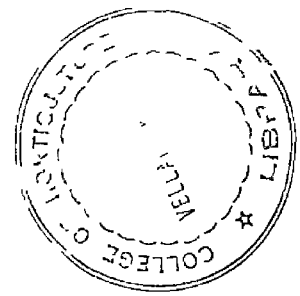
IMPACT OF AGRICULTURAL RESEARCH STATIONS AND FARMS ON THE CULTIVATION OF CROPS BY THE FARMERS OF THE SURROUNDING AREA

BY
P. J. SIVAKUMAR



THESIS
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DECLARATION

I hereby declare that this thesis entitled 'IMPACT OF AGRICULTURAL RESEARCH STATIONS AND FARMS ON THE CULTIVATION OF CROPS BY THE FARMERS OF THE SURROUNDING AREA' 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.

P.J. SIVAKUMAR

Vellayani,
25th January, 1983.

CERTIFICATE

Certified that this thesis entitled 'IMPACT OF AGRICULTURAL RESEARCH STATIONS AND FARMS ON THE CULTIVATION OF CROPS BY THE FARMERS OF THE SURROUNDING AREA' is a record of research work done independently by Sri. P.J. Sivakumar under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship to him.

Dr. G. Thiagarajan Nair
Chairman,
Advisory Committee
(Associate Professor of
Agricultural Extension)

Vellayani,
25th January 1983.

APPROVED BY:

Chairman:

Dr. G. THIAGARAJAN NAIR

Members:

1. Prof. A.G. GOPINATHA MENON
2. Sri. P. CHANDRASEKHARAN
3. Sri. R. BALAKRISHNAN ASAN

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INTRODUCTION

The concept of development, unlike that of growth, relates not simply to a process of quantitative expansion, but to one of qualitative change. Thus economic and social development is concerned with fundamental transformations within an economy or a society. It involves the spread and acceptance of new ideas and new ways of doing things, in short it is inextricably tied up with the diffusion and adoption of innovations. Friedmann (1969) defined the process of development as an innovative process leading to the structural transformation of social system. The process of development was further defined by Hermansen (1972) as the introduction and diffusion of successive waves of innovations in functional and in geographic space. Thus in this context agricultural development of an area can be considered to have taken place, provided some agricultural innovations are introduced and diffused into this area and the agriculturists have adopted these innovations.

Agricultural Research Stations in India in the recent past have generated improved technologies which can certainly be considered as giant leaps in the progress of Indian Agriculture. In order to achieve maximum benefits from the

new technology thus produced, the farmers have to adopt this new technology. But there seems to be an increasing gap between innovations in the research stations and their adoption in the fields by farmers. However, it is believed that an agricultural research station or a farm being important information source should be a motivating force at least for those farmers who are in the vicinity of the research stations and farms to adopt modern agricultural practices. Information is particularly lacking on differences, if any, that exist in the adoption behaviour of farmers living around the research stations and farms and those living in other areas. So a study will be of help in getting information on how much effective these research stations and farms are in influencing the adoption behaviour of farmers in their surrounding area. It was with this broad objective in view that the present study was undertaken.

Objectives.

Following were the specific objectives of the study:

1. to study and compare the level of knowledge about improved agricultural technology, extent of the attitude towards improved agricultural practices and the level of adoption of different agricultural practices of the farmers living in the area surrounding the research stations and farms and those living in other areas,

2. to study the farmers' perception about the research stations and research workers and

3. to study the suggestions for research to be done in the research station as perceived by the farmers.

Scope and limitations.

This study would bring to light the effectiveness of the research stations and farms in influencing the adoption behaviour of farmers of the area surrounding the research stations and farms. The perception of the farmers about the research stations and research workers and the types of research needed can also be found out by this study, which will be useful in streamlining the activities of these stations. This will also help in formulating effective extension activities by the stations for the transfer of technology to farmers.

No research work on this aspect done in India could be located by the researcher which was a serious limitation in building up the general frame work for the present study. Moreover, a study of this nature would require considerable time and resources and hence it was beyond the capacity of a single researcher to investigate in greater depth and make it more comprehensive. These limitations have been taken into consideration in selecting the variables, area coverage and size of samples. The researcher, however, has taken every effort to make the study as objective as possible.

The study was carried out in respect of the Rice Research Stations at Pattambi and Kayamkulam in Kerala State. Though these are the two important rice research stations of the state, the findings may not suit to other stations due to variations. However, this study could be expected to yield some useful information on the impact of the research stations and farms on the cultivation of crops by the farmers of the surrounding area.

THEORETICAL ORIENTATION

CHAPTER II

THEORETICAL ORIENTATION

Kurt Lewin says: "A Science without a theory is blind because it lacks the element which alone is able to organize facts and to give direction to research. Even from a practical point of view the mere gathering of facts has very limited value. It cannot give an answer to the question that is most important for practical purposes - namely, what must one do to obtain a desired effect in given concrete cases? To answer this question it is necessary to have a theory, but a theory which is empirical and not speculative".

This chapter aims to develop a sound theoretical basis, in which the research problem will be explained and linked with the existing findings in the field of study or in related fields. A sound theoretical frame work can be developed by summing up available empirical knowledge which will form a basis to derive hypotheses for the study.

Innovation, Diffusion and Spatial diffusion.

The diffusion of innovations from the agricultural research stations into the neighbouring areas is the focal point of this study.

"Innovation is the successful introduction of ideas perceived as new, into a given social system" (Friedmann, 1969).

The essence of innovation unlike invention is implementation. The idea need only be 'perceived' as new-often it will be borrowed or imitated. And also the term is not restricted to 'the practical application of technical knowledge in production, but also to the replacement of old forms, traditions and ways of doing things' (Hermansen, 1972).

The diffusion of innovations concerns simply, "the acceptance over time of some specific idea or practice by individuals, groups or other adopting units" as defined by Katz et al. and quoted by Berry (1972).

Spatial diffusion of innovations, which is the central point of this study, is concerned with the acceptance of innovations in both time and geographical space. Spatial diffusion of innovations can be categorised into two - "neighbourhood" and "hierarchial". The former has its emphasis on the overriding importance of physical distance in the diffusion process. The distinction between the two as expressed by Cohen (1972) is as follows: "the neighbourhood effect means that the closer a potential adoption unit to the source of innovation or to another unit that has already adopted, the greater the probability that it will adopt. The hierarchial effect implies that the higher the ranking of a potential adoption unit in a hierarchy, the greater the chance that it will adopt". It is the former type - 'neighbourhood' - of spatial diffusion that this study is concerned with.

Hagerstrand . (1952)has described the spatial regularities of innovations as consisting of 3 stages. They are as follows:

Stage 1: Local concentrations of initial acceptance (initial agglomerations)

Stage 2: Radial dissemination outward from the initial agglomerations is accompanied by the rise of secondary agglomerations, while those original centres simultaneously continue to condense

Stage 3: The growth ceases (saturation stage).

In the above study by Hagerstrand, the agricultural indicators clearly displayed initial acceptance groups and radial dissemination along relatively clearcut lines.

There are other examples which indicate that the above scheme is valid for the diffusion of other cultural phenomena as well. The dissemination of wheat cultivation in Sweden followed this pattern within the framework allowed by natural conditions as observed by Lagnert (1949). A study by Wik (1950) indicated that the introduction of steam-powered saws in Norrland between 1850 and 1900 was a large scale reproduction of precisely that process which was observed in Hagerstrand's study; that is, first a dense acceptance area developed around the initial acceptance point in Lundsvall, and then radial dissemination and secondary centres occured. Other industrial

examples are to be found in the glass works region of Southeastern Smaland as reported by Caesar (1931) and the small plant industrial region in the western part of that province as identified by Hårenstam (1942).

The three stage sequence of change can also be detected in the growth of new settlement forms. The works of Wennberg (1947) and Nordstrom (1952) respectively on the development of croft settlements in Northeastern Ostergotland and eastern Smaland reproduce spatial processes in the spread of innovations closely related to what has been discussed earlier.

Previous research works on the Spatial Diffusion of Innovations.

The spatial approach to the diffusion of innovations is only one of the many approaches and cannot be isolated from the others. Its importance ought to vary with the form of the observed population and with the communications media involved. In a society, where there are no appreciable time or cost obstacles preventing one individual from coming into contact with any other individual, relations within "social space" cannot be appreciably modified by the constraints of geometrical space. If air-travel and ability to transmit as well as receive Television were within the reach of every individual, then we would approach the conditions of 'a one-point society' in which case the spatial interpretation of social phenomena would become quite irrelevant. Since so far such conditions

do not exist, it will be interesting to have a spatial analysis of the process of innovation-decision.

An attempt is made here to review previous research work on the aspects of diffusion of innovations as a spatial process; which have a bearing on this study.

Following are some of the examples of innovations which are relevant to development and which have been studied in their spatial dimension:

McVoy . (1940) conducted a study on the city-manager-style governments and tried to know how it spread from its initial acceptance area to the other areas.

The technical developments in manufacturing industry was studied by Pred (1966) in the similar lines of investigation.

Crain (1966) found a clear tendency for those American municipal governments which were early adopters of fluoridation, to influence their undecided neighbours.

A study by Tornquist (1967) on the spread of television sets in parts of Sweden confirms that the distance factor was virtually irrelevant. He noticed that information about the innovation was spread by extensive net work of social relationships and that a much more significant determinant was variation in acceptance - proneness or the degree of resistance to innovation demonstrated by individuals.

Krim (1967) studied the spread of street railways on the spatial dimension.

Morrill (1968) suggested that the eventful spatial distribution of innovation acceptance is the product of a process of innovation adoption in which the zone of maximum acceptance moves progressively away from the origin as the time progresses.

Pederson (1971) has suggested the exchange of information between two towns to be depending upon the distance between them and their size.

The spatial pattern of diffusion of planned shopping centres formed the focal point of study by Cohen (1972).

Misra et al (1972) has advocated the careful functioning of a hierarchy of urban centres in India, in order primarily to promote the efficient functioning of the information networks and thence the diffusion of innovations to the rural areas.

Berry (1972) did indeed find distance from a town that had previously adopted a TV station to be an important determinant of the proportion of rural households with TV sets.

Songsore (1979) who studied the spatial variations within the sphere of influence of innovative services in Ghana found that innovations first filter down the urban hierarchy and then spread outwards with a decline in intensity in the most distant areas.

While the spatial view point is common to all these works cited, in that the distribution of a particular phenomenon is studied, they fail to treat the diffusion of innovations more systematically.

Agricultural Innovations.

Very little work could be traced out on the spatial diffusion of agricultural innovations, that too closely related.

Works of Lindgren (1937) and Hannerberg (1941) might be mentioned as examples both of whom in discussing the distribution of crop rotation systems in past periods, reacted to earlier physically deterministic interpretations.

A few American scholars - Ryan and Gross (1943), Gross (1949) and Gross and Taves (1952) - have attempted to gain some comprehension of the varying patterns of innovational behaviour within an agricultural population. These authors compared those who had accepted new corn hybrids or new technological practices with those who had not. Their findings revealed that variables such as exposure to journals, education, age, participation in co-operatives and other associations, frequency of travel to the nearest central place, size of farm holding and income were determinants of adoption of agricultural innovations.

Hagerstrand's (1952) work can be cited as a classical example of a study dealing with the spatial diffusion of agricultural innovations. In the simulation model of diffusion of agricultural innovations worked out by Hagerstrand in this study, the adoption of innovations by farmers in any given locality was found to be dependent orimarily upon the likelihood of their receiving information about it, itself very largely a function of distance from a previous adopter. Haggerstrand who viewed diffusion of innovations as a learning (persuasion) process, approached the problem by considering that there existed networks of social communications which connected certain places, (central place in this case) to the exclusion of others.

Oliver et al. (1975) reported that distance is a determinant factor to adopt through National Demonstration. The adoption was high among farmers within one mile radius of the Demonstration as compared to other farmers.

Baril (1977) on conducting a spatial analysis of the distribution of a particular farming practice over a 25 year period in a relatively stable and closed locality suggested that proximity to prior adopters is a factor in adoption.

Sarma et al. (1979) found positive results while studying the impact of the Indo-German fertilizer educational project in the project area and the extent of spread of the benefits of the programme in the surrounding areas.

Kamarudeen (1981) after studying the impact of National Demonstration Programme has reported significant difference between the neighbouring and control farmers in their knowledge, attitude and adoption of the scientific practices of paddy cultivation.

Based on these studies, it can be assumed that the spread of agricultural innovations follows a spatial process from their centre of origin.

Role of Agricultural Research Stations in the spread of Innovations.

An agricultural research station should be a motivating force for farmers who are nearby at least, to adopt modern agricultural practices and should serve as an information source.

But no review directly related to this aspect could be met with and hence a few of the related works are mentioned here.

Romany (1977) reported the transformation of a Hungarian village due to the establishment of agricultural co-operatives. Improvements in living and working conditions and changes in cultural and social opportunities were possible.

A study by Rosenthal (1973) revealed that poor farmers around International Crop Research Institute for Semi-Arid Tropics (ICRISAT) were more interested in adoption due to its influence.

Ruttan (1978) concluded that the research stations do not take into account the social factors and hence they fail to make the farmers adopt the innovations.

Based on the above establishing the role played by growth centres in assisting development in the areas around them, it can be postulated for this study that the agricultural innovations will spread from the research stations to nearby farmers and from these farmers to the other farmers at greater distances.

Factors associated with the spread of agricultural innovations as a spatial process.

A few studies concerned with the factors related to the adoption of innovations through spatial diffusion are cited here.

In the american study by Ryan and Gross (1943) on the introduction of hybrid seed corn in two Iowa communities, relationship between initial contact with the innovation and acceptance was dealt with in detail. Among other things, these scholars attempted to identify both the number of farmers who were informed for the first time per year about the new type of corn during the 1920's and 1930's and the number of acceptances during the same period. The data covered 259 farmers, all but two accepted the innovation.

Two other American studies by Gross (1949) and Gross and Taves (1952) and the study mentioned earlier attempted to

analyse the varying patterns of innovative behaviour within an agricultural population. While comparing the two groups of farmers - one which had accepted new corn hybrids or new technological practices and the other which had not - analysis was made on the basis of such variables as exposure to journals, education, age, participation in co-operatives and other associations, frequency of travel to the nearest central place, size of farm holding, income etc.

The results of these studies were occasionally consistent and occasionally contradictory. It was noteworthy that a factor such as age did not influence adoption of innovations. On the other hand, operators of large holdings generally seem to dominate among the innovation - accepting farmers.

Svensson (1942) conducted a research primarily concerned with the spread of architectural innovations in Delsbo, Halsingland during the 1850's. The population concerned was categorised according to (a) the location of farm (b) the size of farm and (c) age of farm owners.

In contrast to the American results, Svensson found that both age and size of farm play roles of varying importance for different cultural innovations. While it was not generally so, in certain case the younger farmers and the operators of large farms adopted innovations earlier than others.

Age and farm size thus recur as factors in the studies so far cited.

Hagerstrand (1952) in his study on the Innovation diffusion process as a spatial one found no relationship between farm size and acceptance. The basic hypothesis that acceptance gradually proceeds in an orderly fashion from larger to smaller cultivated holdings was largely rejected. An obvious localizing influence was exerted, only by the largest and smallest cultivated holdings.

In this same study by Hagerstrand, it was hypothesised that on the average, the density of contacts included in a single person's private information field must decrease very rapidly with increasing distance. But the empirical data could not provide a precise idea regarding the relative frequency of contacts with people living in the immediate vicinity versus contacts with some what more distant individuals. The data revealed that the distance factor has a much more subordinate role. It only begins to strongly assert itself when hinterland contacts and the intra-urban contacts of large population agglomerations are involved.

Pederson (1970) in his study on the adoption in Chile of fire brigades, hospitals, water works, radio stations etc. in the late nineteenth and early twentieth centuries confirmed a significant, though relatively weak relationship between date of adoption and size of town.

Pederson (1971) has come out with another finding that flow of information between two towns will depend upon their size and spacing.

Rosenthal (1978) after studying the influence of International Crop Research Institute for Semi-Arid Tropics among the nearby farmers opined that poor farmers were more interested in adoption than rich farmers.

Findlay and Maclennan (1978) opined after analysing Innovation-diffusion at micro-scale that socio-economic factors constraining the application of ideas or inventions were the chief factors shaping patterns of innovation-adoption rather than spatial inequality in access to information. It was concluded that the neighbourhood effect which forms the basis of the conventional theory relating to rural innovation diffusion processes, does not operate consistently within these study areas.

Osuji (1980) on studying the infrastructural facilities affecting the adoption of new farm practices among farmers in the Imo state of Nigeria analysed the effects of age, education and income on expenditures on recommended new practices, as well the effects of frequency of extension contacts and the distance between the farmer and the extension officer. There were 200 observations in all. The results are quoted as follows: Educational status remaining the same, age does not have an adverse effect. The effect of frequent

contact with the extension service was consistently positive and the author stressed the importance of this channel compared with more general media.

The following conclusion can be made based on the above review:

A research station should be a motivating force for the farmers who are living around the research station to adopt modern agricultural practices brought out by the research station. These farmers will first gain knowledge on improved practices since the research station and research workers are credible information sources. They will develop positive attitude towards these practices which in turn will lead to the final adoption of the practices. All these depend on the farmer's utilization of the research station as an information source. This means, if the farmer makes frequent visits to the research station and research workers, such visits will definitely have a positive influence on his knowledge level on the practices, extent of attitude towards these practices and adoption of the same. Moreover, the perception of farmers about the research station and research workers is also bound to be influenced by the frequency of visits.

The degree or frequency of a farmer's contact with research station and research workers will further be determined by some of his personal characteristics. One important such

character is his age. A farmer who is young can be expected to have more visits because of his better health conditions than an older farmer. Similarly a farmer with higher education, higher income, higher scientific orientation and who owns a large farm can be expected to have more frequency of visits to the research station. Of course, the primary factor which decides his degree of contact is the distance between the farmer's home and the research station. A farmer who is nearer to the research station will definitely have greater degree of contact than a distant farmer, which will ultimately reflect on his knowledge of improved agricultural practices, attitude towards and adoption of the same and his perception about research station and research workers.

Based on the above review and discussion, the following variables were decided to be included in this study.

A. DEPENDENT VARIABLES.

1. Knowledge (of improved agricultural technology)
2. Attitude (towards improved agricultural practices)
3. Adoption (of recommended agricultural practices)
4. Perception (about research station and research workers)

B. INTERVENING VARIABLE.

Degree of contact of farmer with research station and research workers.

C. INDEPENDENT VARIABLES.

1. Age
2. Education
3. Economic status
4. Farm size
5. Scientific orientation

An attempt is made here to review the works done earlier on the association between the selected variables.

A. Association between Intervening Variable and Dependent Variables.

The intervening variable selected is the degree of contact of farmer with the research station and research worker.

1. Knowledge: No work directly dealing with the relationship between knowledge and degree of contact with research station and research worker could be reviewed.

Knight and Singh (1975) concluded that the contact with extension agencies had positive relationship with gain in knowledge of farmers.

Kaleel (1978) reported a positive and significant relationship between contact with extension agencies and gain in knowledge.

Significant positive relationship between contact with extension agencies and knowledge level for both neighbouring and control farmers was observed by Kamarudeen (1981).

Since Agricultural Research Stations act as information sources, contact with the research station and research worker can also lead to gain in the farmer's knowledge level. Hence, it was postulated for the present study that the degree of contact of a farmer with research station and research workers will have a positive influence on his knowledge level about improved agricultural technology.

2. Attitude: Only one study could be located which reveals relationship between contact with information source and attitude.

Kamarudeen (1981) reported significant positive relationship between contact with extension agency and the farmer's attitude towards the scientific practices in paddy cultivation.

As said earlier, contacts with an agricultural research station and research workers can also contribute to attitude development.

So for the present study, it was postulated that there will be positive relationship between a farmer's contact with research station and research workers and his extent of attitude towards improved agricultural practices.

3. Adoption: Ryan and Gross (1943) found positive relationship between initial contact with the innovation and its acceptance.

Bose (1961) and Sawhney (1961) reported that low adoption of improved agricultural practice was due to less contact of farmers with extension agencies.

Sundaraswamy and Duraiswamy (1975) opined that significant positive relationship existed between the contact of farmers with extension agencies and the number of practices adopted by them.

Osuji (1980) concluded that the effect of frequent contact with the extension service on the acceptance of recommended new practices was consistently positive.

The finding by Kamarudeen (1981) was that significant positive relationship existed between contact with extension agencies and the adoption of recommended practices.

Since we can consider the research station also to be an information source like the extension agency, based on the above mentioned works it was postulated that the degree of contact with research station and research workers will have a positive influence on the farmer's adoption of the different agricultural practices.

4. Perception about Research Station and Research worker:

No work could be traced out which explains the relationship between degree of contact with research station and the farmer's perception about research station and research workers.

But it can be presumed that if a farmer has more contact with the research station; he will be able to have a better know-how about the research station as well as the

workers which can contribute to a favourable perception about both the research workers and the station.

Hence it was postulated for this study that a farmer's degree of contact with the research station and research workers will have a positive influence on his perception about the research station and research worker.

B. Association between Independent Variables and Intervening Variable:

1. Age: There was no study which directly explained the relationship between age and degree of contact.

Since it has been shown earlier that degree of contact has a positive influence on knowledge, attitude and adoption of farmers, studies which explain the relationship between age and knowledge, attitude and adoption of farmers can be linked to this study. A few such studies are mentioned below:

Svensson (1942) found that the younger farmers adopted the innovations before the other farmers.

Bhaskaran and Mahajan (1968) reported that young and middle aged farmers were slightly superior to old age group in the matter of retention of knowledge about extension methods.

Singh and Singh (1968) found younger farmers to be having a significantly favourable attitude towards fertilizers than older farmers.

Anbalagan (1976) concluded that young farmers accepted more number of improved agricultural practices of high yielding varieties of paddy than older farmers.

Pillai (1978) while studying the impact of soil conservation programme found that age was negatively and significantly related with adoption of soil conservation practices.

It is expected that a farmer having more degree of contact with the research station and research workers should possess higher knowledge, favourable attitude and should be adopting the scientific practices more. Moreover, it can be argued that younger farmers are expected to have frequent visits to the research stations and have discussions with research workers as they are more healthy than older farmers. Thus based on these assumptions and the other works cited earlier, it was postulated for this study that age of farmers would be negatively related to their degree of contact with the research station and research workers.

2. Education: The degree of contact a farmer has with the research station and research workers can be explained in terms of his ability to utilize research station as an information source .

Jha and Singh (1966) reported that the utilization of sources of farm information had significant relationship with the level of education.

Parshad (1966) found positive association between educational level and information source use.

Singh and Sahay (1970) found that educational status had positive and significant correlation with the number of information sources utilised by farmers.

Parshad and Sinha (1971) also observed significant relationship of farmers' education with their information source utilization.

However, Thangamony (1972) and Nanjaiyan (1975) reported that educational status of farmers did not have any significant association with their utilization of information sources at different stages of adoption.

Chole and Rahudkar (1978) found that educational status was significantly related with the utilization pattern of information sources.

Based on these works and the possible relationship between the farmers' visit toresearch station and their utilization of that information source, it was postulated in this study that education will have a positive influence on the farmers' degree of contact with research station and research workers.

3. Economic status: The relationship between this variable and degree of contact can also be explained in terms of the farmers' utilization of research station as an information source, since no work could be located which explained the

relationship between economic status and the degree of contact directly.

Singh (1974) reported that economic status affected the source utilization pattern of farmers.

Singh and Ambastha (1975) after an analysis of the communication behaviour of farmers reported that socio-economic status of farmers was found to be significantly correlated with their use of information source.

It can be expected from these findings that in this study also farmers with higher economic status will be having more degree of contact with the research station to utilize it as an information source.

So it was hypothesised that the economic status of a farmer will be positively related with his degree of contact with the research station and research workers.

4. Farm size: The direct relationship between farm size and degree of contact was not explained in any of the works reviewed.

Hagerstrand (1952) who studied Innovation-diffusion as a spatial process found no relationship between farm size and acceptance of innovations.

Farm size is found to have a positive influence on the adoption of recommended practices by farmers, as indicated by the works of Subramonyan and Lakshmana (1973), Sharma and Nair (1974) and Chandrakandan and Subramanyan (1975).

However, in this study it is expected from the above said findings that farmers operating larger farms will be having more degree of contact with the research stations to gain more knowledge about the scientific practices which they can adopt in their farm.

So it was postulated that farm size will have a positive relationship with the degree of contact a farmer has with research station and research workers.

5. Scientific orientation: A farmer who is favourably oriented to science will be favourably responding to scientific practices in agriculture also which in turn will help him to adopt these scientific practices. Such a farmer can be expected to utilize the research station as an information source. But no work explaining this relation could be reviewed.

However, scientific orientation of farmers has a positive influence in their adoption of farm practices as opined by Beal and Sibley (1967) and Supe and Salode (1975).

As suggested earlier, it can be expected that a farmer who is scientifically oriented will make more contacts with the research station and research workers to gain information on scientific practices in farming.

Thus it was postulated in this study that scientific orientation will have a positive influence on the farmers' degree of contact with research station and research workers.

The conceptual model developed for the study on the basis of the above discussion and review of the selected variables is presented in Fig. 1.

DEFINITION OF CONCEPTS.

1. Knowledge of Improved Agricultural Technology:

The body of understood information of farmers regarding the recommended agricultural practices in paddy cultivation.

2. Attitude towards Improved Agricultural Practices:

The degree of positive or negative affect associated with the recommended agricultural practices for paddy cultivation towards which the farmers differ in varying degrees.

3. Adoption of different Agricultural Practices:

Adoption was defined as the end action of using the recommended improved practices for cultivation of paddy during the last season.

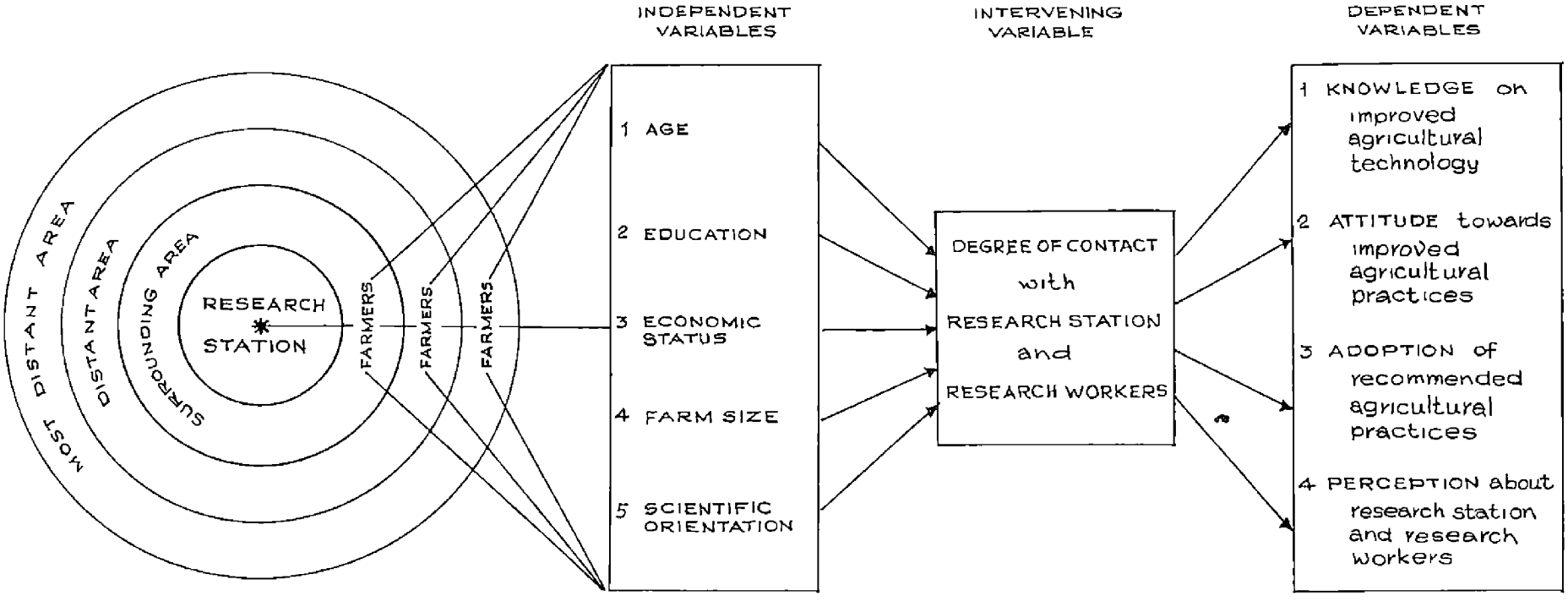
4. Degree of contact with Research Station and Research Workers:

This concept was defined as the frequency with which the farmer had visited the research station and had discussions with the research workers on farming during last year.

5. Age:

The number of years completed by the farmer at the time of interview.

FIG 1 CONCEPTUAL MODEL OF THE STUDY



6. Education:

The extent of formal learning possessed by the farmer.

7. Economic status:

It is the economic condition of the farmer taking into account the materials possessed by him as well as the type of house in which he lives.

8. Farm size:

The number of acres of land under cultivation.

9. Scientific orientation:

It is the degree to which the farmer is oriented to the use of scientific methods in agriculture.

10. Impact:

This concept was defined as the difference between the surrounding and distant farmers on the four selected aspects such as knowledge of improved agricultural technology, attitude towards improved agricultural practices, adoption of different agricultural practices and perception about research stations and research workers.

11. Perception about Research Station and Research Workers:

Farmers' perception about the research station and research workers about their usefulness in helping the farmer to increase agricultural production and his standard of living.

HYPOTHESES DEVELOPED FOR THE STUDY.

The following specific hypotheses were developed for the study.

A1: There will be significant difference in the degree of contact with research station and research workers between the farmers of the areas surrounding the research station and distant farmers.

A2: There will be significant difference in the level of knowledge of improved agricultural technology on paddy cultivation between the farmers of the areas surrounding the research station and distant farmers.

A3: There will be significant difference in the extent of attitude towards improved agricultural practices in paddy cultivation between the farmers of the areas surrounding the research station and distant farmers.

A4: There will be significant difference in the level of adoption of different agricultural practices in paddy cultivation between the farmers of the areas surrounding the research station and distant farmers.

A5: There will be significant difference in the perception about research station and research workers between the farmers of the areas surrounding the research station and distant farmers.

B1: There will be significant positive relationship between the degree of contact with the research station and research workers of the farmer and his level of knowledge on improved agricultural technology on paddy cultivation.

B2: There will be significant positive relationship between the degree of contact with the research station and research workers of the farmer and his extent of attitude towards improved agricultural practices in paddy cultivation.

B3: There will be significant positive relationship between the degree of contact with the research station and research workers of the farmer and his level of adoption of different agricultural practices in paddy cultivation.

B4: There will be significant positive relationship between the degree of contact with the research station and research workers of the farmer and his perception about the research station and research workers.

C1: There will be significant negative relationship between the age of farmer and his degree of contact with research station and research workers.

C2: There will be significant positive relationship between the education of farmer and his degree of contact with research station and research workers.

C3: There will be significant positive relationship between the economic status of farmer and his degree of contact with research station and research workers.

C4: There will be significant positive relationship between the farm size of farmer and his degree of contact with research station and research workers.

C5: There will be significant positive relationship between scientific orientation of farmer and his degree of contact with research station and research workers.

METHODOLOGY

CHAPTER III

METHODOLOGY

This chapter on the methodology adopted for the study is dealt under the following heads:

1. Selection of Research Stations for the study
2. Selection of samples for the study
   a. Selection of villages/wards
   b. Selection of respondent farmers
3. Procedures followed in the empirical measurement of the selected variables
4. Procedures followed in the collection of data
5. Procedures followed in the statistical analysis of collected data

1. Selection of Research Stations for the study:

Out of those agricultural research stations under the Kerala Agricultural University, only Rice Research Stations were considered for the study purpose since paddy is the most important food crop of Kerala.

There are seven rice research stations under the Kerala Agricultural University. It will be a big task to take up all these seven stations for the study purpose and

hence the researcher had to limit the area of study to the two major research stations out of the seven. The two major stations are

1. Regional Agricultural Research Station, Pattambi and
2. Rice Research Station, Kayamkulam.

The above two stations, one situated in the southern part of the state and the other in the northern part, were selected for the study.

2. Selection of villages/wards:

It was decided to draw samples of farmers from three distances around the research stations. The three distances thus fixed were:

i) 0 - 1.5 kms around the research station
ii) 1.5 - 3 kms around the research station and
iii) 3 - 5 kms around the research station.

The three groups were designated as farmers from Stratum I (S_1), farmers from Stratum 2 (S_2) and farmers from Stratum 3 (S_3) respectively and the farmers of Stratum 1 were considered as the surrounding farmers. The farmers of Stratum 2 and Stratum 3 were considered as the distant and most distant farmers respectively.

Regional Agricultural Research Station, Pattambi.

In the study area - Pattambi, the first stratum comes under the jurisdiction of Perumudiyoor Intensive Paddy

Development Unit, stratum 2 under the Ongalloor Intensive Paddy Development Unit and stratum 3 under Vilayoor Unit. From the list of villages collected from Intensive Paddy Development Unit, one village each was selected at random. Thus the villages selected were:

Muthuvala - from Stratum 1
Ongalloor II - from Stratum 2 and
Koppam - from Stratum 3.

The villages coming under each of the Stratum and the villages selected are given in table 1.

Table 1. Villages coming under each of the three Strata in the study area - Pattambi

Stratum	Distance	Villages present	Village selected
S_1	0 - 1.5 kms	Pattambi Muthuvala	Muthuvala
S_2	1.5 - 3 kms	Ongalloor I Ongalloor II	Ongalloor II
S_3	3 - 5 kms	Vilayoor Koppam Thiruvegappura	Koppam

Rice Research Station, Kayamkulam:

In the study area - Kayamkulam, as the area around the research station was classed into municipal wards; it was

decided to select one ward at random from each of the three strata representing the 3 distances. Thus from each stratum the wards selected at random were:

Ward No. 20 from Stratum 1
Ward No. 24 from Stratum 2
Ward No. 8 from Stratum 3

The municipal wards coming under each of the strata and the wards selected are given in table 2.

Table 2. Wards coming under each of the 3 strata in the study area - Kayamkulam

Stratum	Distance	Wards present	Ward selected
S_1	0 - 1.5 kms	17, 19, 20, 21 22, 23, 26	20
S_2	1.5 - 3 kms	1, 2, 12, 13, 14, 15, 16, 18, 24, 25, 27, 28	24
S_3	3 - 5 kms	3, 4, 5, 6, 7, 8, 9, 10, 11, 29, 30, 31, 32	8

Selection of respondent farmers:

A list of farmers cultivating paddy in each selected village was prepared in Pattambi and in Kayamkulam a list of paddy growers in each of the selected ward was prepared.

Accordingly the list of paddy farmers was prepared for Muthuvala, Ongalloor II and Koppam villages in Pattambi and for wards 20, 24 and 8 in Kayamkulam. The registers available at the Intensive Paddy Development Units, Village Office records, Fertilizer agencies and other relevant sources were referred to for this purpose.

From each list thus prepared, a sample of 30 farmer respondents was selected at random to represent the stratum under consideration. Thus a total of 180 farmers, - 90 from Pattambi and 90 from Kayamkulam - formed the respondents for the study as follows:

Station	Stratum	Village/Ward	No.of respondents
Pattambi	Stratum 1	Muthuvala village	30
	Stratum 2	Ongalloor II village	30
	Stratum 3	Koppam village	30
Kayamkulam	Stratum 1	Ward No. 20	30
	Stratum 2	Ward No. 24	30
	Stratum 3	Ward No. 8	30
		Total	180

3. Procedures followed in the empirical measurement of the variables selected:

I Dependent variables.

1. Knowledge:

Shankariah and Singh (1967) measured knowledge of

the respondents about improved methods of vegetable cultivation based on the teacher - made test. The method of self - appraisal was adopted by Singh et al. (1968) to assess the knowledge level of Agricultural Extension Officers.

Singh and Prasad (1974) measured knowledge by the Knowledge Quotient, which was calculated as follows:

$$\text{Knowledge Quotient} = \frac{\text{Observed knowledge score}}{\text{Actual total score}} \times 100$$

In the present study, a simple knowledge test was developed for the respondents who are paddy growers to measure their knowledge of the improved agricultural practices recommended for paddy. With the help of the Package of Practices Recommendations of the Kerala Agricultural University (1981) and discussions with research workers in the research stations, simple questions on the selected recommended practices were prepared for paddy crop.

The questions were presented to farmers during the pre-test of the interview schedule. On the basis of their responses, suitable modifications were made and questions with average level of difficulty were selected for the final knowledge test. A score of '1' was given to each correct answer and '0' score to wrong answer. The score obtained by a respondent on all items were added upto obtain the knowledge score. The knowleoge score was thus calculated as:

$$\text{Knowledge score} = \frac{\text{Obtained score}}{\text{Total score}} \times 100$$

Table 3 presents the recommended practices in paddy cultivation considered for measurement of knowledge in this study.

Table 3. Recommended practices in paddy cultivation considered for measurement of knowledge

Sl. No.	Practice
1.	Use of High Yielding Varieties
2.	Seed Treatment
3.	Spacing
4.	Soil Testing
5.	Liming
6.	Organic manuring
7.	Use of Chemical fertilizers*
8.	Use of plant protection chemicals

* The three major nutrients - viz. Nitrogen, Phosphorus and Potash have been considered under the use of chemical fertilizers.

2 Attitude:

Edwards (1957) has demonstrated the usefulness of attitude measurement scales for quick and reliable quantitative measure of attitude with large groups. Attitude

scales afford to order the various stimuli on a psychological continuum with respect to the degree of the attribute each possesses. Such attitude scales provide us with means of obtaining an assessment in quantitative terms, the degree of affect that an individual may associate with some psychological object.

In this study, the attitude of farmers towards improved agricultural practices in paddy cultivation was measured in terms of the attitude towards the three most important practices which are(a)use of high yielding varieties (b) use of chemical fertilizers and (c) use of plant protection chemicals.

Attitude towards the three most important practices:

a. Attitude towards the use of high yielding varieties:

The Likert technique of measurement of attitude was used in this study. Nair (1969) and Murthy and Singh (1974) developed Likert type scales to measure the attitude of farmers towards high yielding variety programme and IR - 8 paddy cultivation respectively. The method was also used by Pandyaraj (1978) to study the attitude towards high yielding varieties of paddy. This scale was used by Sivarama Krishnan (1981) with slight modification.

Balasubramonian and Singh (1982) developed an attitude scale to measure the attitude of paddy farmers towards high yielding varieties of paddy. This scale was used in this study.

The scale consisted of eight statements - four positive statements and four negative statements. The statements were:

(i) Adoption of high yielding varieties of paddy would benefit the community at large - the farmers, the consumers and the labourers.

(ii) Cultivation of high yielding varieties of paddy requires comparatively less labour than the local varieties of paddy.

(iii) The cultivation of high yielding varieties of paddy has brought about a number of socio-economic changes in the farming community.

(iv) For better level of living, cultivation of high yielding varieties of paddy is essential.

(v) Grains of high yielding varieties of paddy possess poor cooking quality.

(vi) The net return per unit of investment in growing high yielding varieties of paddy is less as compared to that of local varieties.

(vii) The introduction of high yielding varieties of paddy is a major break - through in boosting up our food production.

(viii) High yielding varieties of paddy can be grown on irrigated lands only.

The responses of farmers were rated on a 5 point continuum varying from 'Strongly Agree' to 'Strongly Disagree'. The scores assigned were: Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly disagree (1) in the case of positive statements (Statements 1, 3, 4 and 7). Negative statements (Statements 2, 5, 6 and 8) were scored in the reverse manner. The attitude score of the respondent towards the use of high yielding varieties was then obtained by adding up the scores obtained for each statement in the scale. Thus the minimum score obtainable was 8 and maximum 40 for a respondent.

b. Attitude towards the use of Chemical fertilizers:

A scale consisting of 12 statements according to Likert method was developed by Singh and Singh (1968) to measure the attitude of farm people towards chemical fertilizers, and the responses were entered in a 5 point continuum. Choudhary and Prasad (1971) developed a 15 item Likert type scale to measure the attitude of farmers towards chemical fertilizers.

In the present study, the scale used by Sivaramakrishnan (1981) was used.

The statements of the scale were:

(i) The food problem of our country can be solved by using chemical fertilizers to crops.

(ii) If we use chemical fertilizers continuously for some years, the soil will become unsuitable for cultivation.

(iii) If anybody asks for my advice for increasing production, I will advice him to use chemical fertilizers.

(iv) Produce of crops grown with chemical fertilizers is harmful for health.

(v) Chemical fertilizers will not give returns in relation to the cost involved.

The responses were ranked on a 5 point continuum ranging from 'Strongly Agree' to 'Strongly Disagree'. The scores assigned were Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly disagree (1) for positive statements (Statements 1 and 3). For negative statements (Statements 2, 4 and 5), scoring was done in the reverse manner. The attitude score of each respondent towards the use of chemical fertilizers was obtained by adding up the scores obtained for each statement in the scale. Minimum score obtainable was 5 and maximum 25 for a respondent.

C. Attitude towards use of plant protection chemicals.

Manoharan (1979) used a Likert type scale consisting of six statements scored on a 5 point continuum to measure

the attitude of rural leaders towards chemical plant protection. Sivaramakrishnan (1981) also used this scale for measuring the attitude of farmers towards the use of plant protection chemicals.

The above scale was used in the present study also and the scale consisted of the following statements:

(i) The use of chemicals for pest and disease control in crops is one of the important methods to increase agricultural production.

(ii) Consumption of produces of crops sprayed with chemicals is not good for health.

(iii) Plant protection chemicals will spoil the soil.

(iv) All farmers should use plant protection chemicals to control pests and diseases.

(v) There must be a law to enforce farmers to adopt chemical control of pests and diseases.

(vi) Even though there are bad effects of plant protection chemicals, the good effects justify their use for crops.

The scoring adopted for each statement on the continuum was Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly disagree (1). The scoring pattern was reversed in the case of negative statements (Statements 2 and 3). The attitude score of each respondent towards the use of

plant protection chemicals was obtained by adding up the score obtained for each statement. The minimum obtainable score of a respondent for the scale was 6 and maximum 30.

Then the attitude score of the respondent farmer towards the improved agricultural practices was obtained by adding up (a) the score obtained for the use of high yielding varieties (b) the score obtained for the use of chemical fertilizers and (c) score obtaining for the use of plant protection chemicals.

3. Adoption.

Of the various methods suggested for measurement of adoption by different workers in India and abroad, some of the notable techniques are the ones suggested by Wilkening (1952), Marsh and Coleman (1955), Fliegel (1956), Beal and Rogers (1960), Chattopadhyay (1963) and Supe (1969).

Wilkening (1952) used an index for measuring the adoption of improved farm practices. Considering the potentiality of adoption, he accepted the percentage of practices adopted to the total number of practices applicable for the respondent as the adoption index.

Marsh and Coleman (1955) also used a practice adoption score computed as the percentage of applicable practices adopted.

Supe (1969) used an unweighted practice adoption score. He selected ten practices of cotton and for each

practice the total score for complete adoption was 6. Partial scores were assigned to divisible practices.

Chattopadhyay (1963) constructed an "Adoption Quotient" to measure farm practices adoption. He took into consideration the different factors like potentiality, extent, weightage and time to develop adoption quotient.

Singh and Singh (1974) used the 'adoption quotient' method of Chattopadhyay (1963) with slight modification.

In the present study, the method suggested by Singh and Singh (1974) was used. The formula used was as follows:

$$\text{Adoption Quotient} = \frac{\sum e/p}{N} \times 100 \quad \text{where}$$

$\sum$ = the summation

e = Extent of adoption of each selected practice

p = Potentiality of adoption of each selected practice and

N = The total number of selected practices.

But, for this study, 'N' was considered as the total number of applicable practices only. The practices included for the study are those included for measurement of knowledge presented in Table 3.

Using the formula, adoption quotient was calculated for each respondent.

4. Perception about research station and research workers.

The perception of one farmer about the research station and research workers will be different from the perception of another farmer. This perception may directly or indirectly influence the farmer's outlook to the improved methods of cultivation and also this perception will be in terms of the usefulness, practicability and feasibility of the findings of the station, the sincerity and responsibility of the research workers to the farmer and other attributes. So it was decided to measure the perception of farmers about research station and research workers under three major heads viz.

a. Perception about the research findings of the station
b. Perception about the research workers and
c. Perception about the research station in general.

For this purpose, based on the discussion that the researcher held with farmers, perception statements were collected from the farmers on the various attributes mentioned earlier. There were 29 statements in all in this set of statements.

These statements were then edited after discussion with Extension experts. A final set of 21 statements were selected for the study as follows:

a. 7 statements on the perception about research findings from the station

b. 4 statements on the perception about research workers and

c. 10 statements on the perception about the research station in general.

An arbitrary scoring pattern was adopted for measurement. The statements were presented to the farmer respondents and they were asked to indicate their responses along a 3 point continuum, the response categories being: Very true, True to some extent and Not at all true. The scoring pattern followed was, a score of '3' for 'Very true' responses, a score of '2' for 'True to some extent' responses and a score of '1' for 'Not at all true' responses, for positive statements. For negative statements, the scoring pattern was in the reverse order.

The scores obtained for each statement were added upto get the total score for the farmer under each of the 3 sections. Thus the range of total scores was:

a. 7 - 21 for perception about the research findings of the station

b. 4 - 12 for perception about the research workers and

c. 10 - 30 for perception about the research station in general.

For studying perception another pattern of measurement was also taken up.

II Intervening Variable.

Degree of contact with Research Station and Research Workers:

For measurement of this variable, an arbitrary scale was constructed for the study purpose. This scale consisted of questions as to whether the farmer has heard of the research station, whether he has seen the research station, whether he has visited the research station and whether he has had discussions with the research workers.

The questions that were included and the scoring pattern adopted were as follows:

a. Have you heard of the research station?
   A score of '1' for 'Yes' response and no score for 'No' response.

b. Have you seen the research station?
   An additional score of '2' for 'Yes' response and no score for 'No' response.

c. Have you visited the research station?
   An additional score of '3' was given to 'Yes' response and no score was given for 'No' response.

Based on the frequency of making visits, additional scores were assigned in the following manner:

Frequency of visit	-	Score given
Once in a week		5
Once in a month		4
Once in 3 months		3
Once in 6 months		2
Less than that		1

d. Have you had discussions with research workers?

If 'Yes'

(i) Was it during the research worker's visit to you?

OR

(ii) Was it during your visit to the research station?

If it was during the research worker's visit to the farmers, an additional score of '4' was given and if it was during the farmers' visit to the research station, an additional score of '5' was given.

The frequency of discussions, a farmer had with the research workers was also considered to develop the scale.

Frequency of having discussion	-	Score
Once in a week		5
Once in a month		4
Once in 3 months		3
Once in 6 months		2
Less than that		1

The scores obtained for all these items were summed upto get the score of an individual farmer for his degree of contact with research station and research workers. It was thus calculated for all the respondents. Another form of measurement was also taken up.

III Independent Variables.

i. Age:

In this study, age was measured in terms of the number of years completed by the respondent at the time of interview.

ii. Education:

The different educational levels of the respondent farmers were scored as per the system followed in socio-economic status scale of Trivedi (1963) with a slight modification. The scoring was as follows:

Illiterate	=	0
Can read only	=	1
Can read and write	=	2
Primary school	=	3
Middle school	=	4
High school	=	5
College	=	6

iii. Economic status:

Economic status of the farmer was measured in terms of

a. Material possession and

b. House type of the farmer.

a. Material possession: Bhaskaran (1976) and Sivaramakrishnan (1976) used an index to measure material possession of farmers based on the money value of the materials possessed by them. The money value was assigned to each material based on the respondents' assessment and in the case of discrepancies market value of the materials were assigned.

This same method was followed for the present study also with a slight modification. The number of items possessed by the respondent was multiplied by the money value and the total cost of materials possessed by each of the respondent was worked out. Then a score of '1' was assigned to every five hundred rupees and the total score was then calculated.

b. House type: In order to measure this variable, an arbitrary scoring pattern was followed which is as follows:

Type of house	-	Scores
No home		0
Thatched house		1
Tiled house		2
Terraced house		3

An additional score of '3' was assigned to electrified houses.

iv. Farm size: Even though this variable was studied by many a researcher along with economic status, it was decided to include it as a separate variable for this study. Because in Kerala at present, farm size is not a determinant factor of a person's economic status. Even a farmer with big farm is found to have a low economic status.

The variable was measured in terms of the number of acres of land owned and cultivated by the farmer.

v. Scientific orientation: The scientific orientation scale developed by Supe (1969) was used for the present study. The scale consisted of 6 statements of which 5 were positive and one negative. The statements are:

1. New methods of farming give better results to a farmer than the old methods.
2. The way a farmer's forefathers farmed is still the best way to farm today.
3. Even a farmer with lots of experience should use new methods of farming.
4. Though it takes some time for a farmer to learn new methods in farming, it is worth the efforts.
5. A good farmer experiments with new ideas in farming.
6. Traditional methods of farming have to be changed in order to raise the level of living of a farmer.

The responses were collected in a 5 point continuum with the response categories being Strongly Disagree, Disagree, Undecided, Agree and Strongly Agree. The scoring pattern

followedwas Strongly Disagree - 1, Disagree - 3, Undecided - 4, Agree - 5 and Strongly Agree - 7 for positive statements (nos. 1, 3, 4, 5 and 6). For negative statement (No. 2) the scoring was done in the reserve manner.

Suggestions of farmers as to the research work to be done in the research station:

Studying the suggestions of farmers as to what should be the research work to be done in the research stations to overcome their problems is an objective of this study.

For this the farmers were asked an open end question as to what were the major problems that they had experienced in paddy cultivation during the last year and to suggest what can be done by the researchers in the research stations to overcome these problems. The problems put forward by farmers were collected in the order of importance. After getting the suggestions from all farmer respondents, they were then ranked based on the order of importance.

4. Procedures followed in the collection of data:

A draft interview - schedule was first prepared for pre-testing. Ten farmers who did not form the main sample were interviewed with this schedule. On the basis of the results of pre-test suitable modifications were made and the final schedule was prepared. The data were collected from the main samples of the study through personal interviews with the respondent farmers during the months of August -

September 1982. The questions were rendered in Malayalam at the time of interview. The interview schedule is given in Appendix I.

5. Procedures followed in the statistical analysis of the collected data:

The following statistical tests were used in the analysis of the data.

Analysis of variance tests:

The anova tests were used to compare the three strata with respect to the intervening and dependent variables. Thus anova tests were used to compare the three strata with respect to the degree of contact of farmer with research station and research worker, knowledge about improved agricultural technology, attitude towards improved agricultural practices, adoption of the different recommended practices and the farmer's perception about research station and research workers. The inferences were made at 0.05 level of significance.

Percentage analysis:

This method was used to work out the percentage of farmers who differed in their degree of contact with the research station and research workers and also the percentage of farmers who fall in the different response categories of the perception statements while measuring their perception about research station and research workers.

Correlation coefficient:

To determine the magnitude of relationship between the independent variables with the intervening variable and the intervening variable with the dependent variables, the correlation coefficients were worked out and tested for significance at 0.05 level.

Students' 't' test:

The test was used to test the significance of difference between the two research stations with respect to the variables such as degree of contact of farmer with research station and research workers, the knowledge on improved agricultural technology of the farmers, their attitude towards improved agricultural practices, their extent of adoption of the different recommended practices and the farmer's perception about research station and research workers.

RESULTS

CHAPTER IV

RESULTS

The results of the study are presented in the following order:

I. Differences in the Intervening and Dependent variables between the 3 strata in the two stations.

A. Intervening variable - Degree of contact

Differences in the degree of contact between the 3 strata in Pattambi and Kayamkulam.

B. Dependent variables.

1. Knowledge: Differences in the level of knowledge on improved agricultural technology between the farmers of the 3 strata in Pattambi and Kayamkulam.

2. Attitude: Differences in the extent of attitude towards improved agricultural practices between the farmers of the 3 strata in Pattambi and Kayamkulam.

3. Adoption: Differences in the extent of adoption of recommended practices between the farmers of the 3 strata in Pattambi and Kayamkulam.

4. Perception about Research Station and Research workers:

Differences between the farmers of the 3 strata in Pattambi and Kayamkulam in their perception about research station and research workers.

II. Relationship between the selected variables:

A. Relationship between degree of contact - the intervening variable and dependent variables:

1. Knowledge:

a. Relationship between degrees of contact and level of knowledge in the study area as a whole in Pattambi and Kayamkulam.

b. Relationship between degree of contact and level of knowledge in each stratum of the study areas - Pattambi and Kayamkulam.

2. Attitude:

a. Relationship between degree of contact and attitude towards improved practices in the study area as a whole in Pattambi and Kayamkulam.

b. Relationship between degree of contact and attitude towards improved practices in each stratum of the study areas - Pattambi and Kayamkulam.

3. Adoption:

a. Relationship between degree of contact and adoption of recommended practices in the study area as a whole in Pattambi and Kayamkulam.

b. Relationship between degree of contact and adoption of recommended practices in each stratum of the study areas - Pattambi and Kayamkulam.

4. Perception about Research Station and Research Workers:

   a. Relationship between degree of contact and perception about research station and research workers in the study area as a whole in Pattambi and Kayamkulam.

   b. Relationship between degree of contact and perception about research station and research workers in each stratum of the study areas - Pattambi and Kayamkulam.

B. Relationship between the Independent variables and degree of contact - the intervening variable:

1. Age:

   a. Relationship between age and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

   b. Relationship between age and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

2. Education:

   a. Relationship between education and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

   b. Relationship between education and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

3. Economic status:

   a. Relationship between economic status and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

b. Relationship between economic status and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

4. Farm size:

a. Relationship between farm size and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

b. Relationship between farm size and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

5. Scientific orientation:

a. Relationship between scientific orientation and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

b. Relationship between scientific orientation and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

III A detailed analysis of the farmers' perception about research station and research workers:

A. Pattambi:

1. Perception about research findings of the station
2. Perception about the research workers
3. Perception about the research station in general.

B. Kayamkulam:

1. Perception about research findings of the station
2. Perception about the research workers
3. Perception about the research station in general.

IV. Comparison of the two stations - Pattambi and Kayamkulam in terms of variables such as:

1. Degree of contact of farmer with research station and research workers
2. Level of knowledge of farmers on improved agricultural technology
3. Attitude of farmers towards improved agricultural practices
4. Adoption of recommended agricultural practices of the farmers
5. Perception of farmers about the research station and research workers.

V. Suggestions for research to be done as perceived by farmers of:

1. Pattambi
2. Kayamkulam

I. Differences in the Intervening and Dependent Variables between the 3 strata in the two stations:

A. Intervening variable: Degree of contact.

Differences in the degree of contact between the 3 strata in Pattambi and Kayamkulam.

a. The computed 'F' value and the mean scores obtained for degree of contact by the farmers of the 3 strata in Pattambi and Kayamkulam are presented in Table 4.

Table 4. Computed 'F' value and mean scores for degree of contact of farmers of the 3 strata

Station	'F' value	Stratum	Mean scores	Critical difference	Inference
Pattambi	33.687*	Stratum 1	10.300	1.557	S_1 S_2 S_3
		Stratum 2	5.867		
		Stratum 3	4.100		
Kayamkulam	3.135*	Stratum 1	6.733	1.51	S_1 $\overline{S_2 S_3}$
		Stratum 2	4.766		
		Stratum 3	3.833		

* Significant at 0.05 level

The computed 'F' value was significant at 0.05 level for both the stations which indicated there was significant difference between the farmers of the three strata in their degree of contact with the research station and research workers. Hence

the hypothesis No. A1 was accepted. In Pattambi, farmers of Stratum 1 had the highest degree of contact, then came the farmers of Stratum 2 and farmers of Stratum 3 had the least degree of contact. In Kayamkulam too, farmers of Stratum 1 had the highest degree of contact, but the farmers of 2nd and 3rd strata were on par in their degree of contact.

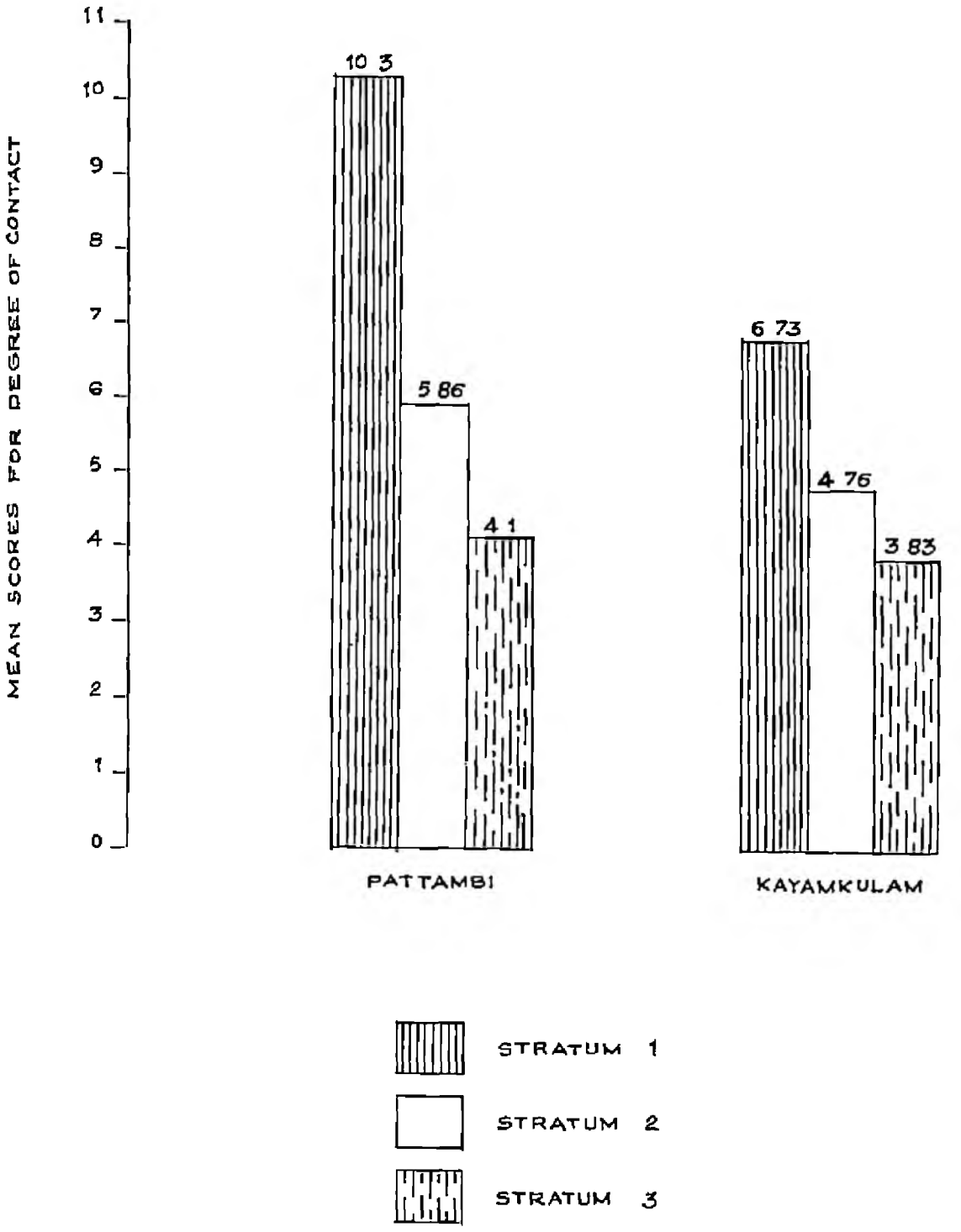
The mean scores for degree of contact obtained by farmers of the 3 strata in Pattambi and Kayamkulam are diagramatically presented in Fig. 2.

b. The number of farmers who had heard of the station, seen the station, visited the station and held discussion with research workers and the concerned percentages are presented in table 5.

Table 5. Number of farmers and their percentage who had heard of the research station, seen the research station, visited the station and held discussions with research workers

Station	Stratum	Heard of		Seen		Visited		Had discussion	
		No.	%	No.	%	No.	%	No.	%
Pattambi	Stratum 1	30	100	30	100	27	90	21	70
	Stratum 2	30	100	30	100	15	50	5	16.67
	Stratum 3	30	100	30	100	7	23.33	1	3.33
Kayam-kulam	Stratum 1	30	100	30	100	14	46.67	5	16.67
	Stratum 2	30	100	30	100	9	30	3	10
	Stratum 3	30	100	30	100	5	16.67	1	3.33

FIG 2 DEGREE OF CONTACT WITH RESEARCH STATION AND RESEARCH WORKERS OF FARMERS OF THE THREE STRATA IN PATTAMBI AND KAYAMKULAM



From this analysis also it was seen that more number of farmers from the stratum 1 had visited the stations and had held discussion with research workers than the farmers of Stratum 2 and 3. This further concretes the indication of farmers of stratum 1 having more degree of contact with the research station and research workers.

B. Dependent variables:

1. Knowledge: Differences in the level of knowledge on improved agricultural technology between the farmers of the 3 strata in Pattambi and Kayamkulam:

The computed 'F' value and mean knowledge scores obtained by the farmers of the 3 strata in Pattambi and Kayamkulam are presented in table 6.

Table 6. Computed 'F' value and mean knowledge scores of the farmers of the 3 strata

Station	'F' value	Stratum	Mean score	Critical difference	Inference
Pattambi	42.732*	Stratum 1	86.377	7.617	S_1 S_2 S_3
		Stratum 2	65.646		
		Stratum 3	51.368		
Kayam-kulam	15.376*	Stratum 1	73.218	6.669	S_1 S_2 S_3
		Stratum 2	63.640		
		Stratum 3	54.636		

* Significant at 0.05 level

The computed 'F' value was highly significant at 0.05 level in the case of both Pattambi and Kayamkulam. This revealed that there is significant difference between the farmers of the 3 strata in their level of knowledge on improved agricultural technology. Hence hypothesis No. A2 was accepted. In both the places, farmers of Stratum 1 had the highest knowledge score, followed by farmers of stratum 2 and farmers of Stratum 3 had the lowest knowledge score.

The mean knowledge scores of farmers of the 3 strata in Pattambi and Kayamkulam are diagramatically presented in Fig. 3.

2. Attitude: Differences in the extent of attitude towards improved agricultural practices between the farmers of the 3 strata in Pattambi and Kayamkulam:

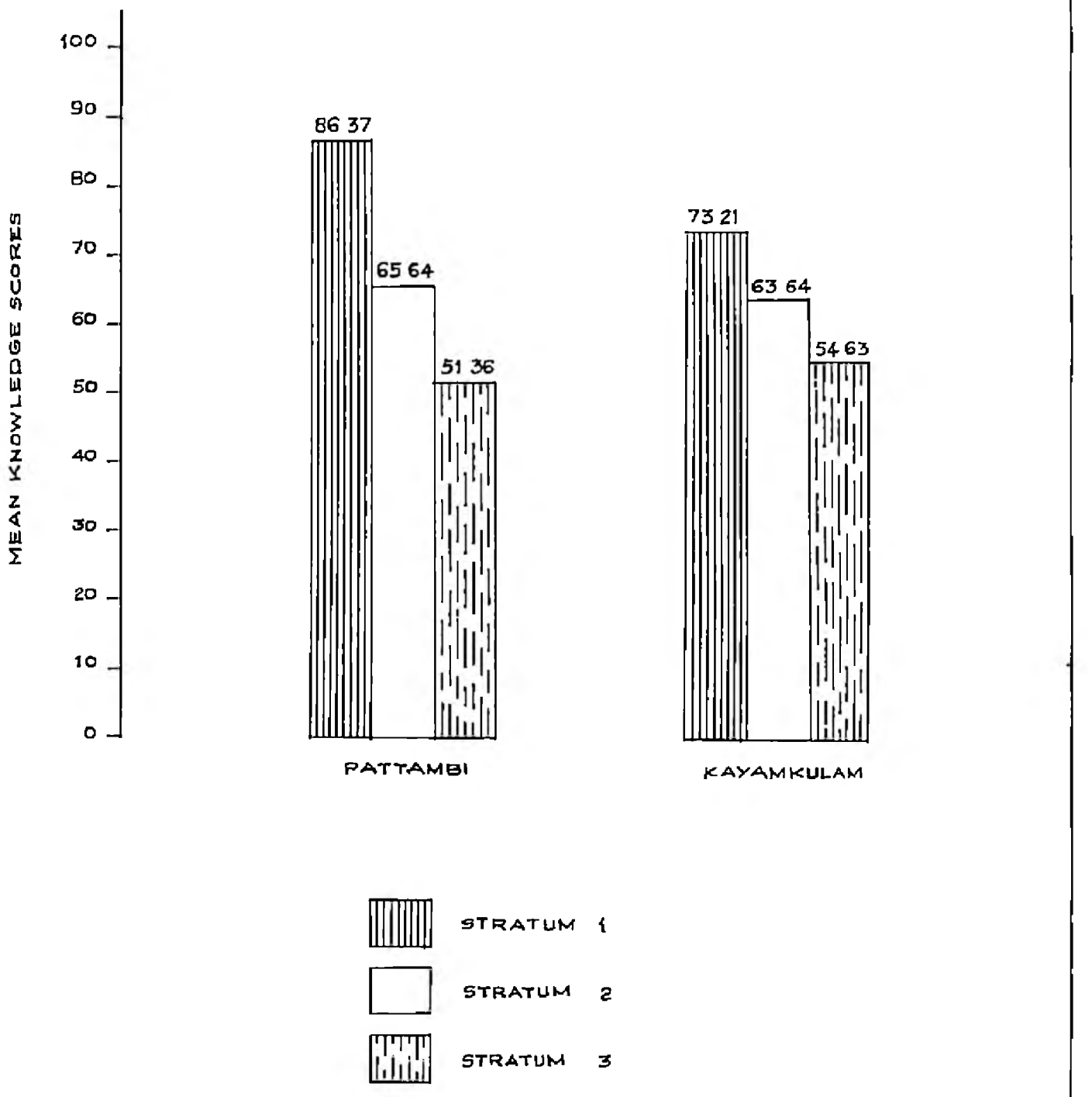
The computed 'F' value and the mean scores for attitude towards improved agricultural practices of the farmers of the 3 strata in Pattambi and Kayamkulam are appended in table 7.

Table 7. Computed 'F' value and mean scores for attitude towards improved agricultural practices of the farmers of the 3 strata

Station	'F' value	Stratum	Mean score	Critical difference	Inference
Pattambi	78.649*	Stratum 1	77.600	4.037	S_1 S_2 S_3
		Stratum 2	63.600		
		Stratum 3	52.333		
Kayam-kulam	81.521*	Stratum 1	76.733	3.418	S_1 S_2 S_3
		Stratum 2	65.733		
		Stratum 3	54.800		

* Significant at 0.05 level

FIG 3 LEVEL OF KNOWLEDGE ON IMPROVED AGRICULTURAL TECHNOLOGY OF THE FARMERS OF THE THREESTRATA IN PATTAMBI AND KAYAMKULAM



The computed 'F' value was highly significant at 0.05 level for both Pattambi and Kayamkulam. This showed that there was significant difference between the farmers of the 3 strata in their extent of attitude towards improved agricultural practices. Therefore hypothesis No. A3 was accepted. The farmers of Stratum 1 had the highest attitude score followed by farmers of Stratum 2 and the lowest scores were obtained by farmers of Stratum 3. This was applicable to both the stations.

Figure 4 diagramatically presents the mean attitude scores of the farmers of the 3 strata in Pattambi and Kayamkulam.

3. Adoption: Differences in the extent of adoption of the recommended practices between the farmers of the 3 strata in Pattambi and Kayamkulam

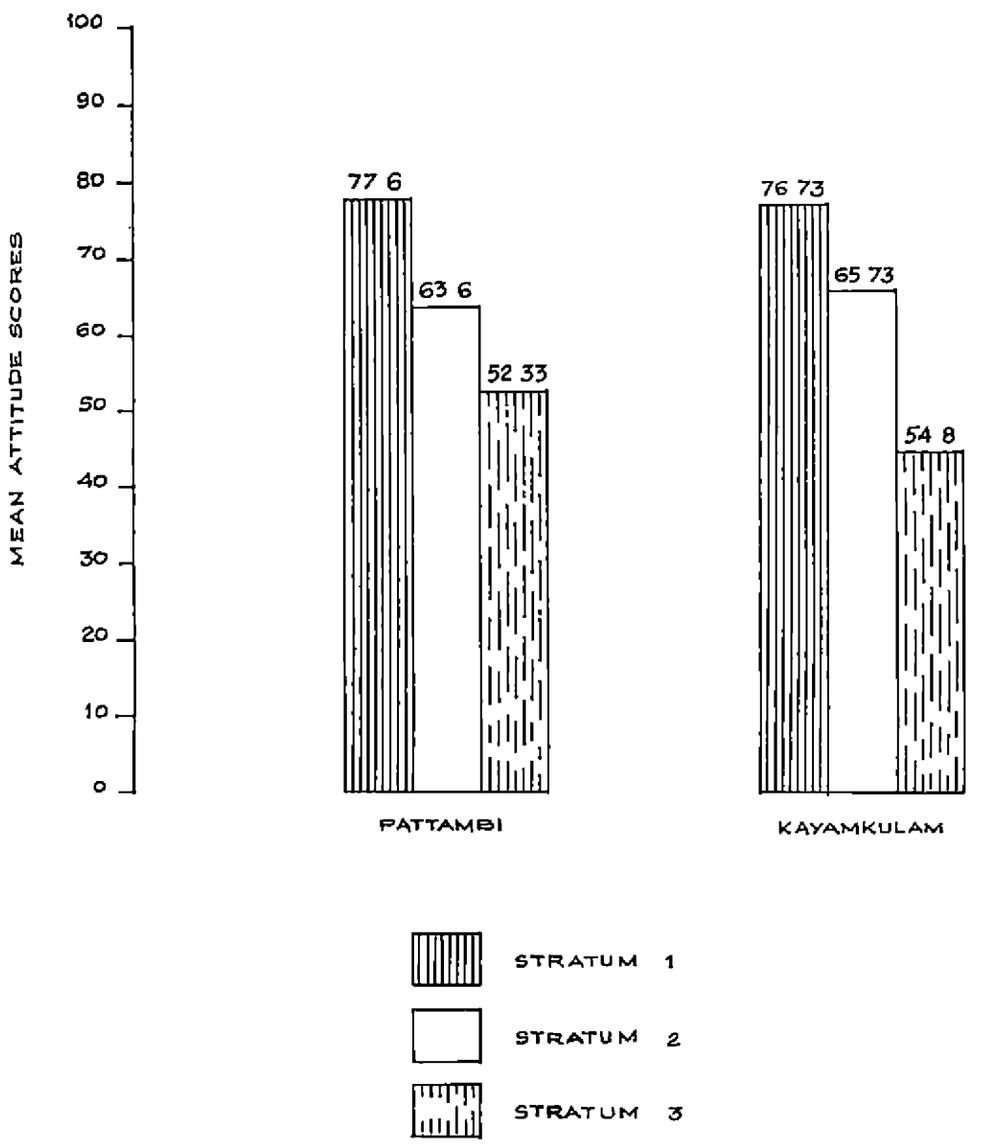
The computed 'F' value and mean adoption quotients of the farmers of the 3 strata in Pattambi and Kayamkulam are presented in table 8.

Table 8. Computed 'F' value and mean adoption quotients of farmers of the 3 strata

Station	'F' value	Stratum	Mean adoption quotients	Critical difference	Inference
Pattambi	86.908*	Stratum 1	69.198	3.634	S_1 S_2 S_3
		Stratum 2	53.977		
		Stratum 3	45.565		
Kayamkulam	9.949*	Stratum 1	55.991	2.821	S_1 $\overline{S_2 S_3}$
		Stratum 2	51.833		
		Stratum 3	49.785		

* Significant at 0.05 level

FIG 4 ATTITUDE TOWARDS IMPROVED AGRICULTURAL PRACTICES OF FARMERS OF THE THREE STRATA IN PATTAMBI AND KAYAMKULAM



The computed 'F' value was significant at 0.05 level in both the places which revealed significant difference in the adoption of recommended practices between the farmers of the three strata. Hence hypothesis No. A4 was accepted. In Pattambi, farmers of Stratum 1 had the highest adoption quotient, then the farmers of Stratum 2 and the farmers of Stratum 3 had the lowest adoption quotient. In the case of Kayamkulam too, the farmers of Stratum 1 had the highest mean adoption quotient, but the farmers of S_2 and S_3 strata were on par in their extent of adoption.

The mean adoption quotients of the farmers of the 3 strata in Pattambi and Kayamkulam are diagramatically presented in Fig. 5.

4. Perception about research station and research workers:

Differences between the farmers of the three strata in Pattambi and Kayamkulam in their perception about research station and research workers:

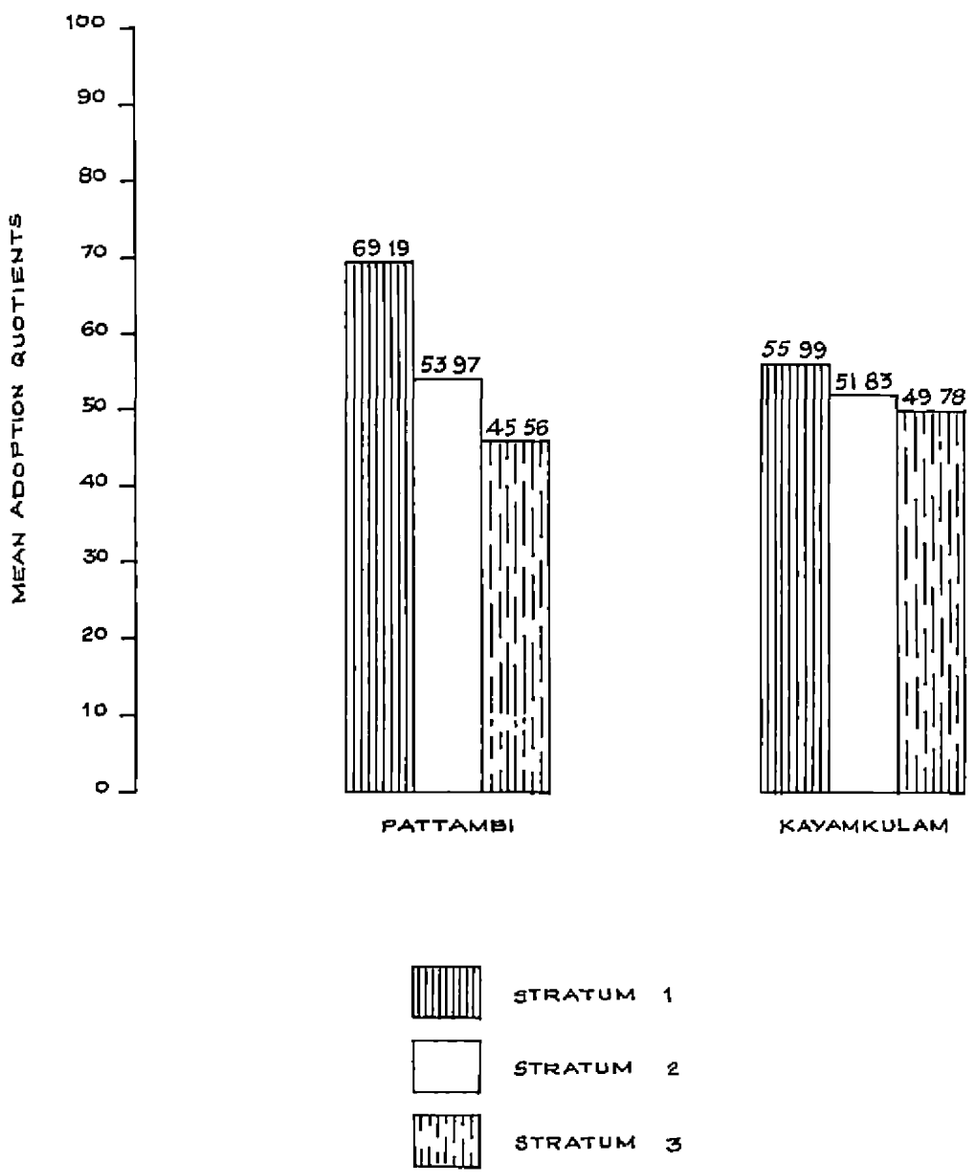
The computed 'F' value and the mean scores of farmers of the 3 strata in Pattambi and Kayamkulam for their perception about the research station and research workers are appended in table 9.

Table 9. Computed 'F' value and farmers' mean perception scores about the research station and research workers

Station	'F' value	Stratum	Mean scores	Critical difference	Inference
Pattambi	28.182*	Stratum 1 Stratum 2 Stratum 3	26.933 24.633 22.100	1.106	S_1 S_2 S_3
Kayam-kulam	26.602*	Stratum 1 Stratum 2 Stratum 3	26.166 22.533 21.833	1.224	S_1 $\overline{S_2 S_3}$

* Significant at 0.05 level

FIG 5 EXTENT OF ADOPTION OF RECOMMENDED AGRICULTURAL PRACTICES BY FARMERS OF THE THREE STRATA IN PATTAMBI AND KAYAMKULAM



The computed 'F' value was significant at 0.05 level in both Pattambi and Kayamkulam which showed that significant difference did exist in the perception about research station and research workers between the farmers of the 3 strata in both places. Hence hypothesis No. A5 was accepted. In both places farmers of Stratum 1 had the best perception score. In Pattambi, farmers of Stratum 2 ranked second and farmers of Stratum 3 ranked third. But in Kayamkulam farmers of S_2 and S_3 strata were on par in their perception about research station and research workers.

Figure 6 diagramatically presents the mean perception scores of the farmers of the 3 strata in Pattambi and Kayamkulam.

II Relationship between the selected variables.

A. Relationship between degree of contact - the intervening variable and dependent variables:

1. Knowledge:

a. Relationship between degree of contact and level of knowledge in the study area as a whole in Pattambi and Kayamkulam:

The calculated correlation coefficients between farmers' degree of contact with research station and research workers and their level of knowledge in the areas - Pattambi and Kayamkulam are presented in table 10.

FIG 6 PERCEPTION ABOUT RESEARCH STATION AND RESEARCH WORKERS OF FARMERS OF THE THREE STRATA IN PATTAMBI AND KAYAMKULAM

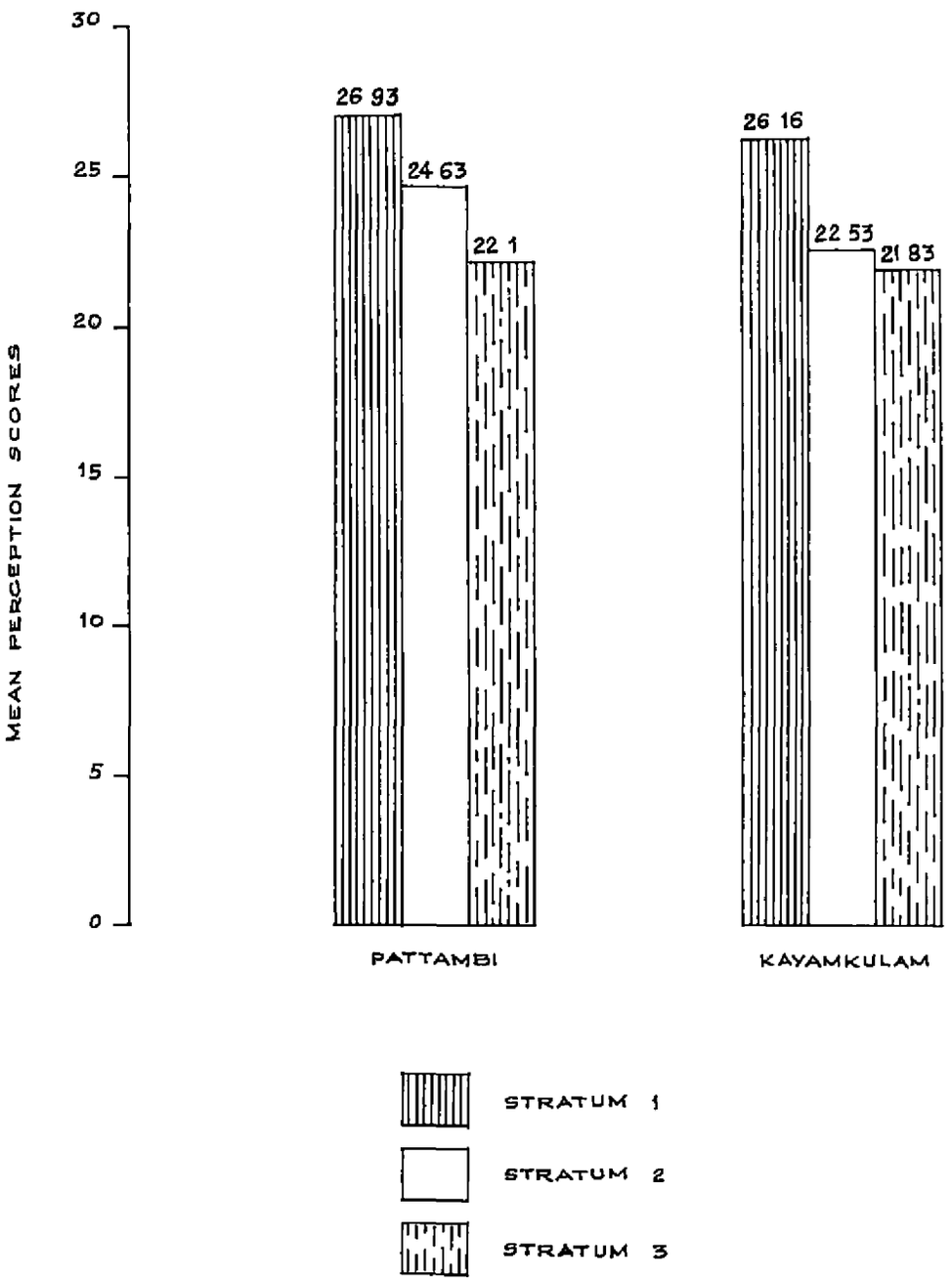


Table 10. Relationship of degree of contact with level of knowledge in the study area as a whole.

Station	Correlation coefficients	Inference
Pattambi	0.906	Positively significant
Kayamkulam	0.862	Positively significant

The correlation coefficients for both the stations were positively significant at 0.05 level. Thus the data revealed that degree of contact had positive significant relationship with levels of knowledge of the farmers in both the stations. Hence the hypothesis No. B1 was accepted for the study area as a whole.

b. Relationship between degree of contact and level of knowledge in each stratum of the study areas - Pattambi and Kayamkulam.

Table 11 presents the calculated correlation coefficients between farmers' degree of contact with research station and research workers and their level of knowledge in each stratum of the study areas.

Table 11. Relationship of degree of contact with level of knowledge in each stratum of the study areas

Station	Stratum	Correlation coefficients	Inference
Pattambi	Stratum 1	0.922	Positively significant
	Stratum 2	0.846	Positively significant
	Stratum 3	0.894	Positively significant
Kayamkulam	Stratum 1	0.926	Positively significant
	Stratum 2	0.926	Positively significant
	Stratum 3	0.856	Positively significant

The correlation coefficients calculated for all the 3 strata in both stations were positively significant at 0.05 level, which revealed that in the 3 strata also degree of contact had positive significant relationship with level of knowledge. Hence hypothesis No. B1 was accepted for each of the 3 strata also.

2. Attitude:

a. Relationship between degree of contact and attitude towards improved practices in the study area as a whole in Pattambi and Kayamkulam.

The correlation coefficients calculated for the study area as a whole, between the farmers' degree of contact with

research station and research workers and their attitude towards improved practices are given in table 12.

Table 12. Relationship of degree of contact with attitude in the study area as a whole

Station	Correlation coefficients	Inference
Pattambi	0.221	Positively significant
Kayamkulam	0.586	Positively significant

The correlation coefficients were positively significant at 0.05 level in both the areas. This revealed that positive significant relationship existed between the degree of contact and attitude towards improved practices. Hence the hypothesis No. B2 was accepted for the study areas as a whole.

b. Relationship between degree of contact and attitude towards improved practices in each stratum of the study areas - Pattambi and Kayamkulam.

The calculated correlation coefficients between the farmers' degree of contact with research station and research workers and their attitude towards improved practices in each stratum of the study areas are appended in table 13.

Table 13. Relationship of degree of contact with attitude in each stratum of the study areas.

Station	Stratum	Correlation coefficients	Inference
Pattambi	Stratum 1	0.911	Positively significant
	Stratum 2	0.787	Positively significant
	Stratum 3	0.697	Positively significant
Kayamkulam	Stratum 1	0.660	Positively significant
	Stratum 2	0.902	Positively significant
	Stratum 3	0.710	Positively significant

The correlation coefficients calculated for each of the 3 strata were positively significant at 0.05 level in both the areas. This revealed that in each of the strata also positive significant relationship existed between the farmers' degree of contact and their attitude towards improved practices. Hence the hypothesis No. H2 was accepted for each stratum also.

3. Adoption:

a. Relationship between degree of contact and adoption of recommended practices in the study area as a whole in Pattambi and Kayamkulam.

The calculated correlation coefficients between the farmers' degree of contact with research station and research workers and their extent ofadoption of recommended practices in Pattambi and Kayamkulam are appended in table 14.

Table 14. Relationship of degree of contact with extent of adoption in the study area as a whole.

Station	Correlation coefficients	Inference
Pattambi	0.804	Positively significant
Kayamkulam	0.460	Positively significant

The calculated values of correlation coefficients at 0.05 level were positively significant in both the stations. Thus the data revealed the presence of positive significant relationship between the farmers' degree of contact and extent of adoption. Hence the hypothesis No. B3 was found to hold good and was accepted for the study area as a whole.

b. Relationship between degree of contact and adoption of recommended practices in each stratum of the study areas - Pattambi and Kayamkulam.

Table 15 presents the calculated correlation coefficients between the farmers' degree of contact with research station and research workers and their extent of adoption of recommended practice in each stratum of the study areas.

Table 15. Relationship of degree of contact with extent of adoption in each stratum of the study areas.

Station	Stratum	Correlation coefficients	Inference
Pattambi	Stratum 1	0.566	Positively significant
	Stratum 2	0.739	Positively significant
	Stratum 3	0.531	Positively significant
Kayamkulam	Stratum 1	0.580	Positively significant
	Stratum 2	0.399	Positively significant
	Stratum 3	0.106	Not significant

The calculated correlation coefficients for each stratu were positively significant at 0.05 level in all the strata except for stratum 3 in Kayamkulam. It revealed the presence of positive significant relationship between the farmers' degre of contact with research station and research workers and their extent of adoption. Since it was found to be so in all the strata, but for stratum 3of Kayamkulam, the hypothesis No. B3 was accepted for each stratum also except in stratum 3 of Kayamkulam.

4. Perception about research station and research workers:

   a. Relationship between degree of contact and perception about research station and research workers in the study area as a whole in Pattambi and Kayamkulam.

The calculated correlation values between the farmers degree of contact with research station and research workers

and their perception about research station and research workers for the study area as a whole are given in table 16.

Table 16. Relationship of degree of contact with the perception about research station and research workers in the study area as a whole.

Station	Correlation coefficients	Inference
Pattambi	0.759	Positively significant
Kayamkulam	0.864	Positively significant

The correlation coefficients thus calculated were positively significant at 0.05 level in both the stations. It thus revealed positive significant relationship to be existing between the degree of contact of farmers and their perception about the research station and research workers. Hence the hypothesis No. B4 was accepted for the study area as a whole in both places.

b. Relationship between degree of contact and perception about research station and research workers in each stratum of the study areas - Pattambi and Kayamkulam.

Table 17 presents the calculated correlation coefficients between the farmers' degree of contact with research station and research workers and their perception about research station and research workers, in each stratum of the study areas - Pattambi and Kayamkulam.

Table 17. Relationship of degree of contact with perception about research station and research workers in each stratum of the study areas.

Station	Stratum	Correlation coefficients	Inference
Pattambi	Stratum 1	0.588	Positively significant
	Stratum 2	0.562	Positively significant
	Stratum 3	0.749	Positively significant
Kayamkulam	Stratum 1	0.120	Not significant
	Stratum 2	0.207	Not significant
	Stratum 3	0.238	Not significant

The calculated correlation coefficients were positively significant at 0.05 level in each stratum of Pattambi and not significant at 0.05 level in any stratum of Kayamkulam. This revealed the presence of positive significant relationship between farmers' degree of contact with research station and research workers and their perception about research station and research workers in each stratum of Pattambi and no significant relationship existed in any strata of Kayamkulam. Hence hypothesis No. 84 was accepted for each stratum of Pattambi and rejected for all strata in Kayamkulam.

B. Relationship between the independent variables and degree of contact - the intervening variable:

1. Age:

a. Relationship between age and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

The correlation coefficients worked out between age and degree of contact in Pattambi and Kayamkulam are given in table 18.

Table 18. Relationship of age with degree of contact in the study area as a whole.

Station	Correlation coefficients	Inference
Pattambi	-0.144	Negative - not significant
Kayamkulam	-0.147	Negative - not significant

The calculated correlation coefficients were not significant at 0.05 level and were negative in both the stations. This revealed that a negative relationship existed between age and degree of contact, but not significant. Hence the hypothesis No. C1 was rejected for both the study areas as a whole.

b. Relationship between age and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

The calculated correlation coefficients between age and degree of contact in each stratum of the study areas are appended in table 19.

Table 19. Relationship of age with degree of contact in each stratum of the study areas.

Station	Stratum	Correlation coefficients	Inference
Pattambi	Stratum 1	-0.126	Negative-not significant
	Stratum 2	-0.129	Negative-not significant
	Stratum 3	-0.093	Negative-not significant
Kayamkulam	Stratum 1	-0.113	Negative-not significant
	Stratum 2	-0.158	Negative-not significant
	Stratum 3	-0.245	Negative-not significant

The calculated correlation coefficients were negative and not significant at 0.05 level in all the 3 strata in both the stations, which revealed that a negative, but not significant relationship existed between age and degree of contact in all the 3 strata of both stations. Hence hypothesis No. C1 was rejected in the case of all strata also.

2. Education:

a. Relationship between education and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

The calculated correlation coefficients between education and degree of contact in the study area as a whole are given in table 20.

Table 20. Relationship of education and degree of contact in the study area as a whole.

Station	Correlation coefficients	Inference
Pattambi	0.828	Positively significant
Kayamkulam	0.647	Positively significant

The correlation coefficients worked out were positively significant at 0.05 level in both Pattambi and Kayamkulam. This confirmed that there existed a positive significant relationship between education and degree of contact in both the places. Hence the hypothesis No. C2 was accepted for the study area as a whole.

b. Relationship between education and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

The calculated correlation coefficients between education and degree of contact in each stratum of the study areas are given in table 21.

Table 21. Relationship of education with degree of contact in each stratum of the study area.

Station	Stratum	Correlation coefficients	Inference
Pattambi	Stratum 1	0.472	Positively significant
	Stratum 2	0.769	Positively significant
	Stratum 3	0.670	Positively significant
Kayamkulam	Stratum 1	0.511	Positively significant
	Stratum 2	0.517	Positively significant
	Stratum 3	0.643	Positively significant

The calculated correlation coefficients were positively significant at 0.05 level in all the strata of both stations. This revealed the presence of significant positive relationship between education and degree of contact in all the strata of Pattambi and Kayamkulam. Hence hypothesis No. C2 was accepted for all the strata too.

3. Economic status:

a. Relationship between economic status and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

The correlation coefficients worked out between economic status and degree of contact in the study area as a whole are presented in table 22.

Table 22. Relationship of economic status with degree of contact in the study area as a whole.

Station	Correlation coefficients	Inference
Pattambi	0.012	Not significant
Kayamkulam	0.171	Not significant

The correlation coefficients calculated were not significant at 0.05 level for both the stations. This revealed that economic status and degree of contact are not significantly related in the study area as a whole. Hence hypothesis No. C3 was rejected for the study area as a whole.

b. Relationship between economic status and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

Table 23 presents the correlation coefficients worked out between economic status and degree of contact in each stratum of the study areas.

Table 23. Relationship of economic status with degree of contact in each stratum of the study areas.

Station	Stratum	Correlation coefficients	Inference
Pattambi	Stratum 1	0.163	Not significant
	Stratum 2	0.186	Not significant
	Stratum 3	0.142	Not significant
Kayamkulam	Stratum 1	0.091	Not significant
	Stratum 2	0.005	Not significant
	Stratum 3	0.026	Not significant

The correlation coefficients thus worked out between economic status and degree of contact in each stratum of the study areas were also not significant at 0.05 level in all strata of both stations which showed the absence of significant positive association between economic status and degree of contact. Hence hypothesis No. C3 was rejected in the case of all strata also.

4. Farm size:

a. Relationship between farm size and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

The correlation coefficients worked out between farm size and degree of contact in the study area as a whole are presented in table 24.

Table 24. Relationship of farm size with degree of contact in the study area as a whole.

Station	Correlation coefficients	Inference
Pattambi	0.440	Positively significant
Kayamkulam	0.380	Positively significant

The correlation coefficients worked out were positively significant at 0.05 level in both stations. This showed that farm size was related to degree of contact in a significantly positive way in the study area as a whole. Hence hypothesis No. C4 was accepted for the study area as a whole.

b. Relationship between farm size and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

The correlation coefficients calculated between farm size and degree of contact in each stratum are presented in table 25.

Table 25. Relationship of farm size with degree of contact in each stratum of the study areas.

Stations	Stratum	Correlation coefficients	Inference
Pattambi	Stratum 1	0.500	Positively significant
	Stratum 2	0.414	Positively significant
	Stratum 3	0.560	Positively significant
Kayamkulam	Stratum 1	0.733	Positively significant
	Stratum 2	0.557	Positively significant
	Stratum 3	0.378	Positively significant

The correlation coefficients worked out were positively significant at 0.05 level in all cases which revealed that farm size and degree of contact were having positively significant relationship in all the strata of both stations. Hence hypothesis No. C4 was accepted for each stratum also.

5. Scientific orientation:

a. Relationship between scientific orientation and degree of contact in the study area as a whole in Pattambi and Kayamkulam.

The calculated correlation coefficients between scientific orientation and degree of contact are presented in table 26.

Table 26. Relationship of scientific orientation with degree of contact in the study area as a whole.

Station	Correlation coefficients	Inference
Pattambi	0.908	Positively significant
Kayamkulam	0.762	Positively significant

The correlation coefficients were positively significant at 0.05 level in both stations which revealed that positive significant relationship existed between scientific orientation and degree of contact. Hence hypothesis No. C5 was accepted for the study area as a whole.

b. Relationship between scientific orientation and degree of contact in each stratum of the study areas - Pattambi and Kayamkulam.

Table 27 presents the calculated correlation coefficients between scientific orientation and degree of contact in each stratum of the study area.

Table 27. Relationship of scientific orientation with degree of contact in the each stratum of the study area.

Station	Stratum	Correlation coefficients	Inference
Pattambi	Stratum 1	0.895	Positively significant
	Stratum 2	0.847	Positively significant
	Stratum 3	0.803	Positively significant
Kayamkulam	Stratum 1	0.835	Positively significant
	Stratum 2	0.874	Positively significant
	Stratum 3	0.711	Positively significant

The calculated correlation coefficients were all positively significant at 0.05 level. This indicated the existence of positive significant relationship between scientific orientation and degree of contact in each stratum of the study areas also. Hence the hypothesis No. C5 was accepted for each stratum also.

III A detailed analysis of the perception of farmers about research station and research workers:

One of the objectives of this study was to study the perception of farmers about research station and research workers. Hence a detailed analysis of this aspect is worked out here.

A. Pattambi.

1. Perception about research findings of the station:

Table 23 presents the number of farmers and their percentages who perceived the 7 statements on the perception about research findings of the Pattambi station along the three responses provided.

Table 28. Perception of farmers about research findings of the station at Pattambi.

Statement	Responses					
	Very true		True to some extent		Not at all true	
	No.	%	No.	%	No.	%
1. The findings of this station are helpful for the farmers to increase their yields	36	40	54	60	..	..
2. It has not been possible to overcome the farmers' problems through the findings of this station	26	28.900	46	51.100	18	20
3. The money spent on research work in the station is a wastage of government revenue	..	..	24	26.700	66	73.300
4. It is not possible for an ordinary farmer to carry out agricultural operations as done in the research station	70	77.800	20	22.200	..	..
5. The profit/loss of the farmer on adopting the findings is not being assessed in the research station	16	17.800	74	82.200	..	..
6. Facilities for direct observation of research results are quite insufficient	..	..	81	90	9	10
7. The suggestions of the farmers are not considered while doing research in the station	..	..	66	73.300	24	26.700

This table revealed that farmers of Pattambi had different perception on the research findings brought out by the research station.

2. Perception about research workers:

The number of farmers and their percentages who perceived the 4 statements on the perception about research workers of Pattambi in different lines are appended in table 29.

Table 29. Perception of farmers about the research workers in Pattambi.

Statement	Response					
	Very true		True to some extent		Not at all true	
	No.	%	No.	%	No.	%
1. The research workers consider their work in the station merely as their means of livelihood	..	..	..	..	90	100
2. The research workers in the research station lend any help needed by farmers	27	30	63	70	..	..
3. The research workers lack first hand experience of problems experienced by farmers	..	..	30	33.300	60	66.700
4. Most of the research workers do their work to improve the conditions of the farmer	81	90	9	10	..	..

The data revealed that farmers in Pattambi have a favourable perception about the research workers of the station.

3. Perception about the research station in general:

The number of farmers in Pattambi and their percentages who perceived the 10 statements on perception about research station in different lines are presented in table 30.

Table 30. Perception of farmers about research station in Pattambi.

Statement	Responses					
	Very true		True to some extent		Not at all true	
	No.	%	No.	%	No.	%
1	2	3	4	5	6	7
1. The research station gives a lot of information on improved agricultural practices	45	50	45	50	..	..
2. The most important problems that bother the farmer are not given enough concern in the research station	27	30	63	70	..	..
3. It will be better to disburse the money spent on research in the station among the farmers	..	..	..	..	90	100
4. The farmers are not going to be affected if the research station is closed	..	..	..	..	90	100
5. The research station has not been successful in bringing out less costly agricultural practices	22	23.300	68	66.700	..	..

1	2	3	4	5	6	7
6. The research station and research workers are highly necessary to solve the problems of farmers	81	90	9	10	..	..
7. The research station's activities aid in creating a favourable attitude by farmers towards the improved practices	36	40	54	60	..	..
8. If the research station is abolished, it will adversely affect the farmers	90	100	..	..	..	..
9. The research station was able to bring about significant changes in the agricultural operations	41	45.500	49	54.500	..	..
10. This research station is functioning effectively	71	78.900	19	21.100	..	..

This table also revealed a favourable perception about the research station in general by the farmers in Pattambi.

B. Kayamkulam.

1. Perception about research findings of the station:

The number of farmers perceiving the 7 statements on the perception about research findings of the Kayamkulam station in different lines and their percentages are given in table 31.

Table 31. Perception of farmers about the research findings of the station at Kayamkulam.

Statement	Responses					
	Very true		True to some extent		Not at all true	
	No.	%	No.	%	No.	%
1. The findings of this station are helpful for the farmers to increase their yields	32	35.500	58	64.500	..	..
2. It has not been possible to overcome the farmers' problems through the findings of this station	34	37.800	42	46.700	14	15.500
3. The money spent on research work in the station is a wastage of government revenue	2	2.200	54	60	34	37.800
4. It is not possible for an ordinary farmer to carry out agricultural operations as done in the station	82	91.100	8	8.900	..	..
5. The profit/loss of the farmer on adopting the findings is not being assessed in the research station	36	40	54	60	..	..
6. Facilities for direct observation of research results are quite insufficient	2	2.200	72	80	16	17.800
7. The suggestions of the farmers are not considered while doing research in the station	2	2.200	78	86.700	10	11.100

The data thus revealed that the farmers of Kayamkulam also varied in their perception about findings of the research station.

2. Perception about research workers:

The number of farmers and their percentages who perceived the 4 statements on the perception about research workers of Kayamkulam station along the different responses are given in table 32.

Table 32. Perception of farmers about research workers of Kayamkulam.

Statement	Responses					
	Very true		True to some extent		Not at all true	
	No.	%	No.	%	No.	%
1. The research workers consider their work in the station merely as their means of livelihood	2	2.200	7	7.800	81	90
2. The research workers in the research station lend any help needed by farmers	18	20	72	80	..	..
3. The research workers lack first hand experience of problems experienced by farmers	4	4.400	36	40	50	55.600
4. Most of the research workers do their work to improve the conditions of the farmer	56	62.300	32	35.500	2	2.200

The data thus revealed that even though differences existed, an overall favourable perception is held by Kayamkulam farmers about the research workers.

3. Perception about research station in general:

Table 33 presents the number of farmers in Kayamkulam and their percentages who perceived the 10 statements on perception about research station in general along the different responses provided.

Table 33. Perception of farmers about research station in Kayamkulam.

Statement	Responses					
	Very true		True to some extent		Not at all true	
	No.	%	No.	%	No.	%
1	2	3	4	5	6	7
1. The research station gives a lot of information on improved agricultural practices	38	42.300	50	55.500	2	2.200
2. The most important problems that bother the farmer are not given enough concern in the research station	31	34.400	59	65.600	..	..
3. It will be better to disburse the money spent on research in the station among the farmers	2	2.200	36	40	52	57.800
4. The farmers are not going to be affected if the research station is closed	2	2.200	7	7.800	81	90

1	2	3	4	5	6	7
5. The research station has not been successful in bringing out less costly agricultural practices	18	20	72	80	..	..
6. The research station and research workers are highly necessary to solve the problems of farmers	72	80	16	17.800	2	2.200
7. The research station's activities aid in creating a favourable attitude by farmers towards the improved practices	12	13.300	76	84.500	2	2.200
8. If the research station is abolished it will adversely affect the farmers	81	90	7	7.800	2	2.200
9. The research station was able to bring about significant changes in the agricultural operations	36	40	52	57.800	2	2.200
10. This research station is functioning effectively	48	53.300	40	44.500	2	2.200

The data in this table thus revealed the presence of an overall favourable perception about research station by Kayamkulam farmers, even though differences in farmers' perception existed.

IV. Comparison of the two stations - Pattambi and Kayamkulam in terms of selected variables:

The two stations selected for the study dealt with the same crop-paddy-but situated in northern and southern parts of

the state. It would be much useful if a comparison is made between the two stations and hence a comparison is attempted here in terms of variables such as:

1. Degree of contact of farmer with research station and research workers.

The mean scores for degree of contact obtained by farmers of Pattambi and Kayamkulam and the computed 't' value are presented in table 34.

Table 34. Mean scores for degree of contact of farmers in Pattambi and Kayamkulam.

Mean scores		't' value	Inference
Pattambi (P)	Kayamkulam (K)		
6.750	4.770	5.343*	Significant difference P K

* Significant at 0.05 level

The calculated 't' value was significant at 0.05 level which revealed that the two stations differed significantly in the farmers' degree of contact with research station and research workers. Of the two, Pattambi farmers have more degree of contact than Kayamkulam farmers.

2. Level of knowledge of farmers on improved agricultural technology:

The mean knowledge scores of farmers in Pattambi and Kayamkulam and the computed 't' value are shown in table 35.

Table 35. Mean knowledge scores of farmers in Pattambi and Kayamkulam.

Mean knowledge scores		't' value	Inference
Pattambi (P)	Kayamkulam (K)		
63.630	57.470	2.079*	Significant difference P K

* Significant at 0.05 level

The computed 't' value was significant at 0.05 level. This revealed the presence of significant difference in knowledge level between the farmers in Pattambi and Kayamkulam, the Pattambi farmers ranking first in the knowledge level.

3. Attitude of farmers towards improved agricultural practices:

The mean attitude scores of farmers of Pattambi and Kayamkulam and the computed 't' value are given in table 36.

Table 36. Mean attitude scores of farmers in Pattambi and Kayamkulam.

Mean attitude scores		't' value	Inference
Pattambi (P)	Kayamkulam (K)		
70.070	65.800	1.076 N.S	No significant difference P K

N.S Not Significant

The calculated 't' value was not significant at 0.05 level which showed that no significant difference existed between Pattambi farmers and Kayamkulam farmers in their extent of actitude towards improved practices and hence they were on par.

4. Adoption of recommended agricultural practices by the farmers:

The mean adoption quotients of the farmers in Pattambi and Kayamkulam and the computed 't' value are shown in table 37.

Table 37. Mean adoption quotients of the farmers in Pattambi and Kayamkulam.

Mean adoption quotients		't' value	Inference
Pattambi (P)	Kayamkulam (K)		
25.800	23.700	2.775*	Significant difference P K

* Significant at 0.05 level

The computed 't' value was significant at 0.05 level. This revealed that the farmers of Pattambi and Kayamkulam differed significantly in their extent of adoption of recommended practices. The Pattambi farmers were better adopters than the Kayamkulam farmers.

5. Perception of farmers about the research station and research workers:

The mean perception scores of farmers in Pattambi and Kayamkulam, about research station and research workers and the computed 't' value are presented in table 38.

Table 38. Mean perception scores of farmers about research station and research workers in Pattambi and Kayamkulam.

Mean perception scores		't' value	Inference
Pattambi (P)	Kayamkulam (K)		
25.800	23.700	2.775*	Significant difference P K

* Significant at 0.05 level

The computed 't' value was significant at 0.05 level. This revealed the presence of significant difference in the perception about research station and research workers between Pattambi and Kayamkulam farmers. The Pattambi farmers had a better perception, of the two groups.

V. Suggestions for research to be done as perceived by farmers of:

1. Pattambi:

Table 39 presents the problems experienced by farmers of Pattambi and the number and percentage of farmers who perceived these problems in the order of importance.

Table 39. Problems experienced by farmers in Pattambi in the order of importance.

Problem	Order of importance							
	Rank I		Rank II		Rank III		Rank IV	
	No.	%	No.	%	No.	%	No.	%
1. Use of unrecommended varieties by other farmers leading to pests and diseases	36	40	12	13.300	6	6.700	..	..
2. Poor straw yield especially in 2nd crop	30	33.300	6	6.700	12	13.300	..	..
3. High incidence of weeds in 1st crop due to dry seeding	12	13.300	42	46.700	6	6.700	..	..
4. Not able to raise green manure crop due to dry sowing in 1st crop	6	6.700	18	20	..	..	6	6.700
5. Severe attack of pests and diseases - stem borer and BLB	..	..	6	6.700	36	40	..	..
6. High cost of agricultural operations	..	..	..	..	6	6.700	..	..

Suggestions were made by farmers to conduct research to overcome all the problems mentioned above.

2. Kayamkulam:

The problems experienced by the farmers of Kayamkulam and the number and percentage of farmers who perceived these problems in the order of importance are given in table 40.

Table 40. Problems experienced by farmers in Kayamkulam in the order of importance.

Problem	Order of importance					
	Rank I		Rank II		Rank III	
	No.	%	No.	%	No.	%
1. Initial stage of 1st crop experience severe drought and later in the season, flooding occurs. Reverse is the case in 2nd crop. Hence application of nutrients at critical stages is difficult	54	60	15	16.700	6	6.700
2. Organic matter content of soil very low. Incorporation of organic matter very difficult due to non-availability and high cost	27	30	9	10	6	6.700
3. High incidence of weeds in 2nd crop	18	20	45	50	9	10
4. Spraying of chemicals in the research station some times proves to be hazardous to nearby farmers	..	..	..	..	9	10

Suggestions were made by farmers to overcome the above mentioned problems by conducting research work in the research station.

DISCUSSION

CHAPTER V

DISCUSSION

The discussion on the findings of the study is presented in this chapter under the following heads:

I. Differences in the Intervening and Dependent variables between the 3 strata in the two stations.

II. Relationship between the selected variables.

III. A detailed discussion on the perception of farmers about research station and research workers.

IV. Comparison of the two stations in terms of the Intervening and Dependent variables and

V. Suggestions for research to be done as perceived by farmers.

I. Differences in the Intervening and Dependent variables between the three strata in the two stations.

A. Degree of contact - Intervening variable:

The study revealed that there was significant differences in the degree of contact with research station and research workers between farmers of the three strata in Pattambi as well as Kayamkulam. The degree of contact was significantly higher for the farmers of the first stratum in both Pattambi and Kayamkulam. In Pattambi, all the three strata differed significantly, with the stratum 1 ranking first in the degree

of contact with a mean score of 10.3, Stratum 2 ranking second with a mean score of 5.857 and Stratum 3 ranking last with a mean score of 4.1. In Kayamkulam too, farmers of Stratum 1 differed significantly from the other strata in their degree of contact with a mean score of 6.733. But the farmers of 2nd and 3rd strata did not differ significantly and they were on par with mean scores of 4.766 and 3.833 respectively.

Farmers of Stratum 1 are the nearest of surrounding farmers to the research station being at a distance within 1.5 kms around the research station. Farmers of the Stratum 2 are at a distance of 1.5 - 3 kms and Stratum 3 at a distance of 3 - 5 kms. Hence they are distant farmers when compared to the farmers of Stratum 1. So it is evident from the analysis of data that the nearest or surrounding farmers of the station are having significantly higher degree of contact than the farmers at a distance. This result confirmed the hypothesis that surrounding farmers and distant farmers will vary significantly in their degree of contact with research station and research workers.

It is natural that the farmers who are staying nearby a research station will make use of it as an information source more than farmers at a greater distance. The nearer or surrounding farmers will be visiting the station more frequently and will be meeting the research workers to gain

more information about improved technology. This sort of a behaviour can be expected in the distant farmers to a lesser extent only because of the greater effort in terms of time and money needed for the visit.

The degree of contact is seen to be getting reduced from Stratum 1 to Stratum 2 and Stratum 2 to Stratum 3. This evidence concretes the assumption that the distance from the research station is an important factor which decides the degree of contact of farmer with research station and research workers.

Though no similar studies were available, the importance of distance in making visits to the research station as revealed by this study, is in conformity with other studies encompassing distance as a predominant factor in farmers' adoption behaviour such as those by Oliver et al. (1975), Baril (1977) and Songsore (1979).

All the farmers from all the three strata in both places had heard of and had seen the respective research station of their place. But variation could be observed in their making visits and holding discussions with research workers. In Pattambi 27 farmers of Stratum 1 which comes to 90% of the sample had visited the research station and 21 farmers - 70% - had discussion with research workers. But in stratum 2 the number of farmers to visit and have discussion were 15 (50%) and 5 (16.67%) respectively. In the

third stratum it was 7 farmers (23.3%) to have visited the station and one farmer (3.33%) to have had discussions with researchers. This evidence amply reveals the difference between the farmers of the 3 stratum who are at varying distances in their degree of contact with the research station. This was found to hold good for Kayamkulam too, where the concerned numbers were 14 farmers (46.67%) to have visited the station and 5 farmers (16.67%) to have had discussions from Stratum 1, 9 farmers (30%) to have visited the station and 3 farmers (10%) to have had discussions from Stratum 2 and 5 farmers (16.67%) to have visited the station and one farmer (3.33%) to have had discussions from Stratum 3.

So beyond all doubts it can be assumed that the nearby or surrounding farmers have more degree of contact with research station and research workers than the distant farmers, emphasising the importance of the distance factor.

B. Dependent variables:

1. Level of knowledge on improved agricultural technology:

A significant difference in the level of knowledge on improved agricultural technology between the farmers of the three strata who are at three distances was revealed by this study in both the places, Pattambi and Kayamkulam.

The analysis of data showed that farmers of Stratum 1 ranked significantly higher than the farmers of Stratum 2 and

the farmers of Stratum 2 ranked significantly higher than farmers of Stratum 3 in their level of knowledge at both Pattambi and Kayamkulam. The mean knowledge scores obtained were 86.337, 65.646 and 51.368 for Stratum 1, Stratum 2 and Stratum 3 respectively in Pattambi and 73.218, 63.64 and 54.636 for Stratum 1, Stratum 2 and Stratum 3 respectively in Kayamkulam. Since significant differences could be identified in the level of knowledge between the surrounding and distant farmers, the finding is in line with the hypothesis set up.

Earlier, it was proved that the surrounding farmers have higher degree of contact with research station and research workers than the distant farmers. Now it has been found that the nearby farmers are having significantly higher knowledge levels than the distant farmers. The role of the research station in giving more information to surrounding farmers is thus clearly exposed from these two findings.

The research station is assumed to be an information centre on improved agricultural technology. The farmers who are close to these research stations are supposed to gain more information from research stations. If the research stations are thus capable of imparting more knowledge to the farmers who are near to it than the distant farmers, the impact of the research station on surrounding farmers in imparting knowledge on scientific agriculture is proved.

This was observed in the present study. Even though no previous works were come across on this aspect, one closely related work was by Sarma et al. (1979) wherein the impact of an Indo-German fertilizer educational project in West Bengal was identified in surrounding areas. So the finding of the present study can be said to be in conformity with the above mentioned work.

2. Attitude towards improved agricultural practices:

It was evident from this study that significant difference existed between the farmers of the three strata in Pattambi and Kayamkulam in their extent of attitude towards improved agricultural practices.

Farmers of Stratum 1 were foundto have significantly higher mean attitude scores - 77.6 in Pattambi and 76.733 in Kayamkulam than farmers of Stratum 2 with mean attitude scores of 63.6 and 65.733 in Pattambi and Kayamkulam respectively. Farmers of Stratum 3 ranked last in their attitude with mean scores of 52.333 and 54.8 in Pattambi and Kayamkulam respectively. Thus the neighbouring farmers and distant farmers were found to differ significantly in their extent of attitude. The neighbouring farmers had more favourable attitude. This is in line with the hypothesis set up for the study.

The research station which is a source of scientific information on agriculture can also be a factor creating a

favourable attitude on the part of farmers towards the improved agricultural practices. As seen earlier the farmers who reside nearby the research station more frequently visit the research station and discuss with the staff members about the new methods of agriculture. It was also found that they had better knowledge. This higher degree of contact and better knowledge might have resulted in a more favourable attitude towards improved agricultural practices.

3. Adoption of recommended agricultural practices:

This study revealed that there was significant difference between the farmers of the 3 strata in their extent of adoption of recommended agricultural practices in both Pattambi and Kayamkulam. Farmers of Stratum 1 had significantly higher adoption quotients than Stratum 2 and 3 in both the places and hence farmers of Stratum 1 ranked first in their adoption. In Pattambi farmers of Stratum 2 were significantly higher adopters than farmers of Stratum 3 whereas in Kayamkulam, farmers of Strata 2 and 3 were on par in their extent of adoption. The mean adoption quotients obtained by the farmers were 69.198, 53.977 and 45.565 for Stratum1,Stratum 2 and Stratum 3 respectively in Pattambi and 55.991, 51.833 and 49.785 for Stratum 1, 2 and 3 respectively in Kayamkulam.

The higher adoption of recommended practices by the surrounding farmers can be attributed to the nearness to the research station. It is also evident from the data that the mean adoption quotient gets reduced as we go from Stratum 1 to Stratum 3. The better knowledge and more favourable attitude of the farmers who are near to the research station might have resulted in better adoption.

The findings of this study are in line with those by Oliver et al. (1975) and Baril (1977) who identified distance as a determinant factor in adoption.

4. Perception of farmers about research station and research workers:

It was revealed by this study that there was significant difference between the farmers of the three strata in their perception about the research station and research workers.

The perception of farmers of Stratum 1 about the research station and research workers was significantly favourable than the farmers of the other 2 strata in both Pattambi and Kayamkulam as revealed by the mean scores obtained by farmers. The mean perception scores were 26.933, 24.633 and 22.1 for farmers of Stratum 1, 2 and 3 respectively in Pattambi and 26.166, 22.533 and 21.833 for farmers of Stratum 1, 2 and 3 respectively in Kayamkulam. In Pattambi, the farmers of Stratum 2 ranked second to Stratum 1 and farmers of Stratum 3 had the lowest perception scores. But in Kayamkulam it was

somewhat different with the farmers of Stratum 1 ranking first and the farmers of strata 2 and 3 on par without any significant difference between their perception.

The neighbouring farmers are having a more favourable perception about research station and research workers than distant farmers. Earlier, it was identified that the surrounding farmers of the research station do have a significantly higher degree of contact with research station and research workers than distant farmers. Moreover, surrounding farmers had better knowledge, favourable attitude and more adoption as discussed earlier. These four factors might have contributed to the farmers developing a favourable perception about research station and research workers. It is also found that as we proceed from Stratum 1 to Stratum 3, the perception scores were getting reduced, the highest scores being obtained by the farmers surrounding the research station.

II. Relationship between the selected variables.

A. Relationship between degree of contact - the intervening variable and dependent variables:

1. Level of knowledge on improved agricultural technology.

This study revealed that there was significant positive relationship between the degree of contact of a farmer with research station and research workers and his level of knowledge on improved agricultural technology. This was applicable when

the study area was taken as a whole as well as to each stratum of the study area.

The research station is a source of latest information on improved agricultural technology. The scientific technology which can be applied to agriculture to boost up yields is readily available in the research station and with research workers. A farmer who visits the research station quite often sees the crops raised in the research station and also the practices demonstrated in the research station. It thus enables him to get first hand information about the scientific practices. Similarly a farmer who has discussions with research workers will also surely get more information on scientific agriculture. In other words, the more the degree of contact the farmer has with the research station and research workers, more will be his level of knowledge on improved agricultural technology. This might be the reason for significant positive relationship between degree of contact and level of knowledge.

2. Attitude towards improved agricultural practices:

A significant positive relationship was revealed in this study between the degree of contact of a farmer with research station and research workers and his extent of attitude towards improved agricultural practices. In both the stations of Pattambi and Kayamkulam, this relationship was found for the study area as a whole and within each stratum of the study area.

In a research station, works on all the improved agricultural practices will be going on and the research workers are abreast of the latest information, as to how these practices can be helpful to farmers. A farmer who visits the research station quite often and has discussions with researchers will be quite convinced of the applicability, practicability and profitability of these practices and this in turn will lead to a positive attitude towards improved agricultural practices. Thus if a farmer has more degree of contact with research station and research workers, it may lead to a positive attitude towards improved agricultural practices. That is the seeing of the practices being demonstrated in the research station and hearing about these practices from the research workers might have helped the farmer to reinforce a favourable attitude towards the improved agricultural practices. This might be the reason for a significant positive relationship between degree of contact and attitude towards improved practices.

3. Adoption of recommended agricultural practices:

This study revealed a significant positive relationship between the degree of contact of farmers with research station and research workers and their adoption of recommended agricultural practices in the study area as a whole as well as in each stratum at both places in Pattambi and Kayamkulam except for Stratum 3 in Kayamkulam.

The scientific agricultural practices that will lead to an increase in agricultural production if adopted are well carried out in a research station. A farmer who visits the station can convince himself that these practices if being adopted will definitely help him to better his crop yields. Moreover, discussions with research workers on these aspects will definitely make him to try these practices on his farm. So, if a farmer gets into contact with the research station and research workers more often, he will be gaining more knowledge on the scientific practices and will be developing a favourable attitude towards these practices. This may culminate in his more adoption of the practices. This might be the reason for the positive influence of degree of contact with research station and research workers on the extent of adoption of recommended practices.

The finding is in line with reports on a closely related aspect - positive significant association between contact with extension agency and adoption of recommended practices - by Bose (1961), Sundaraswamy and Duraiswamy (1975), Osuji (1980) and Kamarudeen (1981).

4. Perception about research station and research workers:

A significant positive association between degree of contact of farmer with research station and research workers and their perception about research station and research workers was noticed in Pattambi and Kayamkulam, when each area was considered

as a whole. But coming to each stratum the finding was so in all strata of Pattambi, but no significant association could be identified in any of the stratum in Kayamkulam.

A farmer will perceive the research station and research workers in a favourable way if he feels that the research station and the researchers are beneficial to him and other fellow farmers. A farmer who makes frequent visits to the research station and gets in touch with research workers will be feeling that the research station's activities and the researchers who are there are aiming at the betterment of farmers and farming as an occupation. This can definitely lead to a favourable perception about the research station and research workers. This might have been the reason for getting such a significant positive relationship between degree of contact of farmers with research station and research workers and farmers' perception about research station and research workers.

B. Relationship between the independent variable and degree of contact - the intervening variable.

1. Age:

Age had no significant relationship with the degree of contact a farmer has with research station and research workers, as was revealed in this study.

The degree of contact of a farmer with research station and researchers can take place irrespective of him being young or old.

So age need not decide the frequency of visits that a farmer makes to the research station. Hence no significant association was revealed between age and degree of contact of farmer.

2. Education:

In this study education was found to have a positive significant association with the degree of contact of farmer with research station and research workers in the study area as a whole as well as within each stratum of the study areas in Pattambi and Kayamkulam.

In order to make farming a profitable proposition, constant contact with an information source on improved agricultural practices is a must. The research station and research workers are the most important of such sources. Educational status of farmers would definitely influence the information seeking behaviour. The more educated farmers will try to get more information on visiting research stations and holding discussion with research workers. And this can be the reason for the positive influence of education on degree of contact with research station and research workers of farmers.

3. Economic status:

No significant relationship between economic status and degree of contact of farmer with research station and research workers was found either in the study area as a whole or within each stratum of the study area.

This may be due to the fact at the present days, no relationship exists between a farmer's economic status and his information seeking behaviour. Irrespective of his income, a farmer interested in improving agriculture will collect information on scientific practices by visiting a formidable information source like the research station. Hence no significant association could be revealed by this study.

4. Farm size:

This study brought out a positive significant relationship between the farm size and the contact that a farmer makes with the research station and research workers. This relationship existed in the study area as a whole as within each stratum.

Farm size was taken as a separate variable in this study because under Kerala conditions farm size cannot considered as an index of one's economic status. Farmers having large farms will be more interested in adopting improved practices to a greater extent because of the facilities they are having to raise more crops in the large area at their disposal. First of all, he must get first hand information on the improved practices which can readily be obtained from the research station and research workers. For this the farmer will visit the research station and research workers more frequently. Hence there existed a positive association between the farm size and farmers' degree of contact. Earlier while considering

economic status no significant association could be revealed. But farm size alone do have a significant positive relationship and hence the consideration of farm size as a separate factor has been justified.

5. Scientific orientation:

A significantly positive relationship was revealed between scientific orientation and a farmer's degree of contact with research station and research workers, in the study area as a whole and in each of the stratum in both Pattambi and Kayamkulam.

A farmer who is more scientifically oriented will be an optimist regarding the success of improved agricultural practices. He may want to adopt these practices and so he makes visits to the research station to get access to information on the latest scientific practices. He will also contact the researchers to get such details. Hence it can be interpreted that a farmer who is more scientifically oriented will be also one who makes frequent visits to research station and research workers. This might have been the reason for the existence of a positive association between scientific orientation and degree of contact of a farmer with research station and research workers in this study.

III. A detailed discussion on the perception of farmers about research station and research workers:

Discussion is done on this aspect as to how the farmers of Pattambi and Kayamkulam differently perceived the statements provided to them on:

(a) research findings of the station

(b) research workers of the station and

(c) research station in general

(a) Perception about research findings of the station.

Statement 1: "The findings of this research station are helpful for the farmers to increase their yields".

In Pattambi, a majority of farmers (60%) perceived this statement to be true to some extent and the rest of 40% perceived it to be very true revealing a favourable perception about the research findings. In Kayamkulam, 64.5% of the farmers perceived the statement to be true to some extent and the remaining 35.5% perceived it to be very true. So in Kayamkulam too, a favourable perception of the findings of the station exists with the farmers.

Statement 2: "It has not been possible to overcome the farmers' problems through the findings of this station".

This statement was perceived by a majority (51.1%) of farmers as somewhat true in Pattambi, 28.9% perceiving it as very true and the rest 20% perceiving it as not at all true revealing diversity in their perception about this statement. In Kayamkulam too, this difference did exist with 45.5% of farmers perceiving it as true to some extent, 37.8% perceiving it as very true and 17.7% perceiving it as not at all true.

Statement 3: "The money spent on research work in the station is a wastage of government revenue".

No farmer in Pattambi perceived this statement to be a very true one and the majority (73.37%) perceived it as not at all true. The remaining 26.7% only perceived it as true to some extent. But two farmers in Kayamkulam (2.27%) gave a very true response for this and 60% found it as true to some extent whereas 37.8% perceived it as not at all true.

Statement 4: "It is not possible for an ordinary farmer to carry out agricultural operations as done in the research station".

This was a statement to be perceived as very true by a large majority of farmers - 77.8% in Pattambi and 91.1% in Kayamkulam. The remaining 22.2% in Pattambi and 8.9% in Kayamkulam gave a true to some extent response for this statement that revealed a feeling of impossibility on the farmers to adopt scientific practices as being done in the research station.

Statement 5: "The profit/loss of the farmer on adopting the findings is not being assessed in the research station".

Anotner statement which could receive a true to some extent response by a majority of farmers in both the places was this one. 82.2% of farmers in Pattambi and 60% in Kayamkulam perceived it so and the balance of 17.8% of Pattambi and 36% in Kayamkulam perceived it to be very true which again revealed a not so satisfactory perception by the farmers.

Statement 6: "Facilities for direct observation of research results are quite insufficient".

This was perceived to be true to some extent by 90% of Pattambi farmers. The remaining 10% could identify it as not at all true. But in Kayamkulam, two farmers perceived it as very true, 80% perceived it as true to some extent and 17.8% as not at all true. The reasons for the Kayamkulam farmers perceiving it as very true - at least a few of them - may be due to the lack of extension activities in the station as being done in Pattambi.

Statement 7: "The suggestions of the farmers are not considered while doing research in the station".

No farmers in Pattambi perceived it as a very true statement whereas two farmers (2.2%) of Kayamkulam perceived it as so. Here also the majority of the farmers - 73.3% in Pattambi and 86.7% in Kayamkulam perceived that this statement was true to some extent and it was perceived as not at all true by 26.7% farmers in Pattambi and 11.1% in Kayamkulam.

An overall appraisal of the perception about all these statements brings out the fact that the farmers are not having a very good perception about the research findings from the stations. Dissatisfaction about the research findings is evident from many of the responses made by the farmers.

(b) Perception about research workers of the station:

Statement 1: "The research workers consider their work in the station merely as their means of livelihood".

An absolute negative response to this statement was obtained from Pattambi with all of them (100%) perceiving this statement as not at all true. But in Kayamkulam two farmers (2.2%) had perceived it as very true which indicated some dissatisfaction about researchers, 7.8% of farmers perceived it as true to some extent and 90% of farmers were of the opinion that this was not at all a true statement.

Statement 2: "The research workers in the research station lend any help needed by farmers".

70% of farmers of Pattambi and 80% farmers of Kayamkulam opined that this was true to some extent. The rest 30% farmers of Pattambi and 20% farmers of Kayamkulam held this statement to be very true. This indicated that the researchers were able to give timely help to the farmers in solving their problems.

Statement 3: "The research workers lack first hand experience of problems experienced by farmers".

This statement was perceived to be true to some extent in Pattambi by 33.3% of the farmers and 66.7% of farmers perceived it as not at all true. But in Kayamkulam 4.4% were of the opinion that this was very true, 40% opined this was true to

some extent and 55.6% considered it as a not at all true statement. Even though a majority of the farmers at both stations perceived it as a not at all true statement, the opinion of some farmers that this statement is true to some extent revealed the existence of such a feeling that the researchers lack first hand experience of farmers' problems.

Statement 4: "Most of the research workers do their work to improve the conditions of the farmer".

90% of farmers in Pattambi and 62.3% of farmers in Kayamkulam perceived this statement as a very true one. 10% of farmers of Pattambi and 35.5% in Kayamkulam considered this statement to be true to some extent and 2.2% (two farmers) of Kayamkulam farmers even considered it as not at all true.

In the case of perception about research workers, an overall analysis of perception of all these statements reveals a favourable perception about the research workers by the farmers.

(c) Perception about research station in general:

Statement 1: "The research station gives a lot of information on improved agricultural practices".

The response to this statement in Pattambi was 50% of farmers perceiving it as very true and 50% perceiving it as true to some extent. In Kayamkulam 42.3% of farmers perceived it as very true and 55.5% perceived it to be true to some extent, and 2.2% perceived it as not at all true.

Thus the farmers felt that the research stations are useful in imparting information on improved agricultural practices.

Statement 2: "The most important problems that bother the farmers are not given enough concern in the research station".

Most of the farmers - 70% in Pattambi and 65.6% in Kayamkulam considered this to be true to some extent. A very true response was given by 30% of farmers in Pattambi and 34.4% in Kayamkulam.

Statement 3: "It will be better to disburse the money spent on research in the station among the farmers".

No single farmer perceived it as very true or true to some extent in Pattambi with all of them considering this statement to be not at all true. This revealed the faith of Pattambi farmers in the activities of Pattambi station. But in Kayamkulam it was different with 40% of farmers considering this statement to be true to some extent, 2.2% holding it to be very true and 57.8% considering the statement to be not at all true. This revealed that Kayamkulam farmers were not that satisfied with the research activities taking place in the station, as in Pattambi.

Statement 4: "The farmers are not going to be affected if the research station is closed".

An absolute negative response to this statement with all 90 farmers perceiving this statement as not at all true in

Pattambi further reinforced the complete satisfaction of Pattambi farmers on the performance of Pattambi station. In Kayamkulam too, a not at all true response was given by 90% of the farmers. 7.8% perceived it as true to some extent and 2.2% perceiving it as very true. Thus the mild dissatisfaction of some farmers of the sample over the functioning of the station was revealed.

Statement 5: "The research station has not been successful in bringing out less costly agricultural practices".

This is a frequently heard complaint and this was responded to also in the same lines with 66.7% of farmers in Pattambi and 80% of farmers in Kayamkulam considering this statement to be true to some extent. Thus it brought out the feelings of the farmers that the innovations brought out by the research station must be cheaper to enable the farmers to adopt them.

Statement 6: "The research station and research workers are highly necessary to solve the problems of the farmers".

This statement was perceived to be very true by a large majority of the farmers - 90% in Pattambi and 80% in Kayamkulam - which indicated that the farmers were still hoping for betterment of agriculture through the innovations brought out from the research stations by the research workers.

Statement 7: "The research station's activities aid in creating a favourable attitude by farmers towards the improved practices".

A more positive perception of this statement was evident in Pattambi than in Kayamkulam. 40% of Pattambi farmers perceived it to be very true and 60% perceived it to be true to some extent. Whereas, in Kayamkulam 84.5% perceived it to be true to some extent, 13.3% perceived it to be very true and 2.2% perceived it to be not at all true. This may be due to the differences in the activities of the 2 stations in getting into contact with the farmers and convincing them of the usefulness of improved practices.

Statement 8: "If the research station is abolished it will adversely affect the farmers".

The farmers of Pattambi as a whole - all 90 of them - perceived this statement to be not at all true, again revealing the importance they attach to the research station. But in Kayamkulam, as seen earlier, a few of the farmers perceived otherwise - 7.8% perceiving it to be true to some extent and 2.2% perceiving it to be very true. The reason for their dissatisfaction over the research station need to be studied in detail.

Statement 9: "The research station was able to bring about significant changes in the agricultural operation".

Even though Pattambi farmers had given maximum faith in the Pattambi station, the perception of this statement was somewhat different with 54.5% of them perceiving it to be true to some extent only and 45.5% perceiving it to be very true.

The reason may be that the high cost of agricultural operations might have forced them to view the innovations from the stations as not so significant. In Kayamkulam too, this was applicable with 57.8% of the farmers perceiving the statement to be true to some extent, 40% perceiving it to be very true and 2.2% even perceiving the statement to be not at all true.

Statement 10: "This research station is functioning effectively".

Such a general statement was given a somewhat positive response by the farmers of both places. 78.9% of Pattambi farmers and 53.3% of Kayamkulam farmers perceived the statement to be very true which is an indication of general satisfaction among the farmers about the research stations.

Once again the overall assessment of the responses provided to the statements shows that the farmers had a more favourable perception about the research station in general even though with respect to specific activities they differed in their perception and even negative responses were recorded. A revitalization of the extension activities of the research stations may prove to be of great help in reshaping the perception of farmers to a very positive level.

IV. Comparison of the two stations in terms of the Intervening and Dependent variables.

Of all the 5 variables compared such as the degree of contact of farmer with research station and research workers,

level of knowledge on improved agricultural practices, extent of attitude towards improved agricultural practices, adoption of recommended agricultural practices and perception of farmers about research station and research workers, except for the extent of attitude towards the improved practices, significant difference between the two stations could be observed on all the variables.

The station at Pattambi had an edge over Kayamkulam station in all the variables which had significant difference. Pattambi ranked better to Kayamkulam in the degree of contact of farmers with research station and research workers, level of knowledge on improved agricultural practices, adoption of recommended agricultural practices and perception about research station and research workers.

This difference can be attributed to several reasons. Pattambi station being older than the Kayamkulam station might have established a strong foot hold in the minds of the farmers, and this might have made the farmers to assign more importance to the research station as an information centre. The more research activities carried out in Pattambi station and the many paddy varieties released by the station are two other notable reasons. So also the extension activities of the Pattambi research station do play a role. These activities enable the farmers to get in close touch with the research station and research workers, get to know of the improved agricultural practices and get convinced of the importance of

these practices in increasing crop yields. This will definitely influence the farmers to adopt more of the practices and for adopting more of these practices, they will try to gain more knowledge on scientific farming by making frequent visits to the research station and research workers. Once the farmer gets convinced on the efficiency of the research station and research workers in helping him to produce more, naturally he will develop a much favourable perception about the research station and research workers.

V. Suggestions for research to be done as perceived by the farmers.

The farmers on citing the most important problems which can be overcome by research activities, suggested that suitable research work may be taken up in the research stations to overcome these problems.

A. Pattambi:

Of the 6 major problems experienced by Pattambi farmers, the problem about which most farmers had serious concern was the use of unrecommended varieties by some farmers leading to severe pest and disease problems. Of the 90 farmers contacted, 36 farmers (40%) opted this problem as the most important one, 12 farmers (13.3%) cited this as the second most important problem and 6 farmers (6.7%) perceived this as the 3rd most important problem as is clear from table 39.

Pattambi is a place which has got easy access to Coimbatore through the border of Kerala State. In Coimbatore several new varieties whose adaptability to our conditions have not been tried so far, are available. Some farmers on knowing that these varieties give high returns in Coimbatore bring the seeds of these varieties to their farm at Pattambi and cultivate them. They are unrecommended varieties. Their cultivation is likely to prove major threats to the existing varieties and it has even proved so. These varieties invite pests and diseases as a result of which the local and high yielding varieties suitable to this place will be affected severely.

Another consequent problem, as mentioned by the farmers was the resulting seed mixture. Hence the farmers suggest that suitable research works may be taken up to overcome this most important problem of existence of unrecommended varieties. The varieties from nearby places like Coimbatore may be tried at Pattambi and if they prove to be unsuitable, the fact must be informed well in advance that no farmer will use these varieties.

The problem that ranked second in its importance was the high incidence of weed problem in 1st crop due to dry seeding. Farmers around 12% gave this problem 1st rank, 46-7% cited this as the 2nd most important problem and 6.7% mentioned this as the 3rd most important problem. The farmers were of the

opinion that this weed problem takes serious turns because of the dry sowing practice adopted for 1st crop. The farmers suggested that some research work may be undertook to ward off this weed menace.

Another problem was the poor straw yield of the varieties. Farmers of this place apart from looking for grain yield, want to get high straw yield also. The poor straw yield of the high yielding varieties has forced many a farmer to substitute local varieties in the place of high yielding varieties. So the farmers suggest that proper research may be undertook to evolve varieties that can give both good grain and straw yields.

The problem that ranked fourth was the inability to raise a green manure crop in the 3rd season. It is recommended that instead of keeping fields fallow during 3rd crop, a green manure crop can be raised which can be incorporated to the soil before the 1st crop. But this becomes difficult as dry sowing is adopted during 1st crop in most places. So farmers have suggested that suitable research work may be undertaken to solve this problem also.

Other problems of minor importance which the farmers suggested that through proper research work can be solved are high incidence of pests like stemborer and gallfly and diseases like Bacterial leaf blight and also the high cost of scientific agricultural operations.

B. Kayamkulam:

The problems perceived by the Kayamkulam farmers were presented in table 40 in the order of importance. The problem that ranked first in the order of importance was the existence of severe drought in the early stages of 1st crop and in the later stages excess of water occur. In the 2nd crop season it is the reverse with flooding during early stages of the crop and drought in the later stages. Because of this, it becomes impossible to apply nutrients at the critical stages of crop growth. 54 farmers (60%) perceived this as the most important problem, 15 farmers (16.7%) identifying this as the 2nd most important problem and 6 farmers (6.7%) identifying this as the 3rd most important problem. The farmers suggested that suitable research works like adjusting the time of sowing may be taken up to overcome this most important problem.

The problem of high incidence of weeds in 2nd crop was judged as the most important problem by 18 farmers (20%), as the 2nd most important problem by 45 farmers (50%) and 9 farmers (10%) identified it as the 3rd most important problem. They suggested that suitable research work on weed control in paddy especially in 2nd crop may be taken up to solve this problem.

Another significant problem which ranked third was the low content of organic matter in the soil. The farmers opined that incorporation of organic manures is a very difficult

proposition because of 2 reasons - non availability and high cost. As the soils are poor in organic matter content, organic manures must definitely be added to boost up yields. Hence research work on this aspect also was invited by the farmers.

A problem only few farmers (10%) identified was that the spraying of chemicals to control pests in the fields of research station indirectly causes problems to the farmers of nearby fields since the pests go and attack their crop. Hence they advocate that such pest control operations must be taken up over a large area as a whole.

SUMMARY

CHAPTER VI

SUMMARY

The study was undertaken to identify the impact of agricultural research stations and farms on the cultivation of crops by the farmers of the surrounding areas. The investigation was carried out at the two most important rice research stations of the state at Pattambi and Kayamkulam.

The specific objectives of the study were:

(1) to study and compare the levels of knowledge on improved agricultural technology, extent of attitude towards improved agricultural practices and the level of adoption of different agricultural practices of the farmers of the area surrounding the research station and farm and other areas.

(2) to study the farmers' perception about the research station and research workers and

(3) to study the suggestions for research to be done in the research stations as perceived by the farmers.

Three separate groups of paddy farmers were selected from three strata representing three distances from the

research stations in both Pattambi and Kayamkulam. Each group comprised of 30 farmers and thus the total number of respondents was 180.

The data were collected through personal interviews with the respondent farmers. The schedule contained questions to measure the four dependent variables of the study viz. knowledge, attitude, adoption of practices and the perception about research station and research workers; the intervening variable namely the degree of contact of farmer with research station and research workers, and the five independent variables such as age, education, economic status, farm size and scientific orientation. Also there were questions inviting farmers to suggest the research works to be done in the stations. Suitable measurement techniques were employed to measure the above variables. Standard statistical techniques such as analysis of variance, correlation, 't' test and percentage analysis, were undertaken for the analysis of the data collected.

The results of the study are summarised as follows:

1. There was significant difference in the degree of contact of farmer with research station and research workers between the neighbouring farmers and distant farmers at both places of study - Pattambi and Kayamkulam.

The surrounding farmers were found to have significantly higher degree of contact than the distant farmers.

The farmers of Pattambi had higher degree of contact with research station and research workers when compared to the Kayamkulam farmers.

2. Significant difference was observed in the level of knowledge on improved agricultural technology between the surrounding farmers and the distant farmers at Pattambi as well as Kayamkulam.

The surrounding farmers had significantly higher level of knowledge than distant farmers which revealed that the research station had an impact on the knowledge level of the surrounding farmers.

The research station at Pattambi was found to have more impact than Kayamkulam as the farmers of Pattambi had obtained significantly higher knowledge scores than Kayamkulam farmers.

3. There was significant difference at both Pattambi and Kayamkulam in the extent of attitude towards improved agricultural practices between the surrounding farmers and distant farmers.

The impact of the research station on the farmers' extent of attitude was revealed by the significantly higher attitude scores obtained by the surrounding farmers than distant farmers.

No significant difference between the two stations could be revealed in this aspect.

4. The surrounding farmers to the research station and distant farmers differed significantly in their adoption of recommended practices in Pattambi and Kayamkulam.

Significantly higher adoption was found to be thereby the surrounding farmers than the distant farmers assertaining the impact that the research station has on the surrounding farmers in their adoption of recommended practices.

The Pattambi farmers had significantly higher adoption of the practices than the Kayamkulam farmers which showed more impact for the Pattambi station.

5. Significant difference was found to exist in the farmers' perception about the research station and research workers between the surrounding farmers and distant farmers.

A more favourable perception was found to be associated with the nearby or surrounding farmers than the distant farmers revealing that the research station has also an impact on the surrounding farmers in developing favourable perception towards research station and research workers.

On comparing Pattambi and Kayamkulam, significantly higher perception scores were found to be obtained by Pattambi farmers.

6. The degree of contact of a farmer with research station and research workers was found to have a significant positive relationship with his level of knowledge on improved agricultural technology.

7. A significant positive relationship existed between the farmers' degree of contact with research station and research workers and his extent of attitude towards improved agricultural practices.

8. The adoption of recommended practices by a farmer was found to be significantly influenced by his degree of contact with the research station and research workers.

9. A significant positive association was found between farmers' degree of contact with research station and research workers and their perception about research station and research workers.

10. Age of farmers had no significant relationship with his degree of contact with research station and research workers.

11. Education had a significant positive relationship with the farmers' degree of contact with research station and research workers.

12. Economic status was found to have no significant association with farmers' degree of contact with research station and research workers.

13. A significant positive relationship existed between a farmer's farm size and his degree of contact with research station and research workers.

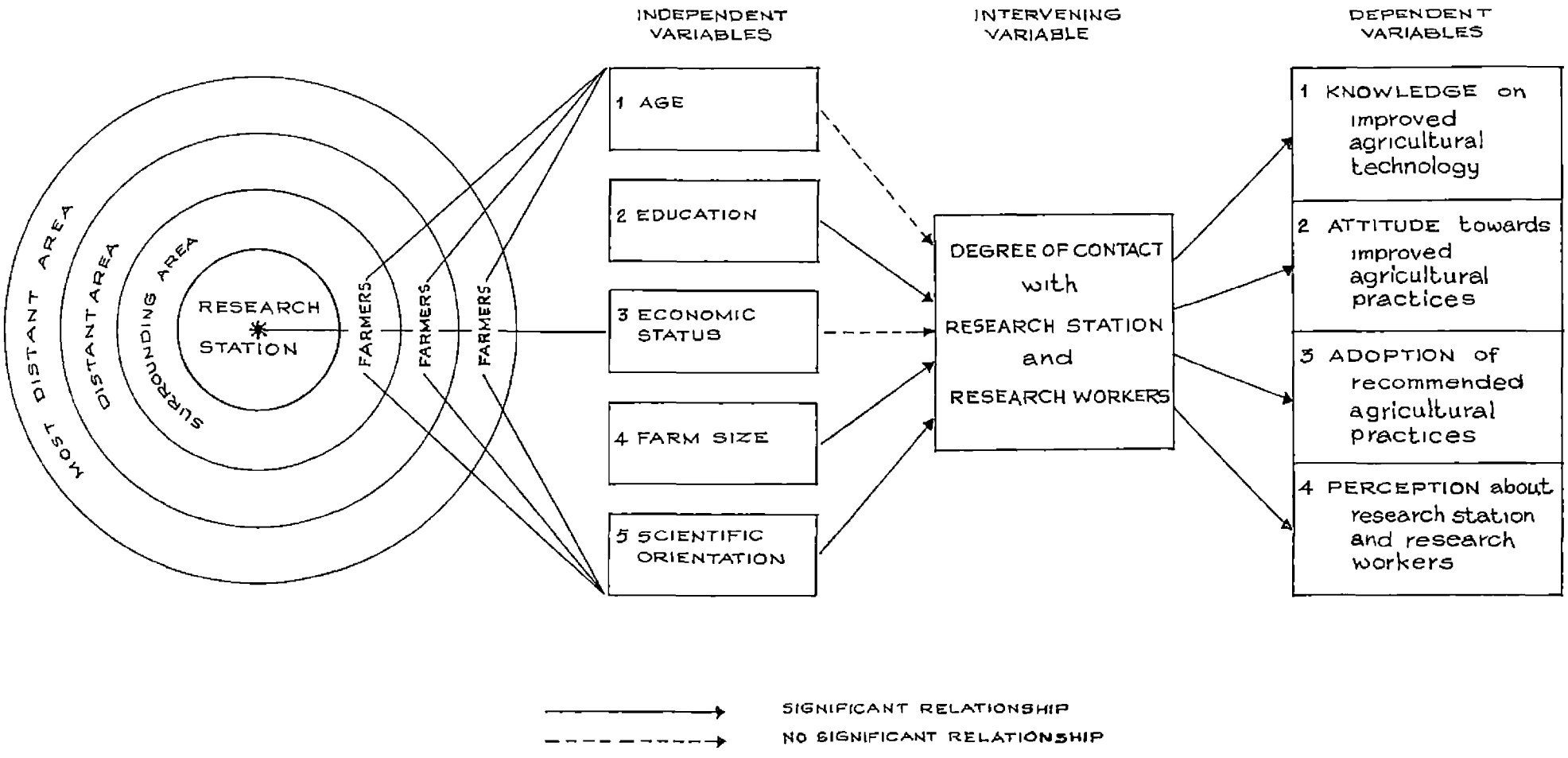
14. Scientific orientation of a farmer was found to have significant positive influence on his degree of contact with research station and research workers.

15. The farmers of Pattambi suggested suitable research works should be undertaken to ward off their important problems such as the use of unrecommended varieties by some farmers leading to severe disease and pest attack, high incidence of weeds in first crop, low yield of straw and inability to raise a green manure crop in the 3rd crop season.

16. Suggestions put up by Kayamkulam farmers were to conduct research work to overcome their important problems such as inability to apply nutrients at critical stages of crop in 1st and 2nd crop seasons due to vagaries of weather conditions, low organic matter content in the soil and high incidence of weeds especially in the second crop season.

To conclude, the present study revealed the impact of the research stations on the adoption behaviour of the surrounding farmers and identified some of the important factors associated with it in the study area. Also the study explained how the farmers perceived about the research station and research workers. The notable suggestions made by the farmers as to the type of research needed were also enclosed in the study. Even though this study was conducted at two of the important rice research stations, it has to be seen whether the results are applicable to other rice research stations as well as research stations dealing with other crops. So also several other factors which were not

FIG 7 EMPIRICAL MODEL OF RESULTS



considered in this study due to lack of time must be explored to identify their relationships also. Hence further research will have to be taken up in the directions mentioned above.

The findings of this study are presented through an empirical model in Figure 7.

REFERENCES

REFERENCES

Anbalagan, S. (1974). A study of Factors Influencing Adoption of Package of Practices for High Yielding Varieties of Paddy. M.Sc. (Ag.) Thesis, Tamil Nadu Agricultural University, Coimbatore.

Balasubramonian, U.A. and Singh, A.P. (1982). Attitude of Farmers Towards High Yielding Varieties of Paddy. Rural Development Review 1 (1): 52 - 53.

Baril, E. (1977). The Adoption of Fertilizer use in Gem, Alberta: A Study in Diffusion. Albertan Geographer 13: 31 - 42.

Beal, G.M. and Rogers, E.M. (1960). The Adoption of Two Farm Practices in a Central Iowa Community. Special Report 26, Iowa State University of Science and Technology, Ames, Iowa.

Beal, G.M. and Sibley, D.N. (1967). Adoption of Agricultural Technology by the Indians of Guatemala. Rural Sociology Report 62, Dept. of Sociology and Anthropology, Iowa State University, Ames, Iowa.

Berry, B.J.L. (1972). Hierarchial Diffusion: The Basis of Developmental Filtering and Spread in a System of Cities. The Free Press (Macmillan), New York.

Bhaskaran, C. (1976). A study of Sociometric Identification of Opinion Leaders and their characteristics in a Progressive and a Non-progressive village in Kanyakumari District of Tamil Nadu. M.Sc. (Ag.) Thesis, Department of Agricultural Extension, University of Agricultural Sciences, Bangalore.

Bhaskaran, K. and Mahajan, B.N. (1968). Effectiveness of Extension Methods in Gaining Knowledge and Acceptance of Agrosan Seed Treatment to Cotton. Indian J. Extn. Edn., 4: 28 - 33.

Bose, S.P. (1961). Characteristics of Farmers who Adopt Agricultural Practices in Indian Villages. Rural Sociology 26: 138 - 145.

*Caesar, M. (1931). Glasindustribygden I Sydostra Smaland, En Ekonomisk - Geografisk Studie. Svensk. Geogr. Drabok.

Chandrakandan, K. and Subramanyan, V.S. (1975). Differential Perception of Farm Practice Attributes by Adopters and Non-adopters. Madras Agric. J., 62 (10-12): 862 - 863.

Chattopadhyay, S.N. (1963). A Study of Some Psychological Correlates of Adoption of Innovations in Farming. Ph.D. Thesis, I.A.R.I., New Delhi.

Chole, R.R. and Rahudkar, W.B. (1978). Source Credibility Pattern Among Small and Big Farmers. Indian J. Extn. Edn., 14 (1&2)

*Choudhary, B.N. and Prasad, C. (1971). A Scale to Measure the Attitude of Farmers Towards Use of Chemical Fertilizers. Interdiscipline 8 (2): 72 - 79.

Cohen, Y.S. (1972). Diffusion of an Innovation in an Urban System: The Spread of Planned Regional Shopping Centres in the United States 1949 - 1968. Research Paper No. 140, Department of Geography, University of Chicago, Chicago.

Crain, R.L. (1966). Fluoridation: The Diffusion of an Innovation Among Cities. Social Forces 44: 467 - 476.

Edwards, A.L. (1957). Techniques of Attitude Scale Construction, Vakils, Feffer & Simons Pvt. Ltd., Bombay. 20 - 40.

Findlay, A. and Maclennan, D. (1978). Innovation Diffusion at the Micro-Scale; A Reconsideration of Information and Economic Factors. Area 10 (4): 309-314.

Fliegel, F.C. (1956). A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices. Rural Sociology 21: 284 - 295.

Friedmann, J.R. (1969). A General Theory of Polarized Development. School of Architecture and Urban Planning, UCLA, Los Angeles.

*Gross, N. (1949). The Differential Characteristics of Accepters and Non-Accepters of an Approved Agricultural Technological Practice. Rural Sociology.

*Gross, N. and Taves, M.J. (1952). Characteristics Associated with Acceptance of Recommended Farm Practices. Rural Sociology.

Hagerstrand, T. (1952). The Propogation of Innovation Waves, Lund Studies in Geography. Gleerup, Lund.

Hagerstrand, T. (1967). Innovation Diffusion as a Spatial Process. University of Chicago Press, Chicago.

*Hannerberg, D. (1941). Norkes Landsbygd 1600-1820. Folkmangd Och Befolkningsrorelse. Akerbruk Och Spannmalsproduktion. Goteborg.

*Harenstam, C. (1942). Jarn - Och Metall manufakturer I Vastra Smaland. Svensk. Geogr. Drabok.

Hermansen, T. (1972). Development Poles and Development Centres in National and Regional Development: Elements of a Theoretical Frame Work. Mouton, Paris and The Hague.

Jha, P.N. and Singh, B.N. (1966). Utilization of Sources of Farm Information as Related to characteristics of Farmers. Indian J. Extn. Edn., 1 (4): 294 - 302.

Kaleel, F.M.H. (1978). A Study on the Impact of Intensive Paddy Development Programme in Kerala. M.Sc.(Ag.) Thesis, Kerala Agricultural University, College of Agriculture, Vellayani.

Kamarudeen, M. (1981). A Study on the Impact of National Demonstration Programme on Paddy Cultivation in Trichur District. M.Sc. (Ag.) Thesis, Kerala Agricultural University, College of Agriculture, Vellayani.

*Katz, E., Lewin, M.L. and Hamilton, H. (1963). Traditions of Research on the Diffusion of Innovations. Amer. Social. Rev., 28: 237 - 252.

Kerala Agricultural University. (1981). Package of Practices Recommendations, Directorate of Extension Education, K.A.U., Mannuthy.

Knight, A. and Singh, K.N. (1975). Study on Personal and Social Characteristics of Farm Broadcast Listeners that are Associated with Gain in Knowledge. Madras. Agril. J., 62 (10 - 12): 698 - 701.

Krim, A.J. (1967). The Innovation and Diffusion of the Street Railways in North America. MA Thesis, University of Chicago, Chicago.

*Lagnert, F. (1949). Valmanstaren Pa Skanes Landsbygd 1911 till 1948. Lund.

*Lindgren, G. (1937). Odlingssystemen I Vastergotland Fore Den Agrara Revolutionen. Ymer.

Mahoharan, P.M. (1979). A Study on the Role of Leadership in Agricultural Development in Rural Areas in Kerala. M.Sc. (Ag.) Thesis, Kerala Agricultural University, College of Agriculture, Vellayani.

Marsh, C.O. and Coleman, A.C. (1955). The Relation of Farmers' Characteristics to the Adoption of Recommended Farm Practices. Rural Sociology 20: 286 - 296.

*McVoy, E.C. (1940). Patterns of Diffusion in the United States. Amer. Sociol. Rev., 5: 219 - 227.

Misra, R.P. (1972). Growth Poles and Growth Centres in the Context of India's Urban and Regional Development Problems. Mouton, Paris and The Hague.

Morrill, R. (1968). Waves of Spatial Diffusion. Journal of Regional Science 8: 1 - 18.

Moseley, J.M. (1974). Growth Centres in Spatial Planning. Pergamon Press, Oxford.

Murthy, A.S. and Singh, S.N. (1974). Communication Behaviour of Farmers. New Heights, Delhi.

Nair, G.T. (1969). A Multivariable Study on Adoption of High Yielding Paddy Varieties by the Farmers of Kerala State. Ph.D. Thesis, I.A.R.I., New Delhi.

Nanjaiyan, K. (1973). A Study of the Utilization of Information Sources and Channels for the Adoption of Improved Practices for Sugarcane by the Farmers of Karamadai Block of Coimbatore District. M.Sc.(Ag.) Thesis. Department of Agricultural Extension, Tamil Nadun Agricultural University, Coimbatore.

*Nordstrom, O. (1952). Relationer Mellan Bruk Och Omland I Ostra Smaland 1750 - 1900. Lund.

Oliver, J., Annamalai, R. and Parthasaratny, G. (1975). National Demonstration - An Analysis as a Farm Based Extension Medium. Madras Agric. J., 62 (10 - 12): 615 - 618.

Osuji, O.L. (1980). Infrastructual Facilities Affecting the Adoption of New Farm Practices among Farmers in the Imo State of Nigeria - A Research Note. Oxford Agrarian Studies 9: 169 - 172.

Pandyaraj, S. (1973). A Study of the Communication Behaviour of Agricultural Extension Personnel, M.Sc. (Ag.) Thesis, Kerala Agricultural University, College of Agriculture, Vellayani.

Parshad, Rajender. (1966). Relative Effectiveness of Information Sources in the Adoption Process of Some Improved Farm Practices. M.Sc. (Ag.) Thesis. Department of Extension Education, Punjab Agricultural University, Ludhiana.

Parshad, R. and Sinha, P.R.R. (1971). Farmers' Characteristics Influencing the Use of Various Categories of Information Sources in the Adoption Process of Soil Stirring Plough. Indian J. Extn. Edn., 7 (3 & 4): 99 - 105.

Pederson, P.O. (1970). Innovation Diffusion in a National Urban System; The Case of Chile. Geographical Analysis 2: 203 - 254.

Pederson, P.O. (1971). Innovation Diffusion in Urban Systems. Lund Studies in Geography, Gleerup, Lund.

Pillai, G.B. (1978). A Study on Adoption of Soil Conservation Measures by Farmers in Scheme Area of Trivandrum District. M.Sc. (Ag.) Thesis, Department of Agricultural Extension, College of Agriculture, Vellayani.

Pred, A.R. (1966). The Spatial Dynamics of U.S. Urban-Industrial Growth 1800 - 1914. Interpretive and Theoretical Essays, MIT Press, Cambridge, Mass.

*Romany, P. (1977). The Transformation of a Hungarian Village. International Zeitschrift Der Land Wirt Schaft 6: 521 - 524.

Rosenthal, J. (1978). Improving the Peoples' Crops. Agenda 1 (10): 9 - 14.

Ruttan, V.W. (1978). Reviewing Agricultural Research Programmes. Agricultural Administration 5 (1): 1 - 19.

*Ryan, B. and Gross, N.C. (1943). The Diffusion of Hybrid Seed Corn in Two Iowa Communities. Rural Sociology.

*Sarma, M.T.R. et al. (1979). Impact of Indo-German Fertilizer Educational Project in West Bengal: An Evaluation. World Ag. Econ. & Rur. Soc. Abst., 22 (5) 3334.

Sawhney, M.M. (1961). Diffusion and Acceptance of Innovation in Agriculture with Special Reference to the Rural Leaders and Rural Youth. Ph.D. Thesis, Indian Agricultural Research Institute, New Delhi.

Shankariah, Ch. and Singh, K.N. (1967). Predictive Analysis of Factors Associated with Knowledge of Improved Practices of Vegetable Cultivation. Indian J. Extn. Edn., 3 (1 & 2).

Sharma, S.K. and Nair, G.T. (1974). A Multivariable Study of Adoption of High Yielding Varieties of Paddy. Indian J. Extn. Edn., 10 (1-2): 30 - 35.

Singh, K.N. (1974). What Research Says About Communicating with Rural People? Media Asia, 1 (3): 41 - 50.

Singh, K.N. and Ambastha, C.K. (1975). Communication Pattern of Farmers: A Systemic Analysis. Indian J. Extn. Edn., 11 (1 & 2): 25 - 31.

Singh, B.P., Jaiswal, N.K. and Singh, B.N. (1968). Analysis of Pre-Service Training Programme of Agricultural Extension Officers. Indian J. Extn. Edn., 4 (3 & 4): 117 - 127.

Singh, N.P. and Prasad, C. (1974). Communication Behaviour and Source Credibility Perception of Young Farmers. Indian J. Extn. Edn., 10 (1 & 2): 53 - 58.

Singh, I.B. and Sahay, B.N. (1970). Communication Behaviour of Kosi Farmers in relation to High Yielding Varieties Programme. Indian J. Extn. Edn., 6 (3 & 4): 20 - 31.

Singh, R.P. and Singh, K.N. (1968). Attitude of Farm People Towards Chemical Fertilizers. Indian J. Extn. Edn., 4 (1 & 2): 53 - 57.

Sivaramakrishnan, S. (1981). A Study on the Differential Adoption of Recommended Agricultural Practices of Selected Crops. M.Sc.(Ag.) Thesis, Kerala Agricultural University, College of Agriculture, Vellayani.

Songsore, J. (1979). Spatial Variations within the Sphere of Influence of Innovative Services: An Example from North-Western Ghana. Journal of Tropical Geography. 48: 66 - 74.

Subramanyan, V.S. and Lakshmana, C. (1973). Impact of Socio-Economic Factors on the Adoption of Improved Farm Practices. Madras Agric. J., 60 (3): 187 - 191.

Sundaraswamy, B. and Duraiswamy, K.N. (1975). Characteristics of Farmers in Relation to Adopting Recommended Practices of Hybrid Sorghum. Madras Agric. J. 62 (10-12): 721 - 725.

Supe, S.V. (1969). Factors Related to Different Degrees of Rationality in Decision-making Among Farmers in Buldana District. Ph.D. Thesis, Division of Agricultural Extension, I.A.R.I., New Delhi.

Supe, S.V. and Salode, M.S. (1975). Impact of National Demonstration on Knowledge and Adoption Level of Farmer Participants. Indian J. Extn. Edn., 11 (1 &2): 36 - 38.

*Svensson, S. (1942). Bygd Och Yttervarld. Studier Over Forhallandet Mellan Nyheter Och Tradition Nord. Museets. Handl. 15.

Thangamany, D. (1972). A study on the Effectiveness of Different Sources of Information in the Adoption of Certain Improved Agricultural Practices in Banana Cultivation by Farmers of Chinnamannoor Block. M.Sc. (Ag.) Thesis, Department of Agricultural Extension, Tamil Nadu Agricultural University, Coimbatore.

Tornquist, G. (1967). Growth of TV Ownership in Sweden 1956 - 1965: An Empirical-Theoretical Study. Almquist & Wiksell, Stockholm.

*Trivedi, G. (1963). Measurement and Analysis of Socio-economic Status of Rural Families. Ph.D. Thesis, Division of Agricultural Extension, I.A.R.I., New Delhi.

*Wennberg, A. (1947). Lantbebyggelsen I Nordostra Ostergotland 1600 - 1875. Lund.

*Wik, H. (1950). Norra Sveriges Sagverksindustri Fran 1800 - talets mitt fram till 1937. Geographica 21.

Wilkening, E.A. (1952). Communication and Acceptance of Recommended Farm Practices Among Dairy Farmers of Northern Victoria. Rural Sociology 27: 116 - 117.

* Original not seen

APPENDIX

APPENDIX I

IMPACT OF AGRICULTURAL RESEARCH STATIONS AND FARMS ON THE CULTIVATION OF CROPS BY THE FARMERS OF THE SURROUNDING AREA

Interview Schedule

Respondent No.

Part - A

1. Name of farmer:
2. Address:
3. Age:
4. Education: Illiterate/Read/Read and Write/Primary/ Middle/High School/College
5. Economic status:

   a. Material possession:

	No.	Cost
(1) Bullock		
(2) Iron plough		
(3) Sprayer		
(4) Pump set		
(5) Bicycle		
(6) Scooter		
(7) Tractor		
(8) Power tiller		

(9) Watch
(10) Radio
(11) Tape Recorder
(12) Fridge
(13) Car
(14) Others (specify)

b. House type:

i. No house/Thatched house/Tiled House/Concrete house

ii. Electrified/Not electrified

6. Farm size:

Area under paddy: ..... acres

7. The distance from your home to the research station is

Within 1.5 kms/1.5 - 3 kms/3. 5 kms

8. Scientific orientation:

Indicate the degree of agreement/disagreement to the following statements.

	SDA	DA	UD	A	SA
i. New methods of farming give better results to a farmer than the old methods					
ii. The way a farmer's forefathers farmed is still the best way to farm today					
iii. Even a farmer with lots of exoer-ience should use new methods of farming					
iv. Though it takes some time for a farmer to learn new methods in farming, it is worth the efforts					
v. A good farmer experiments with new ideas in farming.					
vi. Traditional methods of farming have to be changed in order to raise the level of living of a farmer.					

9. Degree of contact with research station and research workers:

a. Have you heard of the research station? Yes/No

b. Have you seen the research station? Yes/No

c. Have you visited the research station? Yes/No

If so give the frequency of making visits during last year: Once in a week/Once in a month/Once in three months/Once in six months/Less than that.

d. Have you had discussion with research workers? Yes/No

If 'Yes', was it during your visit to the research station

OR

was it during the research worker's visit to you?

Give the frequency of having discussions during last year: Once in a week/Once in a month/Once in three months/Once in six months/Less than that.

Part - B

Knowledge on Improved Agricultural Technology

Please answer the following questions:

1. Use of High Yielding Varieties:

a. Give the names of some high yielding varieties of paddy.

i	ii	iii	iv	v
vi	vii	viii	ix	x

b. Which high yielding varieties are best suited to your place?

i	ii	iii	iv	v

2. Seed treatment:

a. Do you know that seeds are to be treated with chemicals before sowing? Yes/No

If 'Yes'

b. (i) What is the purpose?
(ii) What is the name of the chemical used?
(iii) What is the dose of this chemical?
(iv) How will you treat this chemical with the seed?

3. Spacing:

   a. What is the spacing recommended for paddy:

      i. Short duration varieties

      ii. Medium duration varieties

   b. What is the age of seedlings to be transplanted:

      i. Short duration varieties

      ii. Medium duration varieties

4. Soil testing:

   a. Do you know that soil is to be tested before raising a crop? Yes/No

      If 'Yes'

   b. What is the purpose?

   c. From what depth soil is to be collected?

   d. What is the quantity of soil to be collected?

5. Liming:

   a. Why do you lime paddy fields?

   b. What is the quantity of lime required per acre?

   c. In how many doses are this lime to be applied?

6. Organic manuring:

   a. What is the quantity of organic manure required by one acre of paddy?

   b. When should you add organic manure?

7. Use of chemical fertilizers:

   a. What are the major nutrients required for paddy?

      i ii iii

   b. Give the NPK recommendation per acre of paddy?

      N P K

      i. Short duration varieties

      ii. Medium duration varieties

   c. Give the name of a fertilizer which will supply:

      i. Nitrogen

      ii. Phosphorus

      iii. Potassium

d. Give the quantity of fertilizers to be applied per acre of paddy:

Short duration varieties		Medium duration varieties	
Fertilizer	Quantity	Fertilizer	Quantity
i		i	
ii		ii	
iii		iii	
iv		iv	

e. In how many applications are the following fertilizers added and at what quantity are they added?

	No. of applications	Qty.
i. N fertilizers		
ii. P fertilizers		
iii. K fertilizers		

8. Use of plant protection chemicals:

a. What are the major pests and diseases of paddy?

	Pest	Disease
i.		
ii.		
iii.		
iv.		
v.		

b. The chemicals to be used against them and their dose:

	Pest	Chemical	Dose
i.			
ii.			
iii.			
iv.			

	Disease	Chemical	Dose
i.			
ii.			
iii.			
iv.			

Part - C

Attitude towards improved agricultural practices

Various opnions have been raised regarding the scientific cultivation of paddy. Below are given some statements regarding

the improved varieties, use of chemical fertilizers and use of plant protection chemicals. Give your extent of agreement/ disagreement with the statements:

(a) Attitude towards high yielding varieties:

	SA	A	UD	DA	SDA
(i) Adoption of high yielding varieties of paddy would benefit the community at large - the farmers, the consumers and the labourers.					
(ii) Cultivation of high yielding varieties of paddy requires comparatively less labour than the local varieties of paddy					
(iii) The cultivation of high yielding varieties of paddy has brought about a number of socio-economic changes in the farming community					
(iv) For better level of living, cultivation of high yielding varieties of paddy is essential					
(v) Grains of high yielding varieties of paddy possess poor cooking quality					
(vi) The net return per unit of investment in growing high yielding varieties of paddy is less as compared to that of local varieties.					
(vii) The introduction of high yielding varieties of paddy is a major break - through in boosting up our food production					
(viii) High yielding varieties of paddy can be grown on irrigated lands only					

(b) Attitude towards use of chemical fertilizers

	SA	A	UD	DA	SDA
(i) The food problem of our country can be solved by using chemical fertilizers to crop					
(ii) If we use chemical fertilizers continuously for some years the soil will become unsuitable for cultivation					

SA A UD DA SDA

(iii) If anybody asks for my advice for increasing production, I will advise him to use chemical fertilizers

(iv) Produce of crops grown with chemical fertilizers is harmful for health

(v) Chemical fertilizers will not give returns in relation to the cost involved

(c) Attitude towards using plant protection chemicals

(i) The use of chemicals for pests and disease control,in crops is one of the important methods to increase agricultural production

(ii) Consumption of produces of crops sprayed with chemicals is not good for health

(iii) Plant protection chemicals will spoil the soil

(iv) All farmers should use pp chemicals to control pests and diseases

(v) There must be a law to enforce farmers to adopt chemical control of pests and diseases

(vi) Even though there are bad effects of theipp chemicals, the good effects justify their use for crops

Part - D

Adoption of recommended practices:

Answer the following with regard to your paddy cultivation:

		acres
Area under paddy -	1st crop	
	2nd crop	
	3rd crop	
	Total	

1. Use of high yielding varieties:

   a. Did you cultivate high yielding varieties during last crop?

   b. If 'Yes' Give the area: ..... acres

2. Seed treatment:

   a. Did you adopt seed treatment? Yes/No

   b. If adopted: i. Name of chemical
      ii. Dose
      iii. Method

3. Spacing:

   a. Did you adopt the spacing recommended in the package of practices of KAU? Yes/No

   b. If 'Yes' Variety Spacing

      i. Short duration variety
      ii. Medium duration variety

4. Soil testing:

   a. Did you test the soil before raising last crop? Yes/No

   b. If 'Yes' i. Quantity of soil collected
      ii. Time of collection

5. Liming:

   a. Did you apply lime/dolomite to your paddy feeds? Yes/No

   b. If 'Yes', quantity applied: ..... kg/acre

6. Organic manuring:

   a. Did you apply organic manures to your paddy crop? Yes/No

   b. If 'Yes' Type of manure Qty. applied - kg/acre

7. Use of chemical fertilizers:

   a. Did you apply chemical fertilizers to paddy? Yes/No

   b. If 'Yes' Name of fertilizers Qty.

   Short duration varieties i. ii. iii. iv.

   Medium duration varieties i. ii. iii. iv.

8. Use of plant protection chemicals:

a. Did you use chemicals against pests and diseases of paddy? Yes/No

b. If 'Yes'

	Name of pest	Chemical	Dose
i.			
ii.			
iii.			
iv.			

	Name of disease	Chemical	Dose
i.			
ii.			
iii.			
iv.			

Part - E

Perception about research station and research workers:

Below are given a set of statements on the research findings of this station, the research workers of the station and the research station in general. Indicate your response to these statements.

a. Perception about research findings of the station.

		VT	MT	NAT
(i)	The findings of this station are helpful for the farmers to increase their yields			
(ii)	It has not been possible to overcome the farmers' problems through the findings of this station			
(iii)	The money spent on research work in the station is a wastage of government revenue			
(iv)	It is not possible for an ordinary farmer to carry out agricultural operations as done in the research station			
(v)	The profit/loss of the farmer on adopting the findings is not being assessed in the research station			
(vi)	Facilities for direct observation of research results are quite insufficient			
(vii)	The suggestions of the farmers are not considered while doing research in the station			

b. Perception about the research workers of the station.

VT MT NAT

(i) The research workers consider their work in the station merely as their means of livelihood

(ii) The research workers in the research station lend any help needed by farmers

(iii) The research workers lack first hand exoerience of problems experienced by farmers

(iv) Most of the research workers do their work to improve the conditions of the farmer

c. Perception about research station in general:

(i) The research station gives a lot of information on improved agricultural practices

(ii) The most important problems that bother the farmer are not given enough concern in the research station

(iii) It will be better to disburse the money spent on research in the station among the farmers

(iv) The farmers are not going to be affected if the research station is closed

(v) The research station has not been successful in bringing out less costly agricultural practices

(vi) The research station and research workers are highly necessary to solve the problems of farmers

(vii) The research station's activities aid in creating a favourable attitude by farmers towards the improved practices

(viii) If the research station is abolished, it will adversely affect the farmers

(ix) The research station was able to bring about significant changes in the agricultural operations

(x) This research station is functioning effedtively.

Part - F

Please indicate the problems that you have exoerienced in paddy cultivation in the order of imoortance and suggest what are all the types of research needed in the research station to overcome these problems.

	Problem	Suggestion
(1)		
(2)		
(3)		
(4)		
(5)		
(6)		
(7)		
(8)		
(9)		
(10)		

IMPACT OF AGRICULTURAL RESEARCH STATIONS AND FARMS ON THE CULTIVATION OF CROPS BY THE FARMERS OF THE SURROUNDING AREA

BY

P. J. SIVAKUMAR

ABSTRACT OF THE THESIS

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ABSTRACT

The study on the impact of agricultural research stations and farms on the cultivation of crops by the farmers of the surrounding area was designed to find out the differences between the surrounding farmers and distant farmers in their knowledge level on, attitude towards and adoption of the improved agricultural practices in paddy cultivation. It also envisaged study of the farmers' perception about research station and research workers and the farmers' suggestions as to the type of research needed. The factors contributing to the differences in attitude, knowledge and adoption were also studied. The investigation was carried out in respect of the Regional Agricultural Research Station, Pattambi and Rice Research Station, Kayamkulam.

The important findings of the study were the following:

1. Significant difference was found to exist between the surrounding farmers and distant farmers in their degree of contact with research station and research workers, level of knowledge on improved agricultural technology, extent of attitude towards improved agricultural practices, adoption of the recommended agricultural practices and perception about research station and research workers in Pattambi as well as Kayamkulam. The surrounding farmers stood significantly better in all the five variables mentioned earlier.
2. The farmers' degree of contact with research station and research workers was significantly and positively related

to their level of knowledge, extent of attitude and extent of adoption of the improved agricultural practices.

3. Age and economic status had no significant association with the farmers' degree of contact with research station and research workers.

4. Education, farm size and scientific orientation were found to be significantly and positively associated with the farmers' degree of contact with research station and research workers.

5. Farmers of Pattambi were significantly better in their degree of contact with research station and research workers, level of knowledge on improved agricultural technology, adoption of recommended practices and perception about research station and research workers.

6. An overall favourable perception was found to be held by the farmers about the research station and research workers.

7. Suggestions made by Pattambi farmers were to conduct research to overcome problems like use of unrecommended varieties, weed menace in first crop and low straw yield.

8. Kayamkulam farmers invited research work on problems like inability to apply nutrients at critical stages of growth due to vagaries in weather conditions, low organic matter content of soil and high weed incidence especially in 2nd crop.