.345 | -0.082 |
| $x_9$ | Mass media exposure | -0.390 | 0.290 | -1.342 |
| $x_{10}$ | Extension orientation | 1.787 | 0.376 | 4.758** |
| $x_{11}$ | Indebtedness | -0.197 | 0.721 | -0.273 |
| $x_{12}$ | Level of aspiration | 2.279 | 1.232 | 1.850 |

$R^2 = 0.4182$ $\qquad$ $F = 2.816**$

\* Significant at five per cent level
\*\* Significant at one per cent level

The regression equation is

$$Y_1 = 2.477 + -0.083\ x_1 + 1.734\ x_2 + -0.169\ x_3 + 2.696\ x_4 +$$
$$0.979\ x_5 + 0.475\ x_6 + -0.528\ x_7 + -0.110\ x_9 +$$
$$-0.390\ x_9 + 1.787\ x_{10} + -0.197\ x_{11} + 2.279\ x_{12}$$

The results of the step-wise regression analysis is shown in Table 15.

Table 15. Step-wise regression analysis showing the final step with all the significant variables included in the study of level of knowledge of untrained peeling shed workers

| | Variable | Partial regression coefficients | S.E. of 'b' | t value |
|---|---|---|---|---|
| $x_{10}$ | Extension orientation | 1.4057 | 0.3082 | 4.561** |

$R^2 = 0.2639$　　　　　　　　　$F = 10.226$

** Significant at one per cent level

It could be seen from the table that out of the total 41.82 per cent variations explained by the independent variables together, 26.39 per cent was explained by Extension orientation $(x_{10})$. The final regression is

$$Y_1 = 18.6361 + 1.4057 \, x_{10}$$

The above results showed that a unit increase in extension orientation of untrained peeling shed workers resulted in an increase of 1.4057 unit of their knowledge about the hygienic measures, other factors being kept constant.

IV. Influence of socio-psychological and economic factors of peeling shed workers on the perception about the quality of the product

The correlation coefficients showing the relationship between perception about the quality of peeling shed workers and the independent variables selected for the study are given in Table 16.

Table 16. Correlation between the independent variables and
the perception of the peeling shed workers about
the quality of the product

| Varia-ble No. | Independent variables | Correlation coefficient 'r' | |
|---|---|---|---|
| | | Trained peeling shed workers | Untrained peeling shed workers |
| $x_1$ | Age | -0.267* | -0.383** |
| $x_2$ | Education | 0.439** | 0.033 NS |
| $x_3$ | Experience | -0.151 NS | -0.040 NS |
| $x_4$ | Occupation | -0.395** | -0.039 NS |
| $x_5$ | Income | -0.067 NS | -0.040 NS |
| $x_6$ | Marital status | 0.219 NS | 0.071 NS |
| $x_7$ | Home | 0.206 NS | 0.066 NS |
| $x_8$ | Family | -0.162 NS | 0.039 NS |
| $x_9$ | Mass media exposure | 0.142 NS | -0.031 NS |
| $x_{10}$ | Extension orientation | -0.182 NS | 0.211 NS |
| $x_{11}$ | Indebtedness | 0.002 NS | 0.009 NS |
| $x_{12}$ | Level of aspiration | -0.039 NS | 0.146 NS |

* Significant at five per cent level of probability
** Significant at one per cent level of probability
NS= Not significant

Age showed negative and significant association with the perception of both trained and untrained peeling shed workers.

Education was found to have positive and significant association with the perception of trained peeling shed workers while it indicated non-significant association in the case of untrained workers.

Occupation was negatively and significantly associated with the perception of the trained peeling shed workers about the quality of the product. In the case of untrained peeling shed workers it was non-significant.

Experience, income, marital status, home, family, mass media exposure, extension orientation, indebtedness and level

FIG. 5 : DIAGRAMMATIC REPRESENTATION OF CORRELATION BETWEEN LEVEL OF PERCEPTION AND INDEPENDENT VARIABLES OF RESPONDENTS
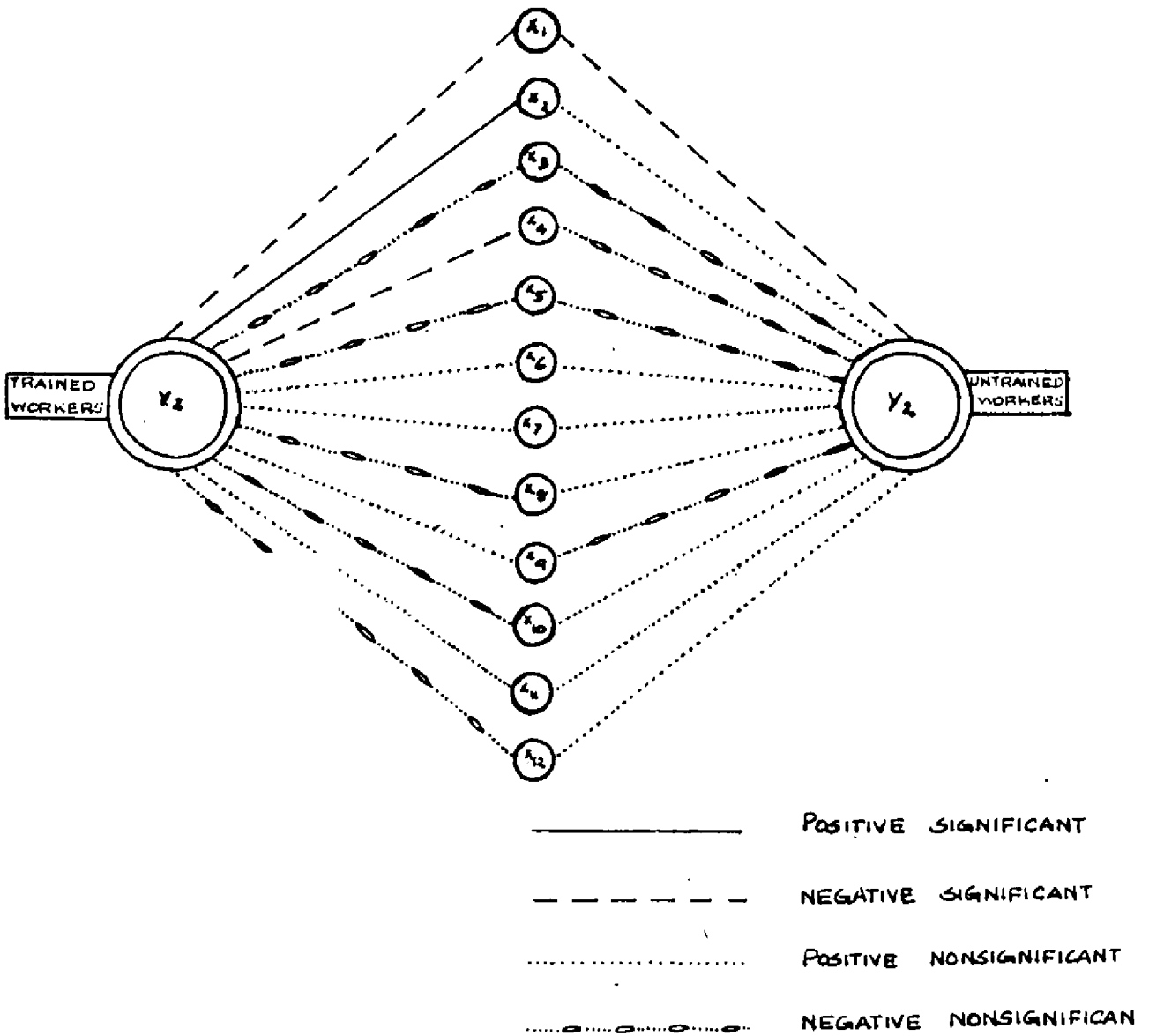
of aspiration failed to reveal any significant association
with the perception of the peeling shed workers about the
quality of the product.

The results of the multiple regression analysis showing
the contribution of the independent variables acting together
in the variations in perception of the trained peeling shed
workers are furnished in Table 17.

Table 17. Regression co-efficients for the perception of
the trained peeling shed workers and independent
variables (n=60)

| | Variables | Regression coefficients | S.E. of 'b' | t value |
|---|---|---|---|---|
| $x_1$ | Age | -0.0176 | 0.019 | -0.907 |
| $x_2$ | Education | 0.1583 | 0.154 | 1.028 |
| $x_3$ | Experience | -0.0552 | 0.037 | -1.494 |
| $x_4$ | Occupation | -1.3321 | 0.549 | -2.319* |
| $x_5$ | Income | -0.0035 | 0.167 | -0.021 |
| $x_6$ | Marital status | -0.6089 | 0.541 | -1.126 |
| $x_7$ | Home | 0.1746 | 0.075 | 2.325* |
| $x_8$ | Family | -0.3538 | 0.197 | -1.793 |
| $x_9$ | Mass media exposure | -0.0481 | 0.038 | -1.267 |
| $x_{10}$ | Extension orientation | -0.0321 | 0.019 | -1.684 |
| $x_{11}$ | Indebtedness | 0.0087 | 0.091 | 0.096 |
| $x_{12}$ | Level of aspiration | -0.1913 | 0.178 | -1.077 |

$R^2 = 0.4059$          $F = 2.676**$
* Significant at five per cent level
** Significant at one per cent level

As evident from table 17, 40.59 per cent of the variation
in the dependent variable was explained by the 12 independent
variables taken together ($R^2 = 0.4059$). This variation was
found to be significant as explained by the F-value. The
multiple regression equation obtained was

$$Y_2 = 23.292 + -0.018 \, x_1 + 0.159 \, x_2 + 0.055 \, x_3 + -1.382 \, x_4 +$$
$$-0.004 \, x_5 + -0.609 \, x_6 + 0.173 \, x_7 + -0.354 \, x_8 +$$
$$-0.048 \, x_9 + -0.032 \, x_{10} + 0.009 \, x_{11} + -0.191 \, x_{12}$$

The result of the step-wise regression analysis is given in table 18.

Of the total variation of 40.59 per cent, explained by 12 independent variables together, 27.09 per cent of the variation in the dependant variable was explained by education $(x_2)$, occupation $(x_4)$ and home $(x_7)$, other factors being kept constant

Table 18.  Step-wise regression analysis showing the final step with all the significant variables included in the study of perception about the quality of the product of trained peeling shed workers

| | Variables | Partial regression coefficients | S.E. of 'b' | t value |
|---|---|---|---|---|
| $x_2$ | Education | 0.2340 | 0.0997 | 2.347[a] |
| $x_4$ | Occupation | -0.8545 | 0.4612 | 1.8527 |
| $x_7$ | Home | 0.1045 | 0.0623 | 1.677 |

$$R^2 = 0.2709 \qquad\qquad F = 6.9385**$$

The final regression equation is as follows:
$$Y_2 = 17.6741 + 0.2340 \, x_2 + -0.8545 \, x_4 + 0.1045 \, x_7$$

The results indicated that a unit increase in the education of trained peeling shed workers resulted an increase of 0.2340 unit of their perception about the quality of the product, other factors being kept constant. Likewise a decrease of 0.8545 unit and an increase of 0.1045 in the dependent variables was brought out by a unit increase in occupation and home respectively for the trained peeling shed workers.

The results of the multiple regression analysis indicating the contribution of independent variables acting together in the variation of perception about the quality of the product of untrained peeling shed workers are given in table 19.

Table 19. Regression coefficients for the perception about the quality of the product of the untrained peeling shed workers and independent variables (n=60)

| | Variables | Regression coefficients | S.E. of 'b' | t value |
|---|---|---|---|---|
| $x_1$ | Age | -0.1528 | 0.038 | -4.068** |
| $x_2$ | Education | 0.0043 | 0.243 | 0.018 |
| $x_3$ | Experience | 0.0788 | 0.058 | 1.357 |
| $x_4$ | Occupation | -0.2118 | 0.701 | -0.302 |
| $x_5$ | Income | -0.2753 | 0.411 | -0.670 |
| $x_6$ | Marital status | -2.0709 | 1.159 | -1.787 |
| $x_7$ | Home | 0.1770 | 0.171 | 1.037* |
| $x_8$ | Family | 0.3650 | 0.416 | 0.876 |
| $x_9$ | Mass media exposure | -0.0194 | 0.090 | -0.216 |
| $x_{10}$ | Extension orientation | 0.2849 | 0.116 | 2.449* |
| $x_{11}$ | Indebtedness | -0.0228 | 0.223 | -0.102 |
| $x_{12}$ | Level of aspiration | 0.5550 | 0.381 | 1.455 |

$R^2 = 0.3582$ $F = 2.186*$

* Significant at 5 per cent level
** Significant at one per cent level

The data in Table 19 indicate that only 35.82 per cent of the variation in the dependent variable was explained by the 12 independent variables taken together ($R^2 = 0.3580$). This variation was proved significant by F-value.

The multiple regression equation is

$$Y_2 = 17.336 + -0.153\ x_1 + 0.004\ x_2 + 0.079\ x_3 + -0.212\ x_4 +$$
$$-0.275\ x_5 + -2.071\ x_6 + 0.177\ x_7 + 0.365\ x_8 + -0.019\ x_9 +$$
$$0.285\ x_{10} + -0.023\ x_{11} + 0.555\ x_{12}$$

Table 20. Step-wise regression analysis showing the final step with all the significant variables included in the study of perception about the quality of the product of untrained peeling shed workers

| | Variables | Partial regression coefficients | S.E. of 'b' | t value |
|---|---|---|---|---|
| $x_1$ | Age | -0.1028 | 0.0269 | 3.8215** |
| $x_{10}$ | Extension orientation | 0.2523 | 0.0956 | 2.6391* |

$$R^2 = 0.2397 \qquad F = 8.9861**$$

The final result evidenced that out of the total variations of 35.62 per cent explained by 12 independent variables together, 23.97 per cent of the variations in the dependent variable was explained by the variable Age ($x_1$) and Extension orientation ($x_{10}$)

The final regression equation in the prediction of dependent variable is

$$Y_2 = 17.0423 + -0.1028 \ x_1 + 0.2523 \ x_{10}$$

Other factors being kept constant, a decrease of 0.1028 unit or an increase of 0.2523 unit in dependent variable was brought about by a unit increase in age and extension orientation respectively.

V. Motivational factors responsible for attending the training programme

The results of the paired comparison technique revealed that 'Innovativeness' was the most effective motive that influenced the peeling shed workers to attend the training programme.

The results are presented in Table 21.

Table 21. Z-matrix with corresponding scale values

|  | Achieve-<br>ment<br>motive | Prestige<br>motive | Affilia-<br>tion<br>motive | Economic<br>motive | Innova-<br>tiveness<br>motive |
|---|---|---|---|---|---|
| Achievement<br>motive | - | 0.332 | 0.126 | 1.405 | 1.645 |
| Prestige<br>motive | -0.332 | - | 0.050 | 0.954 | 2.034 |
| Affiliation<br>motive | -0.126 | -0.05 | - | 0.613 | 1.405 |
| Economic<br>motive | -1.405 | -0.954 | -0.613 | - | 0.613 |
| Innovative-<br>ness motive | -1.645 | -2.054 | -1.405 | -0.613 | - |
| Sum of Z = | -3.508 | -2.726 | -1.842 | 2.359 | 5.717 |
| Means | -0.877 | -0.6815 | -0.4605 | -0.5898 | 1.4293 |
| + 0.877 = | 0 | 0.1955 | 0.4165 | 1.467 | 2.306 |

The motivational hierarchy was as follows:

Innovativeness motive

Economic motive

Affiliation motive

Prestige motive

Achievement motive

# Discussion

# DISCUSSION

All the untrained peeling shed workers selected for the study belonged to the low knowledge level while only a small per cent of the trained workers came under this category. Majority of the trained peeling shed workers were under the category of medium knowledge level which reflects the influence of training programme organised by MPEDA on peeling shed workers in terms of level of knowledge about the hygienic measures. The significantly higher level of knowledge of the trained peeling shed workers over the untrained peeling shed workers concluded from this study is in conformity with the findings of Jha and Sharma (1973), Pimprikar et al. (1974), Bala and Roy (1979), Venugopal and Jalihal (1979), Ramakrishna (1980), Meera (1981), Uma (1982), Joshy and Thorat (1984), Kalaichelvan (1984), Verma et al. (1984), Das and Sharma (1985), Verma and Verma (1985), Babu and Singh (1986), Sohal and Pulsale (1986), Ramkumar (1987), Sanjeev (1987) and Santhi (1987). The respondents were of the opinion that the demonstrations which were conducted along with the training programme helped them for gaining better understanding of the various hygienic measures to be followed in peeling sheds. The two days training programme which explained the scientific fish handling practices to be followed in peeling sheds for improving the quality of the products had a significant influence on the knowledge of the respondents who had undergone training. This finding helped in confirming the hypothesis set for the study that there will be significant difference in the knowledge

about hygienic measures to be followed in peeling sheds between the trained and untrained peeling shed workers.

The higher perception of the majority of the trained peeling shed workers about the different factors that influence the final quality of the product also indicated the impact of the training programme. It is likely that the peeling shed workers who had attended the training programme possessed a better perception level of the various factors influencing the final quality of the product than others who did not attend the training programme. The better knowledge level of the participants of the training programme should have been a valuable input in the perception about the quality of the product. The training programme also gives information regarding the various factors important in determining the final quality of the product. This concept of 'factor influence' might have contributed to the elevation in the perception level of the trained group about the quality of the product. The hypothesis that there will be significant difference in the perception about the quality of the product between the trained and untrained peeling shed workers is accepted.

The factor 'quality of the raw material' was perceived as the most important one in determining the final quality of the product by all the peeling shed workers. This is due to the fact that once the quality of the raw material starts deteriorating it is not possible to improve the final quality of the product, even if all other practices including personal

and general hygienic practices are adopted. Since shrimps are highly perishable items, the conditions under which it is kept such as proper icing and good containers will also have a bearing on the final quality of the product. This might be the reason for the perception of the factor 'storage conditions' as the next important one.

The same pattern of thinking by trained and untrained peeling shed workers point out that both categories of respondents attached same degree of importance to various factors that influence the final quality of the product. In other words there is not much difference in their order of thinking about the six selected factors.

Of the 12 independent variables selected for the study age, education, occupation and family showed significant relationship with level of knowledge of the trained peeling shed workers. In the case of untrained peeling shed workers extension orientation is the only variable which indicated significant relationship with level of knowledge.

The negative and significant association of the variable age with level of knowledge of the trained peeling shed workers indicate that younger farmers try to acquire more knowledge of when exposed to information sources. They showed a high degree of interest and were more eager to know about the principles and procedures about the hygienic measures to be followed in peeling sheds. This result is in agreement with those obtained by Vijayakumar (1983) and Pachori and Tripathi (1989). But

negative significant association of age with level of knowledge disagrees with the findings of Bala and Roy (1979), Ahammed (1981), Kamarudeen (1981), Kalaichelvan (1984), Sanjeev (1987) and Santhi (1987).

The positive and significant relationship of education with level of knowledge about the hygienic measures agree with the findings of Kamarudeen (1981), Kalaichelvan (1984) and Santhi (1987). This finding is not supported by the finding of Bala and Roy (1979). Education is the process of acquiring knowledge and habits through instruction or study and it widens the vision of people, helping them to orient towards new experiences. The non-significant association of this variable with level of knowledge in the case of untrained peeling shed workers reveal that education did not bear a notable effect on the level of knowledge about hygienic measures. Thus it can be said that with some formal education training can enhance the knowledge level of workers in the work they are engaged.

The negative and significant association between occupation and level of knowledge of trained peeling shed workers revealed that those peeling shed workers who adhered to only peeling as their occupation had a better knowledge than others who were doing other related works in fisheries along with peeling. It is quite natural that when an individual is engaged in more than one work the concentration gets shared between these works resulting in a decrease in their knowledge about a particular subject. Further as he proceeds with only peeling as the occupation, he gets more time to acquire a thorough knowledge by practice. But in the case of untrained

peeling shed workers this association was not significant which indicate that occupation did not influence the level of knowledge.

The negative and significant association of the family with level of knowledge about hygienic measures of the trained peeling shed workers revealed that those belonged to single family having upto five family membership readily absorbed more knowledge than others who belonged to joint family members of more than five. The assumption that the individuals from small family with less members have better exposure to education than others might be the reason for the above relationship.

The non-significant association of the variable extension orientation with level of knowledge of the trained peeling shed workers show that it is not their high extension participation and contact, but the effectiveness of the training programme which has resulted in their increased knowledge score and this finding is in consonance with the finding of Sanjeev (1987). However, it disagrees with the findings of Kamarudeen (1981) and Syamala (1988). Out of the 12 independent variables considered for the study extension orientation was the only factor showing significant correlation with knowledge of untrained peeling shed workers about the hygienic measures and this relationship was positive. Extension orientation acts as a powerful tool, instrumental in providing information to the clientle. In the case of trained peeling shed workers they are doing the work for another person, devoting more time for peeling than

untrained peeling shed workers. In addition the training had created confidence or an attitude that whatever needed have already acquired by training. The untrained peeling shed workers are more self-concerned doing the work for themselves, did not concentrate on their devotion of time and whatever knowledge it is possible for them to achieve from various sources caused an increase in their level of knowledge although they have less extension orientation.

Mass media exposure of both the categories of respondent exhibited non-significant relationship with level of knowledge about hygienic measures. This finding was not in accordance with the finding of Syamala (1988). Mass media such as radio, T.V. and newspapers give importance to the agricultural pro-grammes. They are not giving due importance to the field of fisheries when compared to the field of agriculture. Even in fisheries, mass media coverage focusing processing of shrimp is scarce. So it is likely that the frequent exposure cannot cause any change in their knowledge about hygienic measures.

The non-significant association between total experience and knowledge of the trained peeling shed workers about the hygienic measures is a clear indication of the impact of train-ing programme. This points to the fact that it is not the number of years that the peeling shed workers engaged in their work, but the training that was imparted resulted in their increased knowledge. This result is in agreement with those obtained by Santhi (1987). But it is not supported by the

shed workers. This might be the reason for the non-significant association obtained for the variable experience with perception about the quality of the product of the untrained peeling shed workers.

The non-significant association of annual income with perception about the quality of the product of both the categories of respondents is due to the fact that the selection of peeling shed workers for this study was made with the same economic status as a matched pair. So a wide variation was not noticed with respect to this variable which might have lead to this finding. The above result is not in conformity with the findings of Nandakumar (1980) and Sudha (1987).

Mass media exposure indicated non-significant association with perception about the quality of the product of both trained and untrained peeling shed workers. As A.I.R. at present is not giving importance to the field of fisheries, and giving importance mainly to the field of agriculture, mass media exposure did not help in awareness stage, leading to better knowledge and then to the perception of various practices. Hence the present finding that the mass media is not influencing the knowledge and perception of trained and untrained peeling shed workers has to be looked into seriously.

The non-significant association of extension orientation with perception about the quality of the product of both the categories of respondents disagree with the findings of Shivakumar (1983) and Sudha (1987). This indicates that

untrained peeling shed workers. In addition the training had created confidence or an attitude that whatever needed have already acquired by training. The untrained peeling shed workers are more self-concerned doing the work for themselves, did not concentrate on their devotion of time and whatever knowledge it is possible for them to achieve from various sources caused an increase in their level of knowledge although they have less extension orientation.

Mass media exposure of both the categories of respondent exhibited non-significant relationship with level of knowledge about hygienic measures. This finding was not in accordance with the finding of Syamala (1988). Mass media such as radio, T.V. and newspapers give importance to the agricultural programmes. They are not giving due importance to the field of fisheries when compared to the field of agriculture. Even in fisheries, mass media coverage focussing processing of shrimp is scarce. So it is likely that the frequent exposure cannot cause any change in their knowledge about hygienic measures.

The non-significant association between total experience and knowledge of the trained peeling shed workers about the hygienic measures is a clear indication of the impact of training programme. This points to the fact that it is not the number of years that the peeling shed workers engaged in their work, but the training that was imparted resulted in their increased knowledge. This result is in agreement with those obtained by Santhi (1987). But it is not supported by the

findings of Jha and Sharma (1973), Kalaichelvan (1984) and
Sanjeev (1987).

Income, marital status, home, indebtedness and level of
aspiration showed non-significant association with level of
knowledge of both trained and untrained peeling shed workers.

Out of the 12 independent variables selected for the study
age, education and occupation showed significant relationship
with perception of the trained peeling shed workers about the
quality of the product. In the case of untrained peeling shed
workers age is the only variable which indicated significant
relationship with their perception about the quality of the
product.

The correlation study revealed that age of the trained
and untrained peeling shed workers were negatively and signi-
ficantly related to their perception about the quality of the
product. This leads to the generalization that younger peeling
shed workers are more interested in the subject matter and have
a fresh outlook towards the subject. Moreover the younger
peeling shed workers might have achieved better education and
this better education could have lead to their higher percep-
tion about the quality of the product. This finding agreed
with that of Nandakumar (1980) and it failed to agree with the
findings of Bhilegaonkar and Dakh (1978) and Sudha (1987).

In the case of trained peeling shed workers education
indicated positive and significant association with their per-
ception about the quality of the product. The higher perception

of the trained workers with better education may be attributed to the fact that education, could have acted as a catalyst in increasing their perception. Both perception and education are interdependent, perception is the basic step which contributes to the success of an education programme. Education can also enable the trained peeling shed workers to have an effective interaction with other different information sources, helping to acquire more information about scientific fish handling practices. This is in turn ends up in a higher perception about the quality of the product.

The negative and significant association of the variable occupation with the perception about the quality of the product leads to the conclusion that individuals who are engaged in less number of occupation are superior in their perception about the quality of the product. The same may be the reason for the non-significant association of this variable in the case of untrained peeling shed workers since their involvement in secondary occupation is more.

The non-significant association of the variable experience of trained peeling shed workers with perception about the quality of the products points out that training helped the peeling shed workers in increasing their perception about various factors that influence the final quality of the product. It was noticed that majority of the untrained peeling shed workers had more experience in fish processing in addition to their experience in peeling when compared to trained peeling

shed workers. This might be the reason for the non-significant association obtained for the variable experience with perception about the quality of the product of the untrained peeling shed workers.

The non-significant association of annual income with perception about the quality of the product of both the categories of respondents is due to the fact that the selection of peeling shed workers for this study was made with the same economic status as a matched pair. So a wide variation was not noticed with respect to this variable which might have lead to this finding. The above result is not in conformity with the findings of Nandakumar (1980) and Sudha (1987).

Mass media exposure indicated non-significant association with perception about the quality of the product of both trained and untrained peeling shed workers. As A.I.R. at present is not giving importance to the field of fisheries, and giving importance mainly to the field of agriculture, mass media exposure did not help in awareness stage, leading to better knowledge and then to the perception of various practices. Hence the present finding that the mass media is not influencing the knowledge and perception of trained and untrained peeling shed workers has to be looked into seriously.

The non-significant association of extension orientation with perception about the quality of the product of both the categories of respondents disagree with the findings of Shivakumar (1983) and Sudha (1987). This indicates that

orientation to various extension agencies and participation in various programmes did not help them in improving their perception about the quality of the product. Training as such is an extension media for transfer of new technologies.

Level of aspiration showed non-significant association with perception about the quality of both trained and untrained peeling shed workers which is in conformity with the finding of Sudha (1987).

Marital status, home, family and indebtedness were found to have no significant influence with perception about the quality of the product for trained and untrained peeling shed workers. This may be due to the fact that both trained and untrained workers come from more or less the same circumstances.

It was found that the main motive for attending the training programme was the 'innovativeness motive'. Most of the practices in scientific fish handling were innovations for the peeling shed workers. Their curiosity to understand the unknown things induced them to attend the training programme. This is indicated by the higher scale value of innovativeness motive. The peeling shed workers expected that whatever new knowledge they obtain from the training would be useful for their work. This finding was not in conformity with the findings of Meera (1981) and Sanjeev (1987). The next important motive was the economic motive followed by affiliation motive, prestige motive and achievement motive.

*Summary*

# SUMMARY

Marine Products Export Development Authority is organis-
ing the training programme for peeling shed workers to impart
technical knowledge related to improved fish handling prac-
tices from 1984 onwards. Till now no attempt was made to
assess the worth of these programmes. Hence the present study
was undertaken with the following objectives:

1. To study the level of knowledge about hygienic measures
   of trained peeling shed workers in comparison with those
   who have not attended the training programme.

2. To study the perception of the trained peeling shed workers
   about the quality of the product.

3. To compare the association, if any existing between the
   socio-psychological and economic factors of trained and
   untrained peeling shed workers with the level of knowledge
   and extent of perception.

4. To study the motivational factors responsible for attending
   the training programme by the peeling shed workers.

The investigation was carried out in Quilon district, con-
sidering the fact that maximum number of trained peeling shed
workers was available in this district. From among 80 respon-
dents who underwent the training, 60 were selected as a matched
pair technique considering the factors, education and income.
Thus a total of 120 respondents were chosen for the study.

Age, education, experience, occupation, income, marital status, home, family, mass media exposure, extension orienta- tion, indebtedness and level of aspiration were selected as the independent variables. Knowledge of hygienic measures and perception about the quality of the product formed the depen- dent variables. An attempt was also made to analyse the fac- tors responsible for the peeling shed workers to attend the training programme.

The dependent variable, the level of knowledge about hygienic measures, was measured using the method developed by Popat et al. (1985). A set of 53 objective type questions to measure knowledge was formulated. This question battery was given to judges for judging the relevancy on a three point continum as most relevant, somewhat relevant, and not relevant. From the question battery of 53 items 30 items with value above mean score were selected and used for pre-survey. Based on difficulty index and discrimination index 20 items were selec- ted for inclusion in the questionnaire. The reliability of the question items was tested before their inclusion in the final interview schedule. Perception about the quality of the product was measured using an arbitrary scale developed for the study. Here the various factors that influence the final quality of the product were identified and statements which will reflect the influence of these factors on the final quality of the product were prepared. These statements were rated for their degree of importance on a three point continum

as most important, important and not important. An attempt
was also made to find out which item is perceived as most
important by all the respondents and whether the pattern of
thinking was same for both trained and untrained peeling shed
workers.

To study the motivational factors five motives were
selected and statements pertinent to the different motives
were prepared. Paired comparison was used to find out the
relative position of the motives of the respondents.

The data were collected by personal interview using a
structured and pre-tested schedule and were subjected to ana-
lysis as percentage, t-test, simple correlation, rank correla-
tion, multiple regression and step-wise regression.

The salient findings of the study are given below:

1. The study revealed that the trained peeling shed workers
   had significantly higher knowledge about hygienic measures
   than untrained peeling shed workers.

2. The trained peeling shed workers had significantly higher
   perception about the quality of the product, when compared
   to untrained peeling shed workers.

3. The factors perceived as important in determining the final
   quality of the product by the trained and untrained peeling
   shed workers were in the order of merit as 'quality of the
   raw material', 'storage conditions', 'methods of handling',
   'quality of wash water', 'personal hygiene of workers' and
   'general cleanliness in and around the peeling sheds'.

4. The perception on the factors contributing to the final quality of the product by the trained and untrained peeling shed workers were same.

5. Education had positive and significant relationship with the level of knowledge of trained peeling shed workers; while factors as age, occupation and family indicated negative and significant relationship with level of knowledge.

Extension orientation was the only variable which showed positive and significant relationship with level of knowledge of untrained peeling shed workers.

6. The independent variables showed significant variation in influencing the level of knowledge of the trained and untrained peeling shed workers. In the case of trained peeling shed workers education, home and family together contributed to the maximum variation in the level of knowledge. Extension orientation was the only variable that contributed to maximum variation in the level of knowledge of untrained peeling shed workers.

7. In the case of trained peeling shed workers education was found to have positive and significant relationship with perception about the quality of the product. Age and occupation indicated negative and significant relationship with perception about the quality of the product.

Age showed negative and significant relationship with perception of untrained peeling shed workers about the quality of the product.

8. The twelve independent variables together indicated significant contribution in the variation of the perception about the quality of the product of trained and untrained peeling shed workers. Of these, the variables, education, occupation and home contributed the maximum in the case of trained peeling shed workers. Age and extension orientation contributed the maximum variation in the case of untrained peeling shed workers.

9. Innovativeness was the major motive which induced the peeling shed workers to attend the training programme followed by economic motive, affiliation motive, prestige motive and achievement motive.

The study conclusively proved that the training programme organised by MPEDA in Quilon district was effective in increasing the knowledge about the hygienic measures and the perception about the quality of the product of peeling shed workers.

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# Appendices

Dr. P.S. Pushkaran,                          College of Veterinary and
Professor and Head,                          Animal Sciences, Mannuthy.
Dept. of Extension.

To

    . . . . . . . . . .
    . . . . . . . . . .
    . . . . . . . . . .

                    Sub:- M.F.Sc. Programme in Extension

Sir,

        Miss. Daisy C. Kappen, M.F.Sc. student in College of
Fisheries is working on her M.F.Sc. thesis problem entitled
"Impact of Training Programme on hygienic measures followed
in peeling sheds" under my guidance.  As part of the res-
earch study a knowledge test has to be developed to measure
the knowledge of trained peeling shed workers on hygienic
practices to be followed in peeling sheds.  I request you to
serve as a judge for standardization of the knowledge test
items for the final questionnaire; suggest suitable modifi-
cations if needed and also mention any left out information
that has to be included.  I am enclosing a list containing
"53" knowledge items, kindly go through the items and rank
them based on their degree of relevance by making " $\checkmark$ "
against each items.

        I once again reiterate that we are interested to study
your perception about the relevancy of each item, which you
may mark in any one of the 3 columns.

        I request you to kindly fill in the columns and return
the proforma at your earliest convenience.  I solicit your
kind help in this regard.

        Thanking you.

                                        Yours sincerely,

                                        Sd/- 13-3-1989
                                        Dr.P.S. Pushkaran,
                                        Chairman,
                                        Advisory Committee.

| Sl. No. | Items | Most relevant | Somewhat relevant | Not relevant | Relevancy ratio |
|---|---|---|---|---|---|
| *1 | The reason for spoilage in prawns after it is caught is ..... | | | | 2.73 |
| 2 | Organisms of the same type growing together in identical conditions are known as ........ | | | | 1.2 |
| 3 | Bacteria can be seen by ........ | | | | 1.9 |
| 4 | Colony can be seen by ........ | | | | 1.57 |
| 5 | Different types of colonies indicate different types of ........ | | | | 1.83 |
| 6 | The medium suitable for growth of microorganisms is ........ | | | | 1.7 |
| 7 | All microbes are harmful ........ | | | | 2 |
| *8 | Microbes are present everywhere | | | | 2.77 |
| *9 | In atmospheric temperature the growth and increase of microbes will be ........ | | | | 2.9 |
| 10 | After the death of prawn the microbes in the intestine and body surface of prawn will also die .... | | | | 1.93 |
| 11 | The time required for a bacteria to divide into two is ........... | | | | 1.73 |

| Sl. No. | Items | Most relevant | Somewhat relevant | Not relevant | Relevancy ratio |
|---|---|---|---|---|---|
| *12 | The region where microbes are seen in enourmous quantities is ...... | | | | 2.66 |
| *13 | The reason for Black spot in prawn is .... | | | | 2.63 |
| *14 | Black spot in prawn can be prevented by ....... | | | | 2.73 |
| 15 | Black spot in prawn will be more at higher temperature .... | | | | 1.97 |
| *16 | The temperature at which the growth and increase of bacteria is inhibited is ........ | | | | 2.77 |
| 17 | The temperature range at which the bacterial action is more is ..... | | | | 2.06 |
| *18 | The method used to remove 90% of the bacteria in the prawn is ........ | | | | 2.9 |
| *19 | The growth and increase of bacteria can be prevented by keeping in ........ | | | | 3 |
| *20 | By removing the intestine and head prawn can be kept for larger period of time ....... | | | | 2.83 |
| 21 | Ice is devoid of any bacteria ...... | | | | 2.03 |
| *22 | Quantity of ice required to preserve 2 kg of prawn is ....... | | | | 2.7 |
| *23 | It can prevent spoilage to the extent of ........ hours | | | | 2.57 |

| Sl. No. | Items | Most relevant | Somewhat relevant | Not relevant | Relevancy ratio |
|---|---|---|---|---|---|
| *24 | Crushing and hauling of ice on floor is not desirable in peeling sheds ...... | | | | 3 |
| 25 | Large ice crystals are preferred for adding in prawns | | | | 1.67 |
| 26 | The frozen prawns for export are kept at ........ °C | | | | 2 |
| 27 | Spoilage in prawns can also be prevented by .......... | | | | 2.03 |
| 28 | Live prawn never gets spoiled because of ... | | | | 1.87 |
| *29 | The utensils in the plant are cleaned with ......... water | | | | 2.8 |
| 30 | Amount of water required for processing 1 kg of prawn is ....... | | | | 1.9 |
| 31 | The chemical added in water used for washing the prawn is ...... | | | | 2.07 |
| 32 | Amount of chlorine present in the water used for making ice is .... | | | | 1.97 |
| *33 | Amount of chlorine present in water used for washing the floor is ........ ppm | | | | 2.77 |
| *34 | Amount of chlorine used for washing the feet and hands is ...... ppm | | | | 2.9 |
| *35 | The detergent which is used for rubbing and washing the floor of peeling shed is ..... | | | | 2.7 |

| Sl. No. | Items | Most relevant | Somewhat relevant | Not relevant | Relevancy ratio |
|---|---|---|---|---|---|
| 36 | It is necessary to wash hands and feet before entering the processing hall | | | | 2.07 |
| *37 | There is no need to wear cleaned dress in peeling sheds .. | | | | 2.8 |
| *38 | Touching the hair, nose and lips while handling the prawn is permitted on peeling sheds | | | | 2.9 |
| *39 | The workers having disease and injuries in hands and feet are not allowed for doing the work | | | | 2.9 |
| *40 | There is no harm in sneezing and coughing while peeling the prawns ...... | | | | 2.67 |
| *41 | Is there any harm in doing peeling on the floor ..... | | | | 2.93 |
| *42 | Is there any harm in talking while doing the work | | | | 2.73 |
| *43 | Is there anything wrong in chewing while doing peeling | | | | 2.77 |
| *44 | Is it advisable to smoke while doing the work | | | | 2.87 |
| 45 | Polishing the nails is desirable in peeling sheds | | | | 1.83 |
| 46 | Wearing ornaments and watch are allowed in peeling sheds | | | | 1.9 |

| Sl. No. | Items | Most relevant | Somewhat relevant | Not relevant | Relevancy ratio |
|---------|-------|---------------|-------------------|--------------|-----------------|
| *47 | Thatched roof is also suitable in peeling sheds | | | | 1.9 |
| *48 | There is no harm in entering the flies in peeling sheds | | | | 2.83 |
| 49 | It is not compulsory to concrete the loading and unloading area ...... | | | | 2.07 |
| *50 | Water for washing prawn can be drawn from backwaters also | | | | 2.6 |
| *51 | It is not necessary to use only cleaned utensils in the peeling sheds | | | | 2.67 |
| 52 | Unhygienic conditions in peeling shed is the reason for the disease | | | | 2 |
| *53 | The precaution taken for not falling the hair in the peeled product is wearing .... | | | | 2.93 |

If any other questions please indicate:

Suggestions:

* Items selected

## List of items selected for pre-survey

### Test to measure the knowledge of trained peeling shed workers on hygienic practices to be followed in Peeling sheds

| Items | Response category |
|---|---|
| 1. The reason for spoilage in prawns soon after it is caught is | Correct/Incorrect |
| 2. Microbes are present everywhere | True/False |
| 3. In atmospheric temperature the growth and increase of microbes will be ...... | Correct/Incorrect |
| 4. The region where microbes are seen in enormous quantities is ......... | Correct/Incorrect |
| 5. The reason for Black spot in prawn is ........ | Correct/Incorrect |
| 6. Black spot in prawn can be prevented by ....... | Correct/Incorrect |
| 7. The temperature at which the growth and increase of bacteria is inhibited is ........ °C | Correct/Incorrect |
| 8. The method used to remove 90% of the bacteria in the prawn is .... | Correct/Incorrect |
| 9. The growth and increase of bacteria can be prevented by keeping in .... | Correct/Incorrect |
| 10. By removing the intestine and head prawn can be kept for larger period of time | True/False Correct/Incorrect |
| 11. Quantity of ice required to preserve 2 kg of prawn is ....... | Correct/Incorrect |
| 12. It can prevent spoilage to the extent of ........ hrs | Correct/Incorrect |
| 13. Crushing and hauling of ice on floor is not desirable in peeling sheds. True/False | Correct/Incorrect |

|                                                                                          | <ins>Response category</ins> |
| :--------------------------------------------------------------------------------------- | :------------------- |
| <ins>Items</ins>                                                                         |                      |
| 14. The utensils in the plant are cleaned with .......... water                          | Correct/Incorrect    |
| 15. Amount of chlorine to be present in water used for washing the floor is ............ ppm | Correct/Incorrect    |
| 16. Amount of chlorine to be used for washing the feet and hands is ........ ppm         | Correct/Incorrect    |
| 17. The detergent which is used for rubbing and washing the floor of peeling shed is ....... | Correct/Incorrect    |
| 18. There is no need to wear cleaned dress in peeling sheds. True/False                   | Correct/Incorrect    |
| 19. Touching the hair, nose and lips while handling the prawn is permitted on peeling sheds. True/False | Correct/Incorrect    |
| 20. The workers having disease and injuries in hands and feet are not allowed for doing the work. True/False | Correct/Incorrect    |
| 21. There is no harm in sneezing and coughing while peeling the prawns. True/False       | Correct/Incorrect    |
| 22. Is there any harm in doing peeling on the floor                                      | Correct/Incorrect    |
| 23. Is there any harm in talking while doing the work                                    | Correct/Incorrect    |
| 24. Is there anything wrong in chewing while doing peeling                               | Correct/Incorrect    |
| 25. Is it advisable to smoke while doing the work                                        | Correct/Incorrect    |
| 26. Thatched roof is also suitable in peeling sheds. True/False                          | Correct/Incorrect    |
| 27. There is no harm in entering the flies in peeling sheds True/False                   | Correct/Incorrect    |

| Items | Response category |
|---|---|

28. Water for washing prawn can be
drawn from back waters also
True/False                                        Correct/Incorrect

29. It is not necessary to use only
cleaned utensils in the peeling
sheds. True/False                                 Correct/Incorrect

30. The precaution taken to prevent
the fall of hair in the peeled
product is wearing .........        Correct/Incorrect

Difficulty indices and descrimination indices of the items of knowledge test

| Item number in the test | Frequencies of correct answer | | Total frequencies $S_1+S_2+S_3$ | Percentage of respondents giving correct answer (p) | $E^{1/3}$ |
|---|---|---|---|---|---|
| | $S_1$ | $S_3$ | | | |
| 1 | 5 | 0 | 5 | 16.66 | .5 |
| *2 | 10 | 5 | 23 | 76.33 | .5 |
| *3 | 10 | 5 | 22 | 73.33 | .5 |
| *4 | 10 | 4 | 23 | 76.33 | .6 |
| 5 | 5 | 0 | 5 | 16.66 | .5 |
| *6 | 7 | 4 | 18 | 60.00 | .3 |
| *7 | 10 | 2 | 16 | 53.33 | .8 |
| 8 | 10 | 10 | 28 | 93.33 | 0 |
| *9 | 10 | 5 | 25 | 83.33 | .5 |
| *10 | 10 | 4 | 22 | 73.33 | .6 |
| *11 | 9 | 3 | 15 | 50.00 | .6 |
| *12 | 10 | 5 | 19 | 63.33 | .5 |
| *13 | 10 | 5 | 24 | 80.00 | .5 |
| 14 | 10 | 9 | 28 | 93.33 | .1 |
| 15 | 3 | 0 | 3 | 10.00 | .3 |
| 16 | 3 | 0 | 1 | 10.00 | .3 |
| *17 | 10 | 6 | 24 | 80.00 | .4 |
| 18 | 10 | 10 | 30 | 100.00 | 0 |
| *19 | 10 | 5 | 25 | 83.33 | .5 |
| *20 | 10 | 5 | 25 | 83.33 | .5 |
| 21 | 10 | 10 | 30 | 100.00 | 0 |
| *22 | 10 | 5 | 23 | 76.66 | .5 |
| *23 | 10 | 5 | 24 | 80.00 | .5 |
| 24 | 10 | 10 | 30 | 100.00 | 0 |
| *25 | 10 | 5 | 25 | 83.33 | .5 |
| *26 | 10 | 6 | 25 | 83.33 | .4 |
| *27 | 10 | 5 | 25 | 83.33 | .5 |
| 28 | 10 | 10 | 30 | 100.00 | 0 |
| *29 | 10 | 4 | 24 | 80.00 | .6 |
| *30 | 10 | 5 | 25 | 83.33 | .5 |

* Items selected

APPENDIX —IV

INTERVIEW SCHEDULE

Respondent No.

1. Name and address of the Respondent :

2. Age                                    :

3. Education          : Illiterate/can read only/can read and
                        write/primary/Middle School/High
                        School and above

4. Experience         : a) In peeling

                        b) In fish processing

5. Occupation         : a) Primary occupation

                        b) Secondary occupation

6. Income             : a) Primary income

                        b) Secondary income

7. Marital status     : Married/Not married

8. Home               : a) Mixed house/Kucha house/Pucca house/
                           Constructed by stones

                        b) Lighting facilities : Kerosene lamp
                                                 with glass shade,
                                                 Electricity

                        c) Ownership of house  : Rented/own

9. Family             : a) Family type    : Single/joint
                        b) Family size     : Upto 5/5 and above

10. Mass media exposure:

| Media participation | Two or more times a week | Once a week | Once a fortnight | Once a month | Never |
|---|---|---|---|---|---|
| 1. Reads Newspaper | | | | | |
| 2. Listen to radio | | | | | |
| 3. Listen to rural Radio programme | | | | | |

4. Views T.V.

5. Reads from Magazines
   and other literature
   on Agriculture

---

11. Extension orientation:

---

| a) Extension contact category of Extension personnel | Once a week | Once a fortnight | Once a month | Never |
|---|---|---|---|---|

---

1. Fisheries Officer

2. Supervisors

3. Assistant Directors

4. Others

---

| b) Extension participation | Frequency of participation | | | |
|---|---|---|---|---|
| | When-ever conducted | Fre-quently | Some-times | Never |

---

1. Campaign

2. Seminar

3. Film

4. Group Meetings

5. Others (specify)

---

12. Please indicate your nature of indebtedness

---

| Sl. No. | Source | Purpose of borrowing | Amount borrowed | Amount repaid | Balance to be paid |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |

---

13. Level of Aspiration
    Indicate where on the ladder do you feel you stand now
    and where you think you would stand after 5 years

    1. Regarding your possession          7    Most satisfying
       of materials as furniture,
       vehicles, etc.                     6  | Moderately most
                                          5  | satisfying

       a) Where do you think you are
          now

          Step No.                        4    Average

       b) Where do you expect to be
          in next 5 years                 3  |
                                             |
          Step No.                        2  |

                                          1    Least satisfying


    2. Regarding your income:-

       a) Where do you think you
          are now.

          Step No.

       b) Where do you expect to be in
          next 5 years

          Step No.

    3. Regarding your produce from Land

       a) Where do you think you are now
          Step No.

       b) Where do you expect to be in
          next 5 years

          Step No.

    4. Regarding your type of House

       a) Where do you think you are now

          Step No.

       b) Where do you expect to be in next

          Step No.

5. Regarding your possession of fisheries implements

    a) Where do you think you are now

       Step No.

    b) Where do you expect to be in next 5 years

       Step No.

6. Regarding your livestock

    a) Where do you think you are now

       Step No.

    b) Where do you expect to be in next 5 years

       Step No.

7. Other home reared animals

    a) Where do you think you are now

       Step No.

    b) Where do you expect to be in next 5 years

       Step No.

14. Knowledge test

Please answer the following questions:

| | |
|---|---|
| 1. Microbes are present everywhere. | True/False<br>Correct/Incorrect |
| 2. In atmospheric temperature the growth and increase of microbes will be ———————— | Correct/Incorrect |
| 3. The region where microbes are seen in enormous quantities is .......... | Correct/Incorrect |
| 4. Black spot in prawn can be prevented by ............ | Correct/Incorrect |
| 5. The temperature at which growth and increase of bacteria is inhibited is .......... °C | Correct/Incorrect |
| 6. The growth and increase of bacteria can be prevented by keeping in ..... | Correct/Incorrect |

7. By removing the intestine and head prawn can be kept for larger period of time — True/False / Correct/Incorrect

8. Quantity of ice required to preserve 2 kg of prawn is ............. kg — Correct/Incorrect

9. It can prevent spoilage to the extend of ............ hrs — Correct/Incorrect

10. Crushing and hauling of ice on floor is not desirable  Peeling sheds — True/False / Correct/Incorrect

11. The detergent which is used for rubbing and washing the floor of peeling shed is ........ — Correct/Incorrect

12. Touching the hair, nose and lips while handling the prawn is permitted on peeling sheds. — True/False / Correct/Incorrect

13. The workers having disease and injuries in hands and feet are not allowed for doing the work — True/False / Correct/Incorrect

14. Is there any harm in doing peeling on the floor — Correct/Incorrect

15. Is there any harm in talking while doing the work? — Correct/Incorrect

16. Is it advisable to smoke while doing the work? — Correct/Incorrect

17. Thatched roof is also suitable in peeling sheds — Correct/Incorrect

18. There is no harm in entering the flies in peeling sheds — Correct/Incorrect

19. It is not necessary to use only cleaned utensils in the peeling sheds — True/False / Correct/Incorrect

20. The precaution taken to prevent the fall of hair in the peeling shed is wearing ..... — Correct/Incorrect

. Perception about the quality of the product Six statements are given below.  Please indicate their degree of importance.

|  | Most Important | Important | Not Important |
|---|---|---|---|

1. Quality of the raw material is highly important in determining the quality of the product.

2. Storage conditions have no influence on quality of the product.

3. Methods of handling are very important in determining the quality of product.

4. Quality of wash water will defenitely influence the quality of the product

5. Personal hygiene of workers are important determinent of quality of the product

6. General cleanliness in and around the peeling sheds are important in determining the quality of the product.

16. Motivational factors

Below are given a pair of statements please select one statement from each pair.

I participated in training programme because:-

1. I hope to get more money in these days.

   I can influence other people

2. I hope to get more money in those days

   I will get more knowledge about scientific handling practices.

3. I hope to get more money in those days

   I expect to get any other job by attending the training programme

4. I hope to get more money in those days

I consider it as a prestige factor

5. I can influence other people

I will get more knowledge about scientific handling practices.

6. I can influence other people

I expect to get any other job by attending the training programme

7. I can influence other people

I consider it as a prestige factor

8. I will get more knowledge about scientific handling practices.

I expect to get any other job by attending the training programme.

9. I will get more knowledge about scientific handling practices.

I consider it as a prestige factor

10. I expect to get any other job by attending the training programme

I consider it as a prestige factor

# IMPACT OF TRAINING PROGRAMME ON HYGIENIC MEASURES FOLLOWED IN PEELING SHEDS

By

DAISY C. KAPPEN

## ABSTRACT OF A THESIS

Submitted in partial fulfilment of the
requirement for the degree

# Master of Fisheries Science

Faculty of Fisheries
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1989

# ABSTRACT

The study was conducted in Quilon district of Kerala with a view to measure the impact of training programme on hygienic measures followed in peeling sheds. The major objectives were:

1. To study the level of knowledge about hygienic measures of trained peeling shed workers in comparison with those who have not attended the training programme.

2. To study the perception of the trained peeling shed workers about the quality of the product.

3. To compare the association, if any, existing between the socio-psychological and economic factors of trained and untrained peeling shed workers with the level of knowledge and extent of perception.

4. To study the motivational factors responsible for attending the training programme by the peeling shed workers.

The sample consisted of randomly selected 60 trained and 60 untrained peeling shed workers. Data were collected using interview schedule and suitable statistical techniques were employed for the analysis of data.

The study revealed that the trained peeling shed workers had significantly higher knowledge than untrained peeling shed workers. They also had significantly higher perception about the quality of the product than untrained peeling shed workers. The peeling shed workers perceived the factor

'quality of the raw material' as the most important one in determining the final quality of the product. The perception on the factors contributing to the final quality of the product were same for both trained and untrained peeling shed workers.

The selected independent variables together contributed significantly in the variation in knowledge and perception about the quality of the product of both trained and untrained peeling shed workers.

The correlation analysis revealed that education was positively and significantly related with level of knowledge of trained peeling shed workers; while age, occupation and family indicated negative and significant association. In the case of untrained peeling shed workers extension orientation is the only variable which indicated positive and significant relationship with level of knowledge.

Education showed positive and significant relationship with perception about the quality of the product of trained peeling shed workers. Age and occupation revealed negative and significant association. In the case of untrained peeling shed workers only age indicated negative and significant relationship with perception about the quality of the product.

Innovativeness was the major motive which induced the peeling shed workers to attend the training programme.