RESPONSE OF SPECIAL PACKAGE PROGRAMME FOR AGRICULTURAL DEVELOPMENT IN KERALA

BY

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THESIS
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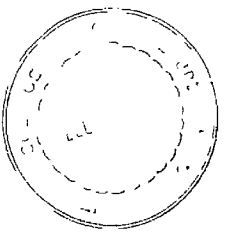

DECLARATION

I hereby declare that this thesis entitled " Response of Special Package Programme for Agricultural Development in Kerala" 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 University or Society.

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College of Agriculture,
Vellayani
6th November, 1979.

CERTIFICATE

Certified that this thesis, entitled " Response of Special Package Programme for Agricultural Development in Kerala" is a record of research work done independently by Sri. K. Abdul Samad, 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.

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INTRODUCTION

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Significant improvement in Indian agriculture which contribute about 50 per cent of the national economy was made through the agricultural development programmes introduced in the first decade of planning. The Community Development Projects, Irrigation Projects etc., implemented helped in increasing agricultural production. The index of agricultural production rose to 135 by the end of Second Five Year Plan. The Intensive Agricultural District Programme followed by the Intensive Agricultural Area Programme were formulated to contribute rapid increase in agricultural production through the concentrated efforts and intensive use of resources in areas which were congenial for increasing agricultural production. Emphasis was given to the package of improved practices to bring about significant increases in yield. With the advent of High Yielding Varieties of crops in Wheat and Paddy an ambitious programme for increasing food production which is known as High Yielding Varieties Programme was initiated.

In Kerala, which is not self sufficient in food grains, the above programmes did not produce the anticipated results. Based on the assessment of the agricultural programmes in the State the authorities have drawn a conclusion that increase in agricultural production can be made only through intensive participation of majority of cultivators in the development programmes.

In Kerala rice is cultivated in contiguous areas which are known as 'Yela' or 'Padasekharams'. The realisation of the importance in organising Paddy cultivation on 'Yela' basis resulted in the starting of an 'Yela' production programme towards the middle of 1971 which was an improvement on the Intensive Agricultural District Programme already implemented. This programme enforced uniform cultivation practices to be followed by the farmers in an 'Yela'. It also envisages that the farmers in the 'Yela' will act jointly in the procurement and timely application of inputs as well as the adoption of improved farm practices. It was accepted that uniformity of cultivation in the 'Yela' will be helpful in substantially increasing the paddy production. The implementation of the programme required systematic and almost day-to-day

advice to the farmers on the science of cultivation. This programme organised on 'Yela' basis is known as "Intensive Paddy Development Programme". It is under one Junior Agricultural Officer. This programme has been extended during the fifth five year plan. Encouraged by the impact of these units the Government decided to have similar Special Package Programmes for the other important crops like Coconut and Pepper. At present the total number of such units in the state is as detailed below:-

Name of Crop	No. of units upto 1979
Paddy	489
Coconut	93
Pepper	12

Need for the study

The State Planning Board has made an evaluation study on Intensive Paddy Development Programme in 1977. The results revealed that the per hectare yield and income of the farmers in Intensive Paddy Development Units were higher by only 10 per cent than the other areas. They have also pointed out that uniform cultural practices have not been undertaken in this programme areas and they have concluded the Intensive Paddy

Development Programme did not bring about any break through in rice production.

Kaleel (1978) in a study on the impact of Intensive Paddy Development Programme in Kerala concluded that high adopters of improved agricultural practices were more in the Intensive Paddy Development area than in the non Intensive Paddy Development area. The study revealed that the farmers in the Intensive Paddy Development area gained more knowledge about subject matter and also the extent of participation of farmers in agricultural extension programme were more in the Intensive Paddy Development area than in non Intensive Paddy Development area. He identified non-availability of inputs in time as the most important constraint. So far no study has been undertaken to find out the response of such Special Package Programmes on other crops. Hence this study has been formulated to make a comparative study on the farmers' responses to the different Special Package Programmes of the different crops.

Objectives

The specific objectives of the study are :

1. To study the farmers knowledge and attitude towards the

package programme

2. To study the attitude of Junior Agricultural Officers towards the programmes.
3. To study the effectiveness of the programmes.
4. To identify the constraints in the successful functioning of the programmes as perceived by both farmers and Junior Agricultural Officers.

Scope & Limitation

The study will help in assessing the response towards the three types of package programmes in Kerala. With nearly 498 Intensive Paddy Development Units, 93 Coconut package Units and 12 Pepper package units, it is rather impossible for the investigator to cover all the units for the study due to limitation of time and resources. Hence the study was limited to 2 Intensive Paddy Development Units selected at random from Calicut district, 2 Coconut Package Units out of 93 Units and 1 Pepper Package Unit out of the 12 units selected at random from all over Kerala. However, maximum efforts have been taken to make the study as objective as possible.

THEORETICAL ORIENTATION

THEORETICAL ORIENTATION

The selection of essential characteristics for explaining or mapping out a social phenomenon requires placing the problem in some conceptual scheme and linking it up with the existing findings in the area of study. This serves as a basis in deciding the kind of variables to be included, kind of data to be collected and helps in summarising what is already known regarding the problem under investigation. This chapter explains the theoretical perceptive adopted for this study and tries to link it with the relevant findings of other related research studies which formed the basis for the determination of the appropriate aspects for this study.

Response

Response, which is the concern of this study, is viewed as the outcome produced in or by an organism when confronted with a stimulus. The Dictionary of Behavioural Sciences defines response as any overt or covert behaviour. These can be infinite types of responses like understanding, acceptance or rejection, mental or physical responses etc.

Tubbs (1977) has classified responses as confirming and disconfirming. The most confirming responses are direct acknowledgement, positive feeling, clarifying responses, agreeing responses and supportive responses. The most disconfirming responses are tangential, impersonal, unprevious, irrelevent, interrupting, incoherent, and incongruous. In a farmer's situation, the ultimate confirming overt response when they are confronted with an applicable improved agricultural practice is the adoption of that practice. There will be other responses before the final adoption takes place. These responses are mostly covert. The most important covert responses that can be produced by an agricultural development programme like the one that is under study are the change in knowledge and attitude. Changes in knowledge and attitude are possible only when the farmers are effectively participating in a programme. Participation which is the first step will lead to more knowledge which will produce favourable attitude conducive for adoption. Proper participation, knowledge and attitude which will result in adoption can thus be considered as responses and hence indicators of effectiveness

of the package programmes. The total period of implementation of a programme in an area may have a direct bearing on the farmers participation, knowledge, attitude and adoption. The more the period, the more can be the participation, knowledge etc. Hence it was postulated that farmers participation in the programme for agricultural development, knowledge, attitude and adoption will vary according to the period of implementation of the programme. Similarly there can be difference in the farmers response to the coconut development programmes in the 'Root Wilt ' disease affected area and disease free areas. It can be anticipated that farmers in 'Root wilt' affected area may more effectively participate in order to get more yield from their affected palms.

Results of reported studied which substantiate the above are reviewed below :

Programme participation

There are only very few studies which reported programme participation. Rogers and Shoemaker (1971) defined participation as the degree to which members of a

social system are involved in the decission making process. They stated that the intensity of participation influences the decision making of the individual. Pathak and Dargan (1971) in their study showed that acceptance of improved practices had association with the cultivators participation in the programme.

The above review of the limited studies which considered the farmers participation in the programme substantiates that the intensity of participaion will have direct positive influence on adoption which is the ultimate expected response from the farmers. In this study programme participation is considered as a first type of response which will have direct and positive relationship with adoption.

Knowledge

Farmer's participation in a package programme for agricultural development will increase his knowledge about the improved agricultural practices which are propagated by the officials of the programme. A knowledge of the important aspects of the programme itself will be the result

of the programme participation. As reported by Majumdar and Majumdar (1967) the knowledge of block development activities was significantly associated with adoption.

Similarly a large number of studies reported the relationship between knowledge of technical subject matter of a practice and its adoption. Johnson and Haver (1953), Williams (1958) and Rogers and Havens (1961) opined that knowledge played an important role in adoption and decision making process. Brander and Strau (1959) concluded that over adoption occured from insufficient and incorrect knowledge of the innovations. Bose (1964) reported the positive relationship of knowledge of innovation with adoption. Dasgupta (1965), Shankaraiah (1965) and Nair (1969) stated that knowledge on improved practices influenced the adoption of farm innovations. Singh (1969) and Singh and Singh (1970) found that the knowledge on package of practices significantly contributed to the adoption behaviour of farmers. Choubey (1972) also reported that higher the technological knowledge of a farmer, more was the level of adoption of technology of high yielding wheat varieties.

Malhotra et al (1974) concluded that technical knowledge was significantly correlated with adoption. According to Sharma and Nair (1974), knowledge on improved practices for high yielding varieties of paddy was positively and significantly related with adoption. Prasad (1978) proved the positive and significant relationship of the knowledge on improved rice culture with adoption behaviour of farmers. The study by Kaleel (1978) also showed significant and positive relationship between gain in knowledge and adoption. Pillai (1978) in his study found the positive relationship of knowledge with adoption.

The above reviews substantiated the fact that knowledge about the important aspects of the development programme and the degree of knowledge about the subject matter propagated by the package programme will influence final adoption which is the end result anticipated through the programme under study. Hence in this study knowledge about the programmes and the knowledge about improved agricultural practices were considered as farmers responses which will have relationship with adoption of improved agricultural practices by them.

Attitude

Attitude, the positive or negative effect of an individual towards an object, idea or individual are tendencies or predispositions to act in a certain way when the individual receives certain stimuli. It has been shown by innumerable researchers in different situations to be related with behaviour of an individual. Persons involvement in a programme will result in the creation of a favourable or unfavourable attitude towards the programmes. When the attitude of a person are known then it is possible to indicate his probable reactions to certain stimuli. The more favourable the attitude of an individual towards the programme, the more will be his participation which will lead to more adoption.

The study by Rai (1965) revealed that adopters of new ideas had favourable attitude towards Government programme. Singh et al (1966) found that the farmer's attitude towards the package programme had positive and significant influence on the level of adoption of package of practices. Majumdar and Majumdar (1967) concluded that attitude was significantly related with adoption. Prasad (1978) in his study found

positive and significant relationship between attitude of farmers towards functional literacy programme related with agriculture and adoption behaviour.

Similarly the attitude of the officials of the programme towards the programme itself will influence the effectiveness of the programme. The researcher has not come to accross with any previous study which considered this aspect.

Constraints

The final response ie. adoption of recommended practices may not take place even when there is high participation, positive attitude and better knowledge. There can be many constraints which are important in a particular place and time which may hinder the final adoption as pointed out by many research workers.

Rai (1965) in a study on the diffusion of information and farmer's response in respect of hybrid maize, found finance was the most important reasons for non-adoption. According to Basram and Capner (1968) lack of knowledge and lack of finance were the main reasons for non-adoption of

the recommended practice. Paramoswaran (1973) proved that lack of knowledge, poor efficiency, unsuitability of soil and lack of conviction among the farmers were the important reasons for non adoption of the package programme. Reports of Ambalagon (1974) also showed lack of knowledge and lack of conviction were the main reasons for non-adoption of package of practices for High Yielding Varieties of paddy. Viswanathan (1975) in his study found high cost of cultivation as the limiting factor in the adoption process. Pillai (1978) found lack of technical guidance, inadequate financial assistance, lack of knowledge and non-availability of materials as the main reasons for the non adoption of soil conservation measures by the farmers of Kerala. In the study of Kaleel (1978) non availability of inputs in time ranked first by farmers followed by lack of irrigation facilities, lack of credit facilities, high labour consumption, lack of support price for paddy and lack of adequate marketing facilities. Rajendran (1978) identified the high cost involved in the adoption as the most important problem among the small paddy growers of Kerala. Untimely and inadequate supply

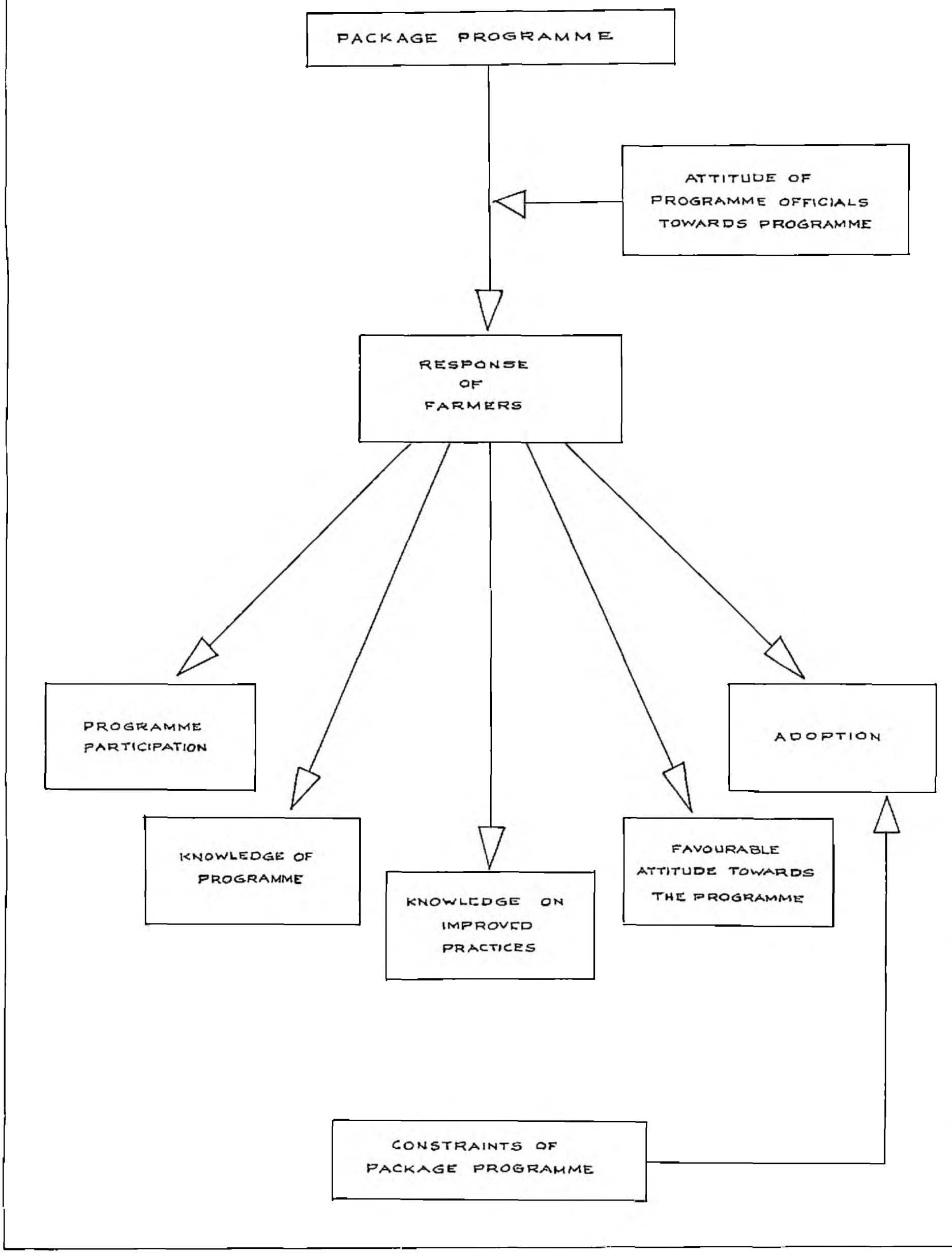
and services, lack of awareness, lack of adequate skill etc., were also found to be important constraints. According to the reports of Kerala State Planning Board (1977) the main hurdles in the implementation of IRD Programme were non cooperation, indifference of farmers on account of excessive fragmentation of holding and the spirit of individualism prevaling among themselves. The other problems were lack of irrigation and drainage facilities, high cost and risk in HYV cultivation, more office work for the agricultural officers, lack of funds and lack of coordination.

The above review indicated the existance of different types of constraints that hinder the adoption. Any study on the response of the package programme should try to identify very objectively such constraints which hinder in producing the ultimate expected response of that programme in farmers.

The conceptual scheme of the present study explained above can be summarised as follows:

1. An agricultural development programme will produce convert and overt responses in farmers in the programme area.

FIG 1 CONCEPTUAL FRAME FOR THE STUDY OF FARMERS RESPONSE OF PACKAGE PROGRAMMES



2. Programme participation, knowledge about the programme, knowledge about improved practices, attitude towards the programme and adoption of improved agricultural practices can be considered as farmers responses towards the package programme.
3. Programme officals attitude towards the programme will have influence on the farmer's responses.
4. There are many constraints that hinder the production of these responses.

The above schema is presented diagramatically in Figure 1.

Concepts

1. Package programme

' Package programme ' are Government programmes which are intensive and intended for making the farmers aware of the improved agricultural practices and helping them to adopt the same for different crops. The different programmes are (1) Intensive paddy development programme (2) Coconut package programme and (3) Pepper package programme

2. Response

Response is the change brought out in both covert

and overt behaviour of an individual through the efforts of the package programmes.

3. Programme participation

Programme participation is the involvement of the farmers in the developmental activities carried out through the various package programmes.

4. Programme knowledge

Programme knowledge is the farmers' awareness of package units, activities etc., of the 'package programmes'.

5. Knowledge about improved practices

The awareness of farmers regarding scientific cultivation practices recommended by the Kerala Agricultural University for paddy, coconut and pepper.

6. Attitude towards the programme

The degree of positive or negative feeling of the farmers and Junior Agricultural Officers towards the package programmes.

7. Adoption

Adoption is the overt behaviour of the farmers in following the improved agricultural practices as per the recommendations of Kerala Agricultural University.

Hypotheses

Based on the above, the following hypotheses were formulated.

A. Participation

1. There would be significant difference in the IPD programme participation between the farmers of the programme areas with more than five years of implementation and less than five years of implementation.

2. There would be significant difference in participation in the coconut package activities between the farmers of the coconut package units of the disease affected and disease free areas.

3. There would be significant difference in the package programme participation by the farmers in the different types of package programmes.

4. Farmers' programme participation would have significant influence on their adoption behaviour.

B. Programme knowledge

1. There would be significant difference in the knowledge about IPD programme between the farmers of the IPD Units over five years and less than five years of implementation.

2. There would be significant difference in the knowledge about CP programme between the farmers of the CP Unit of the disease

affected areas and the disease free areas.

3. There would be significant difference in the knowledge regarding the package programme among the farmers of the different types of package areas.

4. Farmers programme knowledge would have significant influence on their adoption behaviour.

C. Knowledge on improved practices

1. There would be significant difference in the knowledge of improved practices of paddy cultivation between the farmers of the IPD units over five years and less than five years of implementation.

2. There would be significant difference in the knowledge of improved practices of coconut cultivation between farmers of the CP units of the disease affected areas and disease free areas.

3. There would be significant difference in the knowledge of improved practices of cultivation between the farmers of the programme areas and non programme areas.

4. There would be significant difference in the knowledge on improved practices of cultiv tion among the farmers of the different types of package areas.

5. Farmers knowledge about improved cultivation practices would have significant influence on their adoption behaviour.

D. Attitude

1. There would be significant difference in attitude towards the package programme among the farmers of the different types of package programmes.

2. There would be significant difference in attitude towards the IPD programme between the farmers of the IPD units over five years of implementation and less than five years of implementation.

3. There would be significant difference in attitude towards CP programme between the farmers of the disease affected area and disease free area.

4. Farmers attitude towards the package programmes would have significant influence on their adoption behaviour

METHODOLOGY

METHODOLOGY

In this chapter the details regarding the location of the study, procedure followed in selecting the sample, the details of empirical measurements used, methods followed in the collection of data and the statistical procedures used for analysis of the data are presented.

I. Location

The study was under taken in Kerala.

II. Selection of sample

A. Programme Units and Farmer Respondents

The study required data from the Intensive Paddy Development Units (IPD), Coconut Package Units (CP) and Pepper Package Units (PP). The following procedures were adopted to select the sample of IPD, CP and PP Units.

a) Selection of Intensive paddy development programme units

It was hypothesised that the total period of implementation of the IPD programme would have relationship with

the response of the programme. To test this, it was necessary to select IPD Units with different durations. A two stage sampling was used to select the IPD units. In the first stage a district, Calicut was selected by random process. A list of all the IPD Units in Calicut district started from 1971 to 1978 was prepared. These units were stratified into the following two strata.

1. Those started during 1971-74
2. Those started during 1975-78

From each stratum one unit was selected by random method. The IPD Units thus selected were the following.

1971-74 Strata

Chelannur

1975-78 Strata

Kovoor

b) Selection of control group for Intensive Paddy Development programme

In order to quantify the response of IPD programme it was necessary to compare these units with other paddy areas not covered by the programme and which were similar

to the selected IED Units in all other respects. This was necessary because it was not possible to obtain objective data of all aspects pertaining to the period prior to the starting of the IED Programme.

A list ofnon-IED villages in Calicut district where the predominant crop was paddy and which were similar to the agro-climatic, sociological and infra structure conditions prevailing in the selected IED Units were prepared. From this list one village 'Narikunni' was selected by random process.

c) Selection of farmers

A list of all paddy growing farmers in the three selected areas were prepared. From each list, 30 farmers were selected by the random sampling process yielding a total of 90 respondents as follows.

Area	Name of group	No. of farmers
1. Chelannur IED Unit (1971-74)	Group A	30
2. Kovoor IED Unit (1975-78)	Group B	30
3. Narikunni (Non-IED area)	Group C	30

d) Coconut package units and farmer respondents

As it was anticipated that there would difference in the response towards the CP programme between the farmers of Root wilt disease free areas and disease affected areas. Samples from both these areas were selected. For this the CP Units were classified into two groups as (1) CP Unit in disease free areas and (2) CP Unit in disease affected areas. From these two groups one unit each was selected by simple random sampling process. Thus Pallichal unit of Trivandrum district represented the disease free area and Nattakom unit of Kottayam district represented the diseased affected area. From the list of Coconut farmers of these areas, 30 farmers each were selected by random method. Respondents of Pallichal and Nattakom units were termed as group D and E respectively.

e) Selection of control groups for Coconut package programme

From a list of non coconut package villages of the districts from where the package units were seleted, which were similar to Coconut package areas in all other respects, two villages Neyyattinkara and Neelamperoor were selected by random. From these villages, 15 farmers each were selected which formed the control group. They were named as group F and Group G respectively.

f) Pepper package units and farmer respondents

The total number of pepper package units functioning in Kerala at the time of this study was only twelve. From this by simple random sampling process one unit Kodencherry pepper package unit in Calicut district was selected.

From the list of pepper growers in this unit, 30 were selected by simple random sampling process which formed the group H.

g) Selection of control group for Pepper package programme

From the list of non-pepper package areas, which were similar to the selected pepper package area in all other respects one village, the 'Manipuram' was selected as the control area. From this village 30 farmers (Group I) were selected by random sampling process.

Thus a total number of 240 farmer respondents were selected from the different package areas and control areas as detailed below.

Table 1. Respondents selected from different areas

Type of unit	Respondents from programme areas	Respondents from control areas
IPD 1971-74 strata	30 (Group A)	
IPD 1975-78 strata	30 (Group B)	30 (Group C)
CP Unit (disease free area)	30 (Group D)	15 (Group F)
CP Unit (disease affected area)	30 (Group E)	15 (Group G)
Pepper package	30 (Group H)	30 (Group I)

B. Selection of Officers

The objectives of the present study included the study of attitude of Junior Agricultural Officers towards the package programmes and also the study on the effectiveness of the package programmes as perceived by the Junior Agricultural Officers (J.A.Os'). For this a sample had to be selected from among the JAOs' working in the package units.

From the 489 intensive paddy development units functioning at present in Kerala, 100 were selected by means of simple random sampling process with the help of the list available at the Directorate of Agriculture. The JAOs' of these 100 units were selected as respondents for IPD Programme. The JAOs' of all the 93 coconut package units were selected as respondents for the CP Programme and the 12 JAOs' of the pepper package units were selected as respondents for PP Programme. The total number of Officer respondents thus selected were 205.

III. Empirical Measurements

1. Attitude towards the programme

There are different techniques for measuring attitude such as Likert Method, Thrustone technique, Scalogram analysis etc. Scalogram technique was adopted in this study

to select statements for a scale to measure attitude towards the package programmes. The following procedures was used in following the scalogram technique.

Through discussion with farmers and JAOs, a large number of statements were selected regarding the three package programmes. In order to obtain unidimensional scale, these statements were edited and modified using the technique explained by Edwards (1957). Thus eight statements were selected which had homogeneous content. The statements were presented to the experts of the College of Agriculture, Vellayani for obtaining their opinion on homogenity of content of these statements and the relative position of the statements in a continuum from most favourable to least favourable. Based on judgements, four positive and two negative statements were selected.

Testing the unidimensionality

In testing the unidimensionality of the selected six statements, the Guttman method of analysis explained by Edwards (1957) was followed. These six statements were presented to 80 respondents to indicate their degree of agreement or disagreement for each statement. The responses were obtained on a four point

continuum ranging from strongly agree to strongly disagree. The responses were grouped in two categories of 'agree' and 'disagree', and the errors were estimated (Appendix I). From the errors, the coefficient of reproducibility was calculated using the formula,

$$\text{Coefficient of reproducibility (CR)} = 1 - \frac{\text{Total number of errors}}{\text{Total number of responses}}$$

The coefficient of reproducibility was found to be 0.95. According to Edwards (1957) the statements are scalable and follow a unidimensional pattern only if the coefficient of reproducibility is 0.90 or greater. Edwards (1957) also stated that if a set of statement is to constitute unidimensionality, the difference between Coefficient of reproducibility and minimum marginal coefficient of reproducibility (MMCR) should not exceed 0.20. The difference between CR and MMCR of the selected statements was found to be 0.11. So the statements included in this study can be said to be unidimensional.

The same set of six statements were used in measuring the attitude of both farmers and JAOs' towards the three package programmes.

Administration

The responses of the statements were obtained in a five point Likert format. The response categories and their corresponding scores for favourable statements were as follows:-

Response category	Scores
Strongly agree	5
Agree	4
Undecided	3
Disagree	2
Strongly disagree	1

In the case of unfavourable statements, the scoring was reversed.

The scores obtained by each respondent for the six statements were summated for obtaining his total score. The maximum score attainable by the respondent was 30 and minimum was 6. The neutral score was 3 for each item. Thus the neutral score for the 6 statements was 18. The respondents having a total score below 18 were considered as having a negative attitude and above 18 as having a positive attitude towards the package programmes.

2. Knowledge of farmers

Shankariah and Singh (1967) in a study on the predictive analysis of factors related with the knowledge of improved practices of vegetable cultivation developed a schedule to test the knowledge of improved methods based on the teacher made tests. Singh et al (1968) adopted the method of self-appraisal to assess the knowledge level of Agricultural Extension Officers.

The knowledge level of farmers in the present study was measured by simple knowledge test developed to measure the knowledge about the programmes and the knowledge of improved practices of the respective crops. Lists of item regarding the objectives and the activities of the package programmes were prepared for the three package programmes separately. These were then presented to forty farmers to get their responses. On the basis of their responses, the difficulty index for each item was calculated. 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 scores obtained by a respondent on all the items were added up to obtain the knowledge score.

Following the same procedure explained above, knowledge tests to measure the knowledge of improved agricultural practices of paddy, coconut and pepper were developed.

3. Effectiveness as perceived by Junior Agricultural Officers

Based on the discussions with the officials of the Department of Agriculture and also with the help of the records available at the Directorate of Agriculture, complete lists of activities pertaining to the different types of package programmes were prepared for assessing the effectiveness of the programmes as perceived by JAOs. All the activities carried out through the package scheme were included in the questionnaire as shown in Appendix II. The respondents were asked to indicate how much effective was the programme in undertaking the activities listed. Based on the responses, their perception about the effectiveness of the different activities were calculated.

4. Adoption

For quantifying the adoption behaviour, different research workers, both in India and other countries, have developed various methods. In India Chattopadhyay (1963) developed an 'Adoption quotient' for measuring the adoption of farm practices. 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.

The practices divisible were assigned partial scores for partial adoption. Singh and Choubey (1974) used "Adoption of intensity index" for studying the differential adoption of technology for cultivation of high yielding wheat variety.

In the present study the 'Adoption quotient' used by Singh and Singh (1974) which was a slight modification of the one developed by Chattopadhyay was used. The formula for calculation of 'Adoption quotient' was as follows :-

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

Where,

$\sum$ = the summation

e = extent of adoption of each practice.

p = potentiality of adoption of each practice.

N = total number of practices.

The practices considered for the calculation of adoption for each crop are given in the table below:

Table 2 Practices considered in calculating adoption for paddy, coconut and pepper.

Sl.No.	Paddy	Coconut	Pepper
1.	Seed rate	Cultivation of hybrid seedling	Cultivation of hybrid vine
2.	Seed treatment	Selection of seedlings	Pit size in planting

3. Fertilizer application	Spacing in Planting	Fertilizer application
4. Liming	Fertilizer application	Pest & disease control
5. Pest & disease control	Green manure cultivation	...
6. Cultivation of HYVs'	Cover crop cultivation	...
7. ...	Pest & disease control	...

5. Participation in programmes

To quantify participation, the following procedure was used.

The important activities carried out through each package programme were listed out. The farmers were asked to indicate their participation in these activities by stating 'Yes' or 'No'. A score of '1' was given for the answer 'Yes' and '0' for 'No'. The total participation score of each respondent was found out by adding up the scores obtained by each individual for all the activities listed under a programme.

6. Identifying problems or constraints

One objective of the study was to identify the problems or constraints in the successful functioning of the package programmes. Based on the discussions with Junior Agricultural Officers and farmers and also through a review of relevent literature, problems faced by both farmers as well

as Junior Agricultural Officers in the functioning of the three package programmes were identified. The problems faced by JAOs included administrative, technical and supplies & service problems. They were included in the list which was presented to JAOs' to indicate whether they experienced those problems or not. The problems included in the list for farmers included only technical and Supplies & service problems. These lists were pre-tested. Based on the results, modifications were made.

The response to each item was obtained on a three point continuum of 'most important', important and 'least important'.

To find out the importance of the problems, a cumulative index was calculated. For this a weightage of '3' was given to the response 'most important. '2' to important and '1' to least important'. The frequency of responses under each category was multiplied with the corresponding weightage and added up to get a cumulative index. Based on the cumulative index the problems were ranked in the order of importance.

IV. Data collection procedure

The data from the JAOs' were collected by means of mailed questionnaire. A covering letter was used, through

which the respondents were asked not to give their name or any identification mark on the questionnaire to keep anonymity. Permission from the Director of Agriculture was obtained which was also communicated to the JAOs' along with the questionnaire. Out of the 205 JAOs to whom the questionnaires were sent, only 112 JAOs (60 of IED, 40 of CP and 12 of PP units) replied inspite of repeated reminders.

The data from the farmers were collected by means of interview by the researcher. The respondents were interviewed individually with the help of the malayalam version of the schedule. The english version of the schedule is given in Appendix III.

V. Statistical methods

1. Students 't' test.

Students 't' test was used for comparing the difference between groups.

2. Analysis of variance

The difference in the knowledge level of farmers of the different programme units and the control area were worked out by this method.

This technique was adopted in comparing the adoption of improved practices between the two IED units and control area

and also between the two CP units and the two control area.

For comparing between the different package areas indices were formed for participation, programme knowledge and knowledge on improved practices by taking the percentage of scores obtained out of the possible maximum attainable. This was done because the number of activities, improved practices etc., varied from programme to programme

The abstract of ANOVA is given in the appendix IV.

Path analysis

In this study path coefficient was worked out as explained by Snedecor and Cochran (1967) to find out the influence as well as the direct and indirect effects of the personal factors of farmers viz. attitude, knowledge about the programme, knowledge on improved practices and participation with adoption behaviour of farmers.

The analysis was carried out with the help of the computer available at the College of Agriculture, Vellayani.

RESULTS

RESULTS

The results of the study are presented in the following sequence.

A. Farmers' participation in package programmes.

B. Knowledge of farmers about package programme.

C. Farmers' knowledge about improved agricultural practices.

D. Attitude of Farmers towards the package programme.

E. Attitude of JAOs towards the package programme

F. Difference in attitude of farmers towards package programme.

G. Adoption of recommended package of practices.

H. Inter Correlation analysis.

I. Path analysis.

J. Effectiveness of package programme as perceived by JAOs.

K. Perceived constraints of the package programme.

The hypothesis in the null form is stated first and then the data are presented.

A. Farmers participation in package programmes

a) Farmers' participation in the IPD programme

Null Hypothesis: There would be no significant difference in participation in the IPD activities between the farmers of the IPD Units with more than five years and less than five years of implementation.

The mean participation scores of farmers of the two categories of IPD Units are given in Table 3.

Table 3 Mean participation scores of farmers in IPD activities.

Groups	Mean participation scores
IPDs over 5 years (A)	2.67
IPDs less than 5 years (B)	2.87
Inference	Not significant

The computed 't' value 1.32 was not significant at 0.05 level. Hence the null hypothesis was accepted. There was no difference in farmers' participation in the IPD activities between the farmers of IPD units with more than 5 years and less than 5 years of implementation.

b) Farmers' participation in the C.P. programme.

Null hypothesis : There would be no significant difference in the participation in CP activities between the farmers of the CP units of the disease affected and diseases free areas. The mean participation scores of farmers of the CP units of disease affected and disease free areas are given in Table 4.

Table 4 Mean participation scores of farmers in Coconut gardens in CP programme activities.

Groups	Mean participation scores
CP in disease free area (D)	3.03
CP in disease affected area (E)	3.00
Inference	Not significant

The calculated 't' value 1.21 was not significant at 0.05 level. Hence the null hypothesis was accepted. There was no significant difference in participation in the CP activities between the farmers of the CP units of the disease affected and disease free areas.

c) Difference in participation in package activities among the farmers of IPD, CP and PP units.

Null Hypothesis : There would be no significant difference in participation in the package activities among the farmers of IPD, CP and PP units.

In table 5 the mean scores regarding the participation of the farmers in IPD, CP and PP activities are presented.

Table 5. Mean scores of participation in the package activities of the farmers of IPD, CP and PP units.

Programme	Mean participation scores (Standard scores)
IPD over five years (A)	38.08
IPD less than five years (B)	40.83
IPD area (combined)	39.46
CP in disease free areas (D)	50.53
CP in disease affected areas (E)	48.33
CP area (combined)	42.60
PP area (H)	58.00
Critical Difference (CD)	12.14
Inference	H D E B A

B. Knowledge of farmers about the package programme

a) Knowledge about IPD programme

Null Hypothesis : (1) There would be no significant

difference in the knowledge about the IPD unit between the farmers of the IPD units with implementation period of over five years and less than five years.

2) There would be no significant difference in the knowledge about the Ela-committee between the farmers of the IPD units over five years and less than five years of implementation.

3) There would be no significant difference in the knowledge about the Activities of the IPD programme between the farmers of the IPD units over five years and less than five years of implementation.

The extent of farmers' knowledge about the IPD unit, Ela-committee and Activities carried out through the IPD programme are presented in table 6.

Table 6. Mean knowledge scores of farmers about IPD units, Ela committee and IPD activities.

Groups	Knowledge on IPD unit	Knowledge about Ela-committee	Knowledge on IPD activities
IPDs over five years (A)	1.833	0.700	1.066
IPDs less than five years (B)	1.866	0.366	0.566
Inference	Not significant	Not significant	Not significant

The computed 't' values for the knowledge on IPD unit, Ela committee and Activities were 0.125, 1.655, 1.579 respectively which were not significant at 0.05 level. So the three null hypotheses were accepted. There was no significant difference on the knowledge about the programme between the farmers in IPD units over five years and less than five years of implementation.

b) Knowledge about the CP Programme

Null Hypotheses : 1) There would be no significant difference in the knowledge about CP unit between the farmers of the Coconut package units in the disease affected area and disease free area.

2) There would be no significant difference in the knowledge about the CP committee between the farmers of the disease affected and disease free areas.

3) There would be no significant difference in the knowledge about the Activities of CP programme between the farmers of the coconut package units in the disease free and disease affected areas.

The mean scores on the knowledge about the CP unit, CP committee and the Activities are given in the table 7.

Table 7. Mean knowledge scores of farmers about CP unit, CP committee and CP activities.

Groups	Knowledge about the CP unit	Knowledge about CP committee	Knowledge on CP activities
CP in disease free areas (D)	1.933	0.133	0.500
CP in disease affected areas(E)	2.066	0.333	0.966
Inference	Not significant	Not significant	Not significant

The computed 't' values of the above three aspects were 0.608, 1.074,and 0.673. Of these the 't' value for the knowledge on activities was significant at 0.05 level. So the null hypothesis number three was rejected and the others were accepted.

It was concluded that the farmers in the two areas did not differ in their knowledge about the CP units and CP committee, but they had significant difference in their knowledge about the CP activities.

c) Difference in knowledge regarding the package programmes among the farmers of IPD, CP and PP units.

Null Hypothesis : There would be no significant difference in the knowledge level regarding the package programmes among the farmers of IPD, CP and PP units.

In table 8, the mean standard scores on the knowledge level of farmers of the IPD, CP and PP units regarding the package programmes are presented.

Table 8 . Mean knowledge scores (standard score) regarding the package programmes of the farmers of IPD, CP and P.P.programme.

Package programme	Mean knowledge scores (Standard score)
IPD over five years (A)	25.03
IPD less than five years (B)	19.53
IPD area (combined)	22.28
CP in disease free areas (D)	18.73
CP in disease affected areas (E)	23.07
CP area (combined)	20.90
PP area (H)	32.97
CD	7.69
Inference	H A E B D

The 'F' values of 4.266 was found significant at 0.05 level. The null hypothesis was rejected. It was confirmed that there was significant variation in the knowledge level regarding the package programmes among the farmers of IPD, CP and PP units.

C. Farmers' knowledge about improved agricultural practices

a) Knowledge on different improved practices in paddy cultivation of the farmers of IPD areas and the non IPD area.

Null Hypothesis : 1) There would be no significant difference in the knowledge level regarding the seed rate among the farmers of IPD and non-IPD areas.

2) There would be no significant difference in the knowledge level regarding the seed treatment among the farmers of IPD and non-IPD areas.

3) There would be no significant difference in the knowledge level regarding nutrient requirements for paddy among the farmers of IPD and non-IPD areas.

4) There would be no significant difference in the knowledge level regarding fertilizer dosage for paddy among the farmers of IPD and non-IPD areas.

5) There would be no significant difference in the knowledge

level regarding liming practices to paddy among the farmers of IPD and non-IPD areas.

6) There would be no significant difference in the knowledge level regarding pest and diseases of paddy among the farmers of IPD and non-IPD areas.

7) There would be no significant difference in the knowledge level regarding HYVs' of paddy and their duration, among the farmers of IPD and non-IPD areas.

The mean scores of the knowledge about different improved practices of paddy of the farmers of the IPD and non-IPD areas are presented in Table 9.

Table 9. Mean scores of the knowledge about improved practices of paddy cultivation.

Groups	Seed rate	Seed treatment	Fertilizers requirement	Nutrients	liming	Pests & diseases	HYV & duration
IPDs over 5 years(A)	1.30	0.733	2.700	3.96	1.230	1.060	2.830
IPDs less than 5 years (B)	1.33	0.933	2.100	4.130	1.100	0.100	2.500
Non IPD area (C)	0.366	0.433	0.066	1.400	0.630	0	1.200
CD	0.43	0.63	1.61	0.63	0.39	0.39	0.65
Inference	B A C	B A C	A B C	B A C	A B C	A B C	A B C

All the 'F' values were significant at 0.05 level. Hence the null hypotheses stated also were rejected. The groups differed in their knowledge level on seed rate, pest and diseases and for paddy cultivation.

b) Knowledge on improved practices on coconut cultivation of the farmers of the coconut package and the non-coconut package areas.

Null Hypotheses : 1) There would be no significant difference in the knowledge level regarding hybrid seedlings among the farmers of the CP and non-CP areas.

2) There would be no significant difference in the knowledge level regarding qualities of good seedlings among the farmers of the CP and non-CP areas.

3) There would be no significant difference in the knowledge level regarding spacing in planting of coconut among the farmers of the CP and non-CP areas.

4) There would be no significant difference in the knowledge level regarding nutrient requirement of coconut among the farmers of the CP and non-CP areas.

5) There would be no significant difference in the knowledge level regarding fertilizer dosage for coconut among the farmers of the CP and non-CP areas.

6. There would be no significant difference in the knowledge level regarding the green manure in coconut gardens among the farmers of the CP and non-CP areas.

7) There would be no significant difference in the knowledge level regarding the cover crops in coconut gardens among the farmers of the CP and non-CP areas.

8) There would be no significant difference in the knowledge level regarding the pest and diseases of coconut among the farmers of the CP and non-CP areas.

In the table 10 the mean scores of the knowledge level of farmers of the CP and non-CP areas regarding the improved practices in Coconut cultivation are presented.

Table 10. Mean scores of the knowledge about improved practices in coconut cultivation

Groups	Hybrid-seedlings	Quality of good seedlings	Spacing	Nutrients	Fertilizer requirement	Green manure	Cover crops	Pests & diseases
CP in disease free areas (D)	1.200	0.600	0.430	0.870	0	1.200	0.100	1.000
CP in disease affected areas (E)	0.970	0.570	0.400	3.330	1.20	0.900	0	1.870
Control in disease free areas (F)	0.470	0.130	0	2.200	0	0.670	0	0
Control in disease affected area (G)	0.730	0.470	0	3.330	0	0.670	0	0.270
CD (between D & E)	0.319	—	.184	--	0.821	0.241	- -	0.602
CD (between F & G)	0.451	—	.274	--	1.162	0.343	- -	0.851
CD (for other combinations)	0.382	—	.237	--	1.007	0.298	--	0.735
Inference	DeCF	DEFG	DEFG	DEFG	EDFG	DEFG	DEFG	EDGF

The 'F' values on the knowledge level regarding hybrid seedlings, spacing, fertilizer dosage, green manure and pest and diseases were significant and the knowledge on qualities of good seedlings, nutrients and cover crops were not significant at 0.05 level. Hence the null hypotheses numbers one, three, five, six and eight were rejected and rest three were accepted.

c) Knowledge on improved practices in Pepper cultivation of the farmers of PP and non-PP areas.

Null Hypotheses : 1) There would be no significant difference in knowledge on hybrid pepper between the farmers of PP and non-PP areas.

2) There would be no significant difference in knowledge on pit size between the farmers of PP and non-PP areas.

3) There would be no significant difference in knowledge on nutrient requirements for pepper between the farmers of PP and non-PP area.

4) There would be no significant difference in knowledge on fertilizer requirement for pepper between the farmers of PP and non-PP area.

5) There would be no significant difference in knowledge on pest and diseases of pepper between the farmers of PP and non-PP areas

The mean scores of the knowledge about different improved practices of pepper of the farmers of the PP and non PP area are presented in table 11.

Table 11. Mean scores of the knowledge about improved practices in pepper cultivation

Groups	Hybrid pepper	Pit size	Nutrients	Fertilizer requirement	Pest & diseases
PP unit (H)	1	0.600	5.4	1.6	0.600
Non PP area (I)	0.666	0.066	2.6	0	0.233
Inference	Significant	Significant	Significant	Significant	Significant

The computed 't' values at 0.05 level for all the five improved practices were found to be significant. Hence all the null hypotheses were rejected. The groups differed in their knowledge on all the improved practices of pepper cultivation.

d) Difference in knowledge level on improved practices among the farmers of IPD, CP and PP areas.

Null Hypothesis: There would be no significant difference in the knowledge on improved practices among the farmers of IPD, CP and PP units.

The mean standard knowledge scores regarding improved practices of the farmers of the IPD, CP and PP programmes are presented in table 12.

Table 12. Mean knowledge scores (standard score) regarding improved practices of the farmers of IPD, CP and PP programmes.

Package programmes	Mean stanadard knowledge scores
IPD over five years (A)	32.97
IPD less than five years (B)	29.37
IPD area (combined)	31.17
CP in disease free areas(D)	23.17
CP in disease affected areas (E)	22.57
CP area (combined)	22.87
PP area (H)	52.47
CD	9.64
Inference	H A B D E

The computed 'F' value of 12.407 was significant at 0.05 level. Hence the null hypotheses was rejected. There was significant difference in the knowledge on improved practices among the farmers of the IPD, CP and PP areas.

D. Attitude of farmers towards the package programmes

The distribution of attitude scores of the farmers towards the three types of programmes are presented in table 13.

Table 13. Distribution of farmers according to their attitude scores towards different types of package programmes (in percentage)

Score range	IPD N = 60	CP N = 60	PP N = 50
1 - 3	0	0	0
4 - 6	0	0	0
7 - 9	0	0	0
10 - 12	0	0	0
13 - 15	5	0	0
16 - 18	13	17	24
19 - 21	20	20	13
22 - 24	25	27	13
25 - 27	34	28	37
28 - 30	3	8	13
Total	100	100	100

The data revealed that as much as 82 per cent of farmers of IPD Units, 83 % of farmers of CP Units and 76 % of farmers of PP Units were having favourable attitude towards the respective package programmes.

E. Attitude of Junior Agricultural Officers (JAOs) towards the package programme.

In table 14 the distribution of attitude scores of the JAOs towards the different package programmes are shown.

Table 14. Distribution of JAOs regarding to their attitude scores towards different types of package programmes (in percentage)

Score range	IPD N = 60	CP N = 40	PP N = 12
1 - 3	0	0	0
4 - 6	0	0	0
7 - 9	2	0	0
10 - 12	0	3	0
13 - 15	2	13	0
16 - 18	3	3	0
19 - 21	12	22	8
22 - 24	26	44	50
25 - 27	17	10	17
28 - 30	38	5	25
Total	100	100	100

The above table revealed that majority of the JAOs working in the package units had favourable attitude towards the programme. In the case of IPD programme 93 per cent of JAOs in charge of these units had favourable attitude towards the programme. In the case of CP programme the percentage of JAOs with favourable attitude was 81 while for PP programme its was 100.

F. Difference in attitude towards the package programmes among the farmers of IPD, CP and PP Units

Null Hypotheses : There would be no significant difference in attitude among the farmers of the IPD, CP and PP units towards the respective package programmes.

The table 15 shows the mean attitude scores obtained by the different study groups of farmers of IPD, CP and PP Units.

Table 15. Mean attitude scores of farmers towards the different package programmes

Groups	Mean attitude scores
IPD over five years (A)	21.43
IPD less than five years (B)	22.83
IPD area (combined)	22.13
CP in disease free area (D)	22.33
CP in disease affected areas (E)	22.57
CP area (combined)	22.45
PP area (H)	23.17
CD	--
Inference	A B D E H

The calculated 'F' value was only 0.888 which was not significant at 0.05 level and hence the null hypotheses was accepted. It was confirmed that there was no significant difference in attitude among the farmers of different IPD, CP and PP Units.

G. Adoption of recommended package of practices

a) Adoption of improved practices of paddy cultivation by the farmers of IPD and non IPD areas.

Null Hypothesis: There would be no significant difference in the adoption of improved practices of Paddy cultivation among the farmers of IPD and non IPD areas.

The mean adoption scores of the groups are given in table 16.

Table 16 Mean scores of the adoption of improved practices for paddy.

Groups	Mean adoption scores
IPDs over 5 years (A)	54.97
IPDs less than 5 years (B)	59.47
Non IPD area (C)	20.56
Critical Difference (CD)	13.45
Inference	B A C

The computed 'F' value (19.15) was significant at 0.05 level. Hence the null hypotheses was rejected. There was variation in the adoption of improved practices in paddy cultivation among the farmers of IPD and non-IPD areas

b) Adoption of improved practices of Coconut cultivation by the farmers of CP and non-CP areas.

Null Hypothesis : There would be no significant difference in the adoption of improved practices of Coconut Cultivation among the farmers of CP and non-CP areas.

The mean adoption scores of the groups are given in Table 17.

Table 17 Mean scores of the adoption of improved practices for coconut

Groups	Mean adoption scores
CP unit in disease free area (D)	56.04
CP unit in desease affected area (E)	63.10
CP (combined)	59.47
Control in disease free area (F)	25.81
Control in disease affected area (G)	42.81
Control (combined)	34.20
CD (between D & E)	12.45
CD (between F & G)	17.60
CD (for other combination)	15.25
Inference	E D G F

The computed 'F' value was 8.49, which was significant at 0.05 level. Hence the null hypothesis was rejected. So

there was significant difference in the adoption of improved practices in Coconut cultivation among the farmers of the CP and non-CP areas.

c) Adoption of improved practices in Pepper cultivation by the farmers of PP and non PP areas.

Null Hypothesis : There would be no significant difference in the adoption of improved practices of pepper cultivation between the farmers of the PP and non-PP areas.

The mean scores of the adoption of improved practices of pepper cultivation of the farmers of PP and non PP areas are given in the table 18.

Table 18 Mean scores for the adoption of improved practices of pepper cultivation

Groups	Mean adoption scores
PP unit (H)	75.25
Non PP area (I)	33.25
Inference	Significant

The computed 't' value 6.12 was significant at 0.05 level. Hence the null hypothesis was rejected. There was significant difference in the adoption of improved pepper cultivation practices between the farmers of PP and non-PP areas.

d) Difference in the adoption behaviour of the farmers of IPD, CP and PP units.

Null Hypothesis : There would be no significant difference in the adoption of behaviour among the farmers of IPD CP and PP units.

The mean scores of the adoption behaviour of the farmers of IPD, CP and PP areas are given in table 19.

Table 19 Mean scores of the adoption behaviour of the farmers of IPD, CP and PP units.

Package programmes 6	Mean adoption scores
IPD over 5 years (A)	54.97
IPD less than 5 years (B)	59.47
IPD area (combined)	57.22
CP in disease free area (D)	57.04
CP in disease affected area (E)	63.10
CP area (combined)	59.57
PP area (H)	75.25
CD	...
Inference	A B D E H

The 'F' value 2.33, was not significant at 0.05 level. Hence the null hypothesis was accepted. There was no variation among the farmers of IPD, CP and PP units

in the adoption of improved practices.

The mean scores of the five aspects with respect to the different types of package programmes studied are presented in a bar chart in figure 2 for a comparative study

A summary of all the results which indicate the responses of the different package programmes are presented in table 20.

MEAN VALUES OF PARTICIPATION, PROGRAMME KNOWLEDGE, KNOWLEDGE ON IMPROVED PRACTICES, ATTITUDE AND ADOPTION OF THE THREE TYPES OF PACKAGE PROGRAMMES

X_1 - I.P.D. PROGRAMME

X_2 - C.P. PROGRAMME

X_3 - P.P. PROGRAMME

FIG 2 MEAN VALUES OF PARTICIPATION, PROGRAMME KNOWLEDGE, KNOWLEDGE ON IMPROVED PRACTICES, ATTITUDE AND ADOPTION OF THE THREE TYPES OF PACKAGE PROGRAMMES

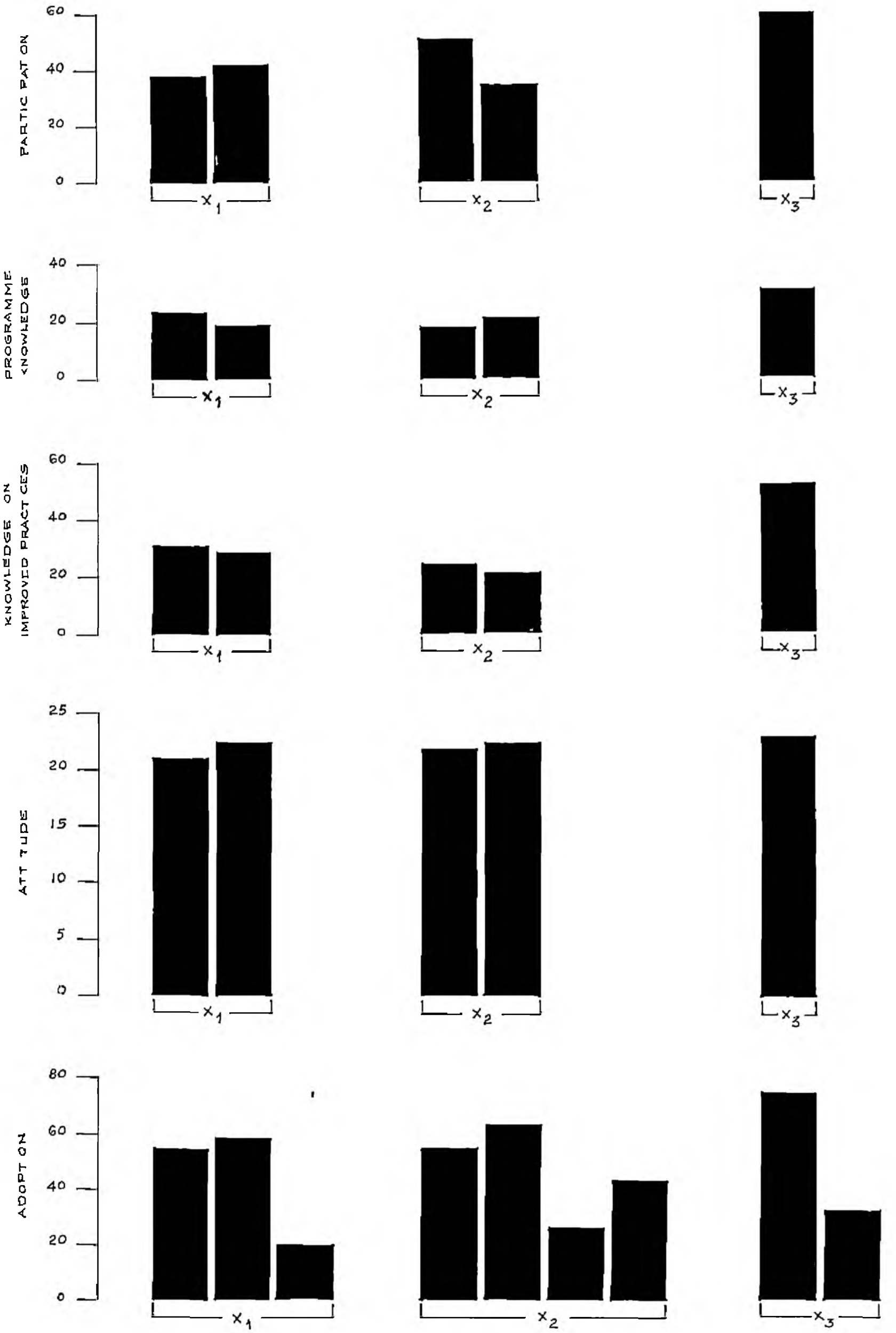


Table 20 Summary of findings on response of different package proggrmmes

Response	Between IPD(A) & IPD(B)	Between IPD & control	Between CP (D)& CP (E)	Between CP & control	Between PP & control	Between IPD & CP	Between IPD & PP	Between CP & PP
1	2	3	4	5	6	7	8	9
A. Participation	NS	..	NS	..	..	NS	S	S
B. Programme knowledge								
a) Knowledge on unit	NS	..	NS	..	..	..	..	..
b) Knowledge on committee	NS	..	NS	..	..	NS	S	S
c) Knowledge on activities	NS	..	S	..	..			
C. Knowledge on improved practices								
a) knowledge on HYVs or seeds	NS	S	NS	S	S			
b) knowledge on nutrient requirement	NS	S	NS	NS	S	NS	S	S
c) Knowledge on fertilizer dozage	NS	S	S	S	S			
d) Knowledge on pest & diseases	S	S	S	S	S			

1	2	3	4	5
D. Attitude	NS	..	NS	..
E. Adoption	NS	S	NS	S

IPD (A) - IPD over 5 years
IPD (B) - IPD less than 5 years
CP (D) - CP in disease free area
CP (E) - CP in disease affected area.

	6	7	8	9
	..	NS	NS	NS
	S	NS	NS	NS

NS - Not significant
S - Significant

H. Inter correlation analysis

In order to find out the relationship of adoption with knowledge, attitude and participation, an inter correlation analysis has been worked out for the three package programme areas separately. The correlation matrix are presented below. The independent variables are :

X_1 - Knowledge on package programme

X_2 - Knowledge on improved practices.

X_3 - Programme participation

X_4 - Attitude towards the programmes

a) IPD programme

Null Hypothesis : 1. There would be no significant influence by the knowledge about the programme on the adoption behaviour.

2) There would be no significant influence by the knowledge on improved practices on the adoption behaviour.

3) There would be no significant influence by programme participation on the adoption behaviour.

4) There would be no significant influence by attitude of farmers on the adoption behaviour

The correlation matrix with respect to the IPD programme area is furnished in table 21.

Table 21. Correlation matrix in the case of IPD programme

Adoption	Knowledge on programme	Knowledge on improved practices	Participation	Attitude
1	0.6465**	0.8139**	0.8199**	0.7355**
	1	0.5546**	0.6263**	0.5130**
		1	0.7094**	0.6400**
			1	0.7588**
				1

** Significant at 0.01 level

The correlation coefficient of adoption with knowledge about the programme, knowledge on improved practices, participation and attitude were highly significant. Hence all these null hypothesis were rejected. The knowledge, participation and attitude had significant influence on the adoption of improved practices. The inter-correlation between pair of variables were also highly significant.

b) CP programme

Null Hypotheses : 1) There would be no significant influence by the knowledge about the programme on adoption behaviour.

2) There would be no significant influence by the knowledge on improved practices on the adoption behaviour.

3) There would be no significant influence by the programme participation on the adoption behaviour.

4) There would be no significant influence by attitude of farmers on the adoption behaviour.

Table 22 Correlation matrix in the case of CP programme

Adoption	Knowledge on programme	Knowledge on improved practices	Partici pation	Attitude
1	0.5438**	0.7873**	0.6690**	0.5327**
	1	0.6375**	0.6620**	0.5246**
		1	0.6805**	0.6169**
			1	0.5695**
				1

** Significant at 0.01 level.

According to table 22, in the case of CP also, there was significant positive influence of the four independent variables on adoption behaviour. Hence all the null hypotheses were rejected. The independent variables themselves were strongly inter-correlated.

c) PP programme

Null Hypotheses : 1) There would be no significant influence by the knowledge about the programme on adoption behaviour.

2) There would be no significant influence by the knowledge on improved practices on adoption behaviour.

3) There would be no significant influence by programme participation on adoption behaviour.

4) There would be no significant influence by attitude of farmers on adoption behaviour.

Table 23 Correlation matrix in the case of PP programme

Adoption	Knowledge on programme	Knowledge on improved practices	Participation	Attitude
1	-0.2913	0.8975**	0.8755**	0.7371
	1	-0.0976	-0.1345	-0.0758
		1	0.9056**	0.7745**
			1	0.7199**
				1

** Significant at 0.01 level.

As per the table 23 shows, in the case of PP programme, it was found that the knowledge on PP programme had no influence on adoption behaviour as evidenced by the low negative correlation coefficient. Also it was seen that knowledge on the programme was not having any influence on the three remaining

independent variables. But the independent variables namely knowledge on improved practices, participation and attitude had strong influence on adoption and these independent variables were inter correlated within themselves. Hence the null hypotheses number one was accepted and the rest three were rejected.

I. Path analysis

Since the independent variables were found to be significantly correlated with adoption and also since there was strong inter correlation between pairs of independent variables, path coefficient analysis has been taken up to understand the contribution of these factors directly and indirectly on the dependent variable.

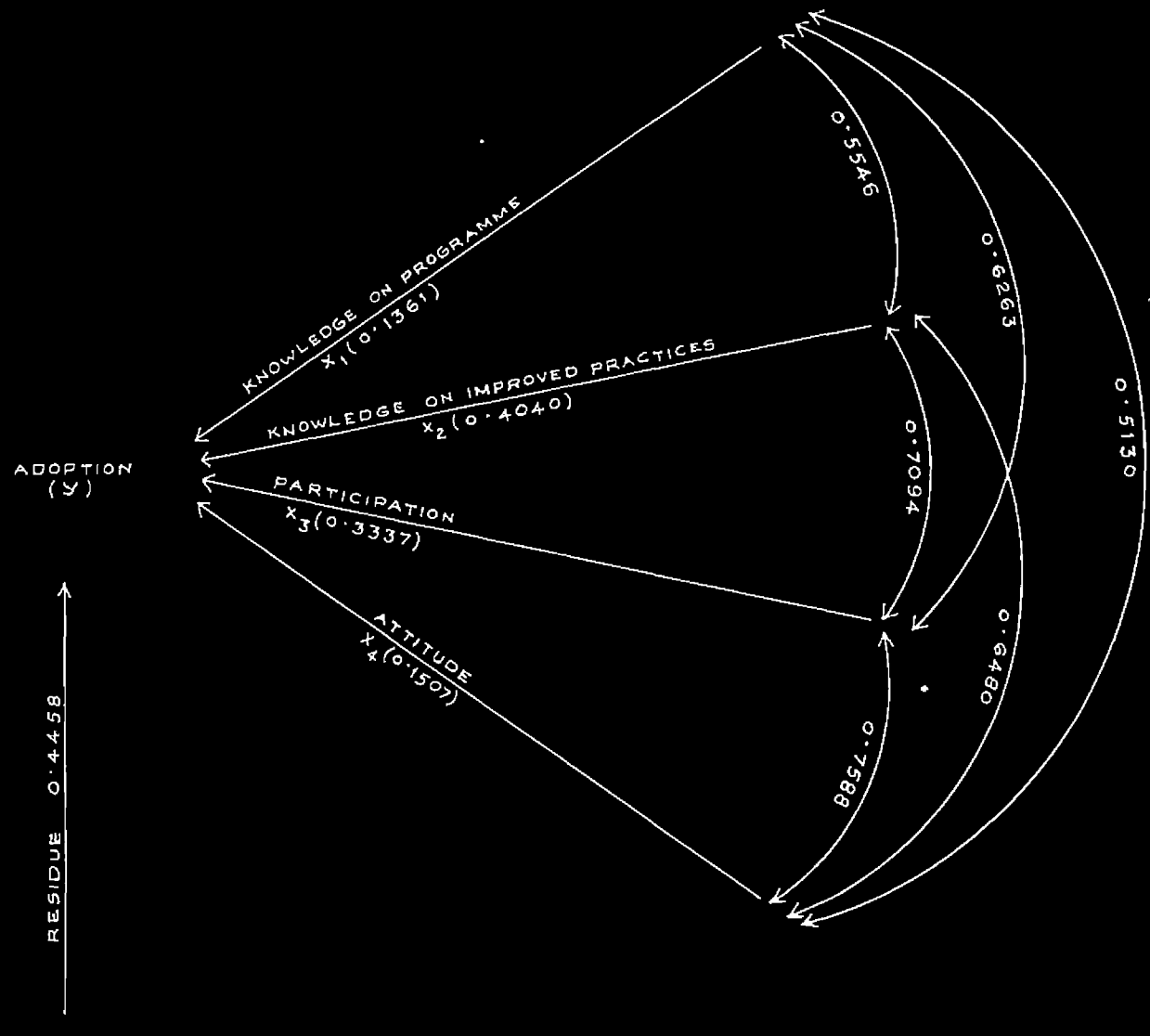
The result of the path coefficient analysis with respect to the IFD, CP and PP Programme are presented in the table 24, 25 and 26 respectively.

Table 24 Direct and Indirect effects of component factors on adoption behaviour of farmers in the IPD programme

Knowledge on programme	Knowledge on improved practices	Participation	Attitude	Total
+ 0.1362	+ 0.2241	+ 0.2090	+ 0.0773	+ 0.6466
+ 0.0853	+ 0.4040	+ 0.2367	+ 0.0979	+ 0.8139
+ 0.0853	+ 0.2866	+ 0.3337	+ 0.1144	+ 0.8200
+ 0.0699	+ 0.2618	+ 0.2532	+ 0.1507	+0+ 7356

In the case of IPD programme area (table 24) the maximum contribution towards the correlation between adoption and knowledge on the programme was the indirect effect of knowledge on improved practices (0.2241), followed closely by the indirect effect of participation (0.2090). The indirect effect of attitude was only 0.773. In the case of knowledge on practices, the maximum contribution came from the direct effect itself. The contribution of participation was 0.2367 where as the indirect effect of knowledge on programme and attitude were very small. Considering participation, it was found that the direct effect had the maximum contribution, followed by the indirect effect of knowledge on improved practices. In the case of attitude the indirect effect of

FIG. 3. PATH ANALYSIS AND CORRELATION STUDIES IN ADOPTION OF IMPROVED PRACTICES FOR PADDY.

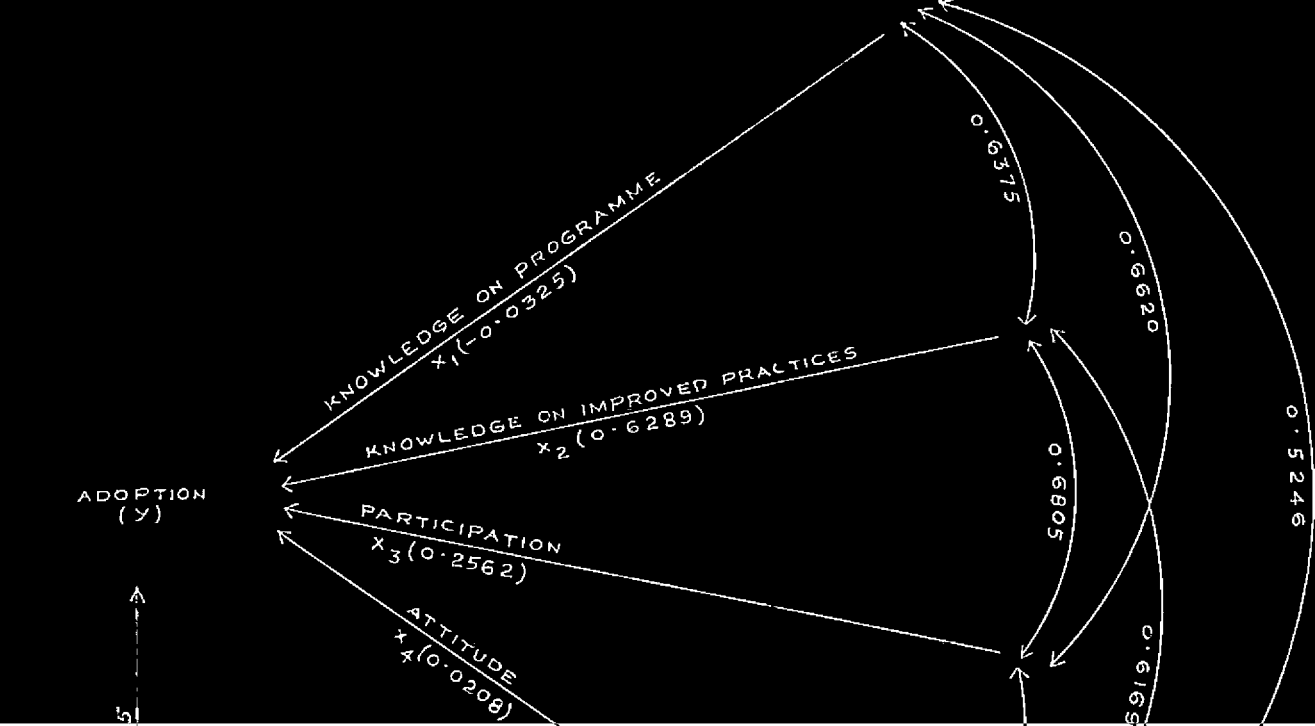


knowledge on practices and participation were considerably larger than the direct effect itself. Considering all the effects, it was found that knowledge on improved practices and participation contributes to a considerable portion of correlation coefficient with adoption.

Table 25 Direct and indirect effects of component factors on adoption behaviour of farmers in the CP programme

Knowledge on programme	Knowledge on improved practices	Participation	Attitude	Total
- 0.0325	+ 0.3958	+ 0.1696	+ 0.0103	+ 0.5438
- 0.0208	+ 0.6289	+ 0.1743	+ 0.0129	+ 0.7953
- 0.0215	+ 0.4225	+ 0.2562	+ 0.0119	+ 0.6691
- 0.0171	+ 0.3830	+ 0.1459	+ 0.0208	+ 0.5326

In table 25 the direct and indirect effects with respect to CP programme areas are presented. The correlation coefficient between knowlege on practices and adoption received maximum contribution from the indirect effect of knowledge on programme. The direct effect of knowledge on improved practices accounted for a considerable portion of the correlation between knowledge on practices and adoption. In the case of participation, knowledge on improved practices had the maximum influence. Correlation between attitude and adoption was mostly due to the indirect effect of knowledge on


KNOWLEDGE ON PROGRAMME
x_1(-0·0325)
KNOWLEDGE ON IMPROVED PRACTICES
x_2(0·6289)
PARTICIPATION
x_3(0·2562)
ATTITUDE
x_4(0·0208)
ADOPTION
(y)
0·6375
0·6620
0·5246
0·6805
0·6195

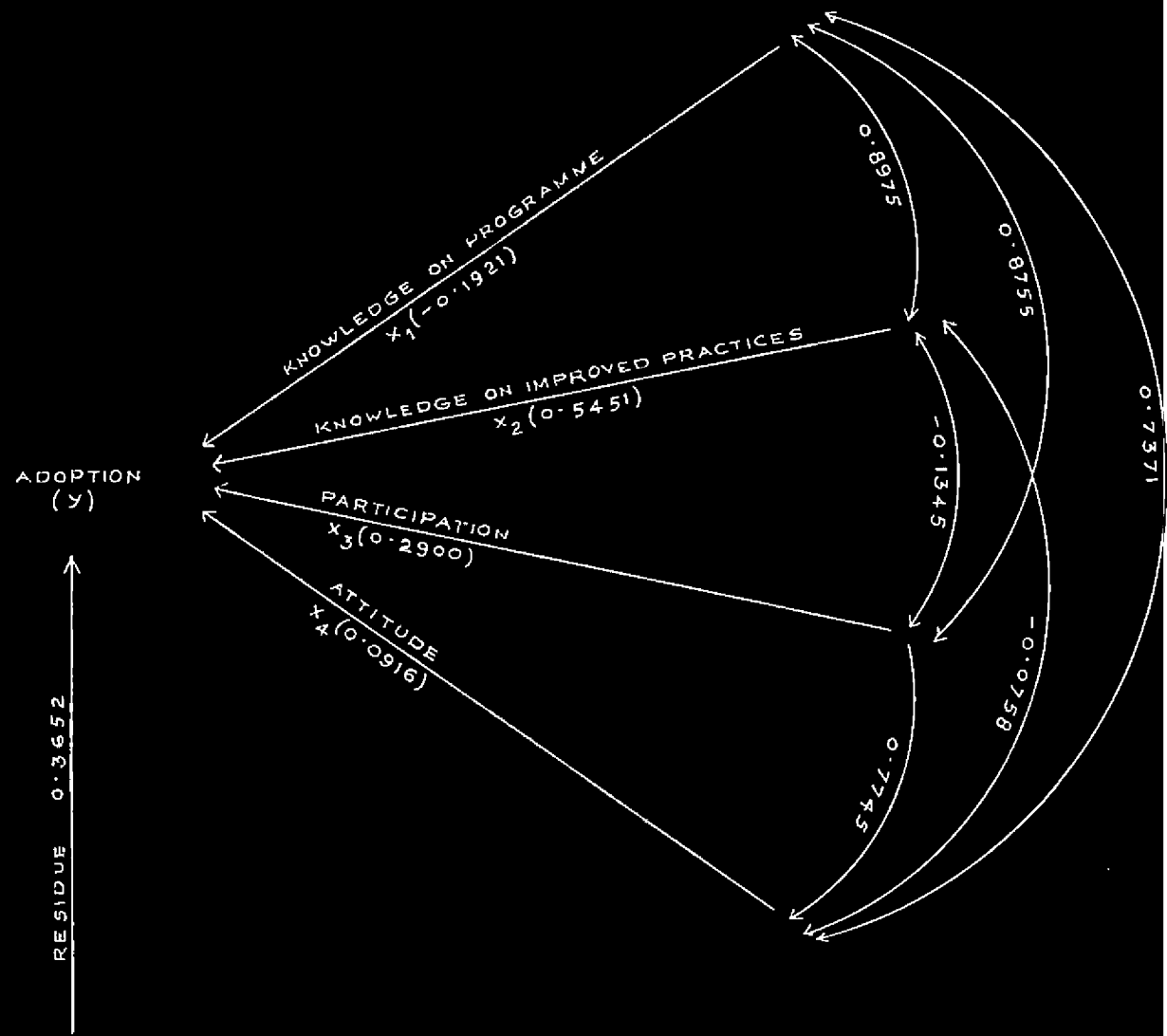
programme. Hence here also the contributions of knowledge on programme and knowledge on improved practices were considerably larger than the contribution of participation and attitude.

Table 26 Direct and indirect effects of component factors on adoption behaviour of farmers in the PP programme

Knowledge on programme	Knowledge on improved practices.	Participation	Attitude	Total
- 0.1921	- 0.0532	- 0.0390	- 0.0069	-0.2912
+ 0.0188	+ 0.5451	+ 0.2627	- 0.0709	+ 0.8975
+ 0.0258	+ 0.4937	+ 0.2900	+ 0.0659	+ 0.8754
+ 0.0146	+ 0.4222	+ 0.2088	+ 0.0916	+ 0.7372

In the case of PP areas showed in table 26, the correlation coefficient between adoption and knowledge on programme was not significant. The direct effect of knowledge on the improved practices was 0.5451 out of the correlation coefficient of 0.8975. The contribution of participation was 0.2627. In the case of correlation with participation, the indirect effect of knowledge on improved practices had the greatest importance. This was true in the case of correlation between attitude and adoption also. In the case of PP the most important factor was knowledge on improved practices.

FIG. 5. PATH ANALYSIS AND CORRELATION STUDIES IN ADOPTION OF IMPROVED PRACTICES FOR PEPPER.



J. Effectiveness of the package programme as perceived by JAOs.

a) IPD programme

The effectiveness of the IPD programme as perceived by the JAOs are presented below.

Table 27 Opinion of JAOs regarding the extent to which IPD programme has in carrys out different developmental activities

Sl. No.	Activities	Percentage of JAOs			
		Helped to very large extent	Helped to a large extent	Helped to some extent	Not helped
1.	Making farmers of the ela cultivate same variety of paddy	10	6	72	12
2.	Making farmers cultivate HYV of paddy	62	22	10	6
3.	Collectively ensuring the inputs by the farmers of the Ela.	6	37	45	12
4.	Collectively carrying out plant protection measures by the farmers	20	53	22	5
5.	Collectively conducting farm operations by the farmers of the Ela	2	10	35	53
6.	Ensuring collective water management practices by the farmers	2	23	48	27
7.	Making farmers' participation in common nursery programme	0	14	28	58

In table 27 the opinion of JAOs regarding to what extent the IPD programme has helped in carryant out the different developmental activities are presented.

Tab) CP programme

The perception of JAOs working in CP programme regarding the effectiveness of the CP programme are presented below.

The opinion of JAOs regarding the extent to which the CP programmes has helped in bringing out developments are presented in table 28.

Table 28 The percentage of JAOs who perceived that the CP programme was effective in bringing out the various development

Sl. No.	Developmental activities	Percentage of JAOs who perceived that CP programme was effective
1.	CP programme has helped in increasing the coconut production of Kerala	88
2.	CP programme has helped in increasing the economic condition of farmers	85
3.	CP programme has helped in the supply of good quality seedlings to farmers	98
4.	CP programme has helped in increasing the area of coconut under intensive cultivation	88
5.	CP programme has helped in providing sufficient of quantity of fertilizers in right time	80
6.	CP programme has helped the farmers to purchase pumpsets for irrigation	75
7.	CP programme has helped in increasing the area under inter and mixed cropping	77

c) PP programme

The effectiveness of the PP programme in helping the pepper growers as perceived by JAOs are presented below.

Table 29 shows the opinion of JAOs regarding the extent to which PP programme has helped the pepper growers.

Table 29 Percentage of JAOs who perceived that the the PP programme was effective in bringing out different development.

Sl. No.	Developmental activities	Percentage of JAOs who perceived that PP programme was effective
1.	PP programme has helped in increasing pepper production in Kerala	100
2.	PP programme has helped in increasing the economic condition of farmers	100
3.	PP programme has helped in supply of of good quality pepper cuttings to the farmers	92
4.	PP programme has helped in providing sufficient quantity of fertilizers to the farmers in the right time	67

K. Constraints to the functioning of the package programme as perceived by the farmers and JAOs

a) IPD programme

The constraints in the successful functioning of the IPD programme as perceived by the farmers of the IPD units are given in the table 30 (a) in their rank order.

Table 30 (a) Constraints in the implementation of IPD programme as perceived by the farmers of IPD areas.

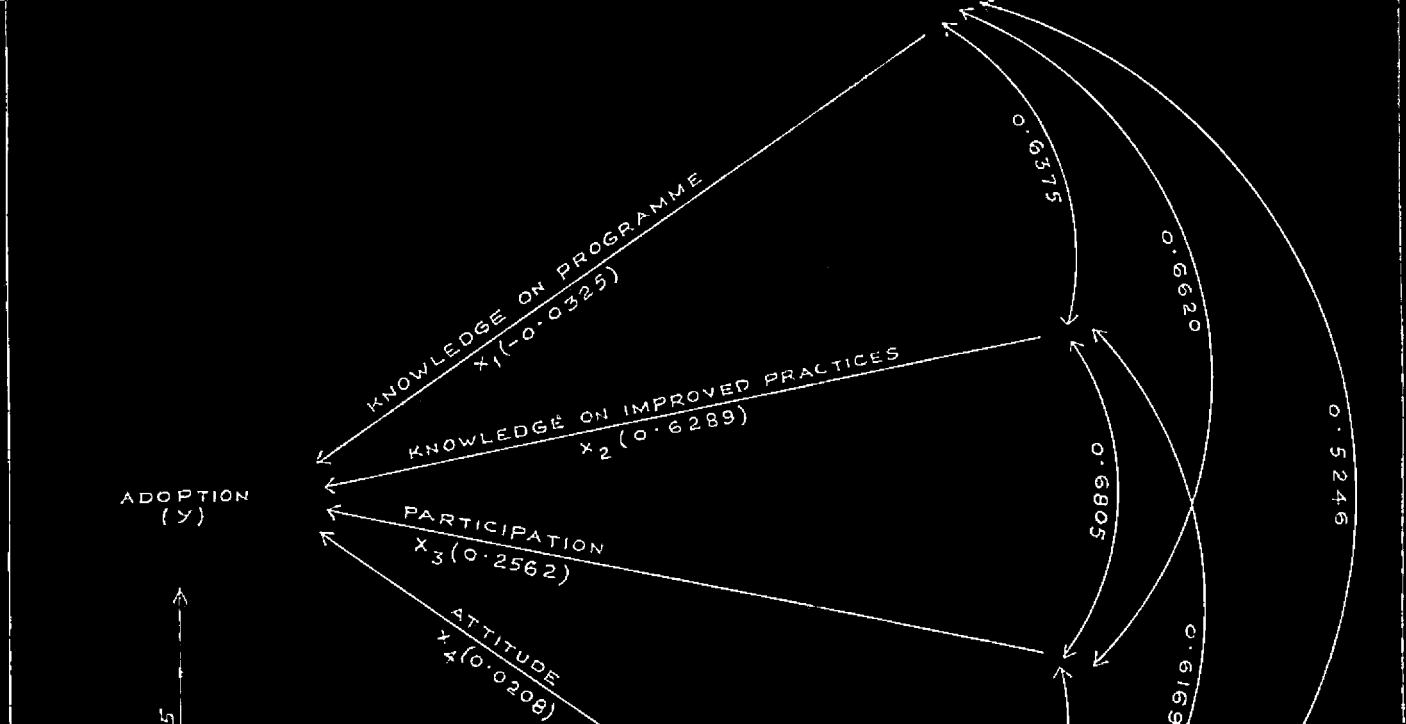
Sl.No.	Constraints	Weightage	Rank
1.	High yielding varieties are highly susceptable to pest and diseases	165	1
2.	Low price of HYV paddy	164	2
3.	The cost of plant protection chemicals are very high	164	2
4.	High cost technology is involved in following the scientific method of cultivation	157	3
5.	The availability of labour is limited during peak seasons which does not favour uniformity in cultivation	142	4
6.	Untimely and inadequate supply of inputs	134	5
7.	The procedure for sanctioning of loans take time	129	6
8.	Lack of capital	128	7
9.	High fertilizer recommendation for the cultivation of HYVs of paddy	126	8
10.	High cost of chemicals for chemical weedking	118	9
11.	Consumption quality of HYV is poor	117	10
12.	There is no effect for liming	96	11
13.	Irrigation facilities in IPD area is very poor	90	12
14.	High labour consumption involved for transplatnting	87	13
15.	The availability of bullock pairs and ploughman is limited	82	14
16.	The tractor facilities are poor	81	15
17.	The PP equipment cost high	81	15

Sl. No.	Constraints	Weightage	Rank
18.	Non availability of good quality seeds	76	16
19.	Flood	75	17
20.	Lack of marketing facilities	74	18
21.	Liming is expensive	73	19
22.	The seedlings supplied through common nursery is not of good quality	72	20
23.	Lack of proper communication facilities	68	21
24.	Lack of proper storage facilities	65	22
25.	Lack of proper transport facilities	64	23
26.	The seminars and discussions conducted in IPD unit is not based on cultivators' needs	60	24

The constraints in the rank order felt by the JAOs working in the Intensive Paddy Development programme are presented in the table 30 (b).

Table 30 (b) Constraints in the implementation of IPD programme as perceived by JAOs working in IPD units.

Sl. No.	Constraints	Weightage	Rank
1.	The JAO has to do a lot of other administrative work	162	1
2.	Untimely and inadequate supply of inputs	155	2
3.	Data obtained from village records and other establishments are not up-to-date	151	3
4.	The consumption quality of HYVs is poor	148	4
5.	High investment prevent farmers from cultivating HYVs	147	5
6.	The local taste for local variety of grains	147	5
7.	Adequate staff is not available for the basic data collection	145	6
8.	Cost of plant protection chemicals are very high	145	6
9.	High yielding varieties are highly susceptably to pest and diseases	145	6
10.	Low price of HYV paddy prevent farmers from cultivating HYVs	142	7
11.	Chemical weeding not done due to high cost of chemicals	140	8


KNOWLEDGE ON PROGRAMME
X_1(-0·0325)
KNOWLEDGE ON IMPROVED PRACTICES
X_2(0·6289)
PARTICIPATION
X_3(0·2562)
ATTITUDE
X_4(0·0208)
ADOPTION
(Y)
0·6375
0·6620
0·5246
0·6805
0·6196

RESIDUE 0·5885
ADOPTION (Y)
KNOWLEDGE ON PROGRAMME
X1(-0·0325)
KNOWLEDGE ON IMPROVED PRACTICES
X2 (0·6289)
PARTICIPATION
X3(0·2562)
ATTITUDE
X4(0·0208)
0·5695
0·6805
0·6375
0·6169
0·6620
0·5246

Sl. No.	Constraints	Weightage	Rank
12.	Irrigation facilities in IPD area is very poor	140	8
13.	Department loan for HYV cultivation is not given for the first crop	137	9
14.	Fragmented holdings do not favour uniformity of cultivation	137	9
15.	The farmers do not use the required quantity of plant protection chemicals	128	10
16.	When the procedure for sanctioning of loans are finalised the crop will be in a late harvest stage	126	11
17.	High fertilizer recommendation for HYVs	121	12
18.	The availability of labour is limited during peak seasons which does not favour uniformity in cultivation	119	13
19.	The farmers do not fully utilise the 25 % subsidy offered by the Department of agriculturefor purchase of plant protection equipment	118	14
20.	Bla committee is found ineffective in the data collection process	115	15
21.	Raising common nursery is difficult as it is difficult to get sufficient land in a compact area	113	16
22.	In the preparation of plan, the national policy or national priority on certain aspects is a barrier for the local development programme	110	17
23.	Eventhough farmers are aware of the liming practices, they do not apply the recommended quality	110	17
24.	The availability of bullock pairs and plough man is limited	110	17
25.	Non availability of HYV seed in sufficient quantity	110	17

Sl. No.	Constraints	Weightage	Rank
26.	Demand for a particular variety of seedling	110	17
27.	Floods affect the crop adversely	105	18
28.	Non cooperation of farmers act as a barrier in carrying out plant protection activity on a community basis	104	19
29.	In the preparation of plant no good suggestions are brought out by the Ela committee	100	20
30.	High labour consumption prevents farmers from transplanting and to do broadcasting which results in low yield	100	20
31.	Non availability of good seed suited to the locality	100	20
32.	The high cost technology is involved in following the recommended package of practices	97	21
33.	Risk due to pest, disease and other climatic conditions do not favour common nursery	95	22
34.	Practically no help is attained from district authorities in the preparation of plan.	92	23
35.	Local disputes in sharing water available in the area arises.	92	23
36.	Mis utilisation of M.I. works like bunds for fish farming	92	23
37.	The tractor facilities are poor	92	23
38.	Delay in getting the subsidy and funds for com on nursery	92	23
39.	Varietal preference of farmers is a difficulty in implementing common nursery programme	91	24

Sl. No.	Constraints	Weightage	Rank
40.	Farmers misuse the subsidy availed to them	89	25
41.	As topography of land differs varieties suitable also differs	87	26
42.	The farmers' cooperation is limited in the data collection process	86	27
43.	The plant protection equipments cost high	86	27
44.	Uncertainity regarding the availability of good quality seeds	85	28
45.	Though training classes are arranged the idea is not duplicated in the field	84	29
46.	People's participation is limited in the IRD units	81	30
47.	Lack of proper technology to deal with present problems	80	31
48.	Farmers of an area differ in education and economic status which does not help in uniformity of cultivation	78	32
49.	Farmer labourers raise objection to tractor farming	62	33

b) C.P. programme

The constraints felt in the adoption of improved practices for coconut cultivation by the farmers of coconut package area are presented in their rank order in the table 31 (a).

Table 31 (a) Constraints in the implementation of CP programme as perceived by the farmers in CP units.

Sl. No.	Constraints	Weightage	Rank
1	2	3	4
1.	High labour consumption is required for following the recommended package of practices	169	1
2.	Cost of plant protection chemicals are very high	167	2
3.	High cost technology is involved in following the recommended package of practices	150	3
4.	The cost of plant protection equipments are very high	137	4
5.	Lack of proper irrigation facilities	116	5
6.	Cost of fertilizers very high	114	6
7.	Lack of adequate capital	110	7
8.	High fertilizer recommendation	98	8
9.	Untimely and inadequate supply of inputs	98	8
10.	Soil erosion is a problem	87	9
11.	Procedure for sanctioning of loans take much time	83	10
12.	Root wilt disease	81	11
13.	Non availability of good and disease free seedlings	71	12
14.	Flood damages the crop	70	13
15.	Lack of supervision and guidance from the officers concerned	67	14

1	2	3	4
16.	Cost of weedicides are very high	65	15
17.	Cost of the seedlings are very high	65	15
18.	Chemical weeding is much expensive	64	16
19.	Lack of marketing facilities	64	16
20.	Lack of communication facilities	62	17
21.	Lack of transport facilities	62	17
22.	The seedlings distributed through agricultural department is reliable	61	18
23.	The training camps and seminars conducted through CP unit are not useful	60	19
24.	Green manure cultivation is a waste of money	60	19

The constraints felt by the JAOs of the coconut package units are presented in the rank order in table 31 (b)

Table 31 (b) Constraints in the implementation of CP Programme as perceived by JAOs working in CP units.

Sl. No.	Constraints	Weightage	Rank
1	2	3	4
1.	JAO has to do a lot of work administrative work	101	1
2.	Timely action from other departments (like minor irrigation, electricity cooperatives etc.) are not obtained	98	2

1	2	3	4
3.	The farmers do not use the required amount of plant protection chemicals	97	3
4.	Data obtained from village records and othe. establishments are not up-to-date	95	4
5.	Irrigation facilities in the CP unit is very poor	95	4
6.	Adequate staff is not available in coconut package unit	94	5
7.	Farmers are subsidy minded and so they will accept schems just to avail subsidy	92	6
8.	The cost of plant protection chemicals are very high	91	7
9.	High labour consumption prevents farmers from following recommended package of practices	91	7
10.	Adequate staff is not available for the basic data collection	89	8
11.	Adequate staff is not available to send reports in time	85	9
12.	Farmers are not prepared to distroy their old and diseased coconut palms for planting new ones	85	9
13.	The plant protection equipment are very costly	85	9
14.	Lack of funds	84	10
15.	Lack of adequate funds for the various programmes	81	11
16.	The procedure for sanctioning of loans take much time	81	11

1	2	3	4
17.	Lack of proper supervision and control to the works done	80	12
18.	Root wilt disease	80	12
19.	Majority of farmers are not interested in grown green manure crop	79	13
20.	Farmers cooperation is limited in the data collection process	78	14
21.	The viability of service cooperative for credit is not dependable	78	14
22.	In commercial banks, staff for processing and sanctioning loans is insufficient	78	14
23.	The proforma for reporting is not need oriented, uniform nor objective	76	15
24.	Individual size of holding is very small to carry out intensive cultivation	76	15
25.	Lack of flexibility and authorisation of the budget	75	16
26.	High fertilizer recommendations and resultant prevents farmers from supplying the recommended dose of fertilizers as per package of practices	75	16
27.	In the preparation of plan the national policy in certain aspects is a barrier for the local development programme	70	17
28.	Peoples participation is limited in the CP units	70	17
29.	The farmers are not utilizing the loans provided for purchase of pump-sets to irrigate coconut gardens	70	17

1	2	3	4
30.	Untimely and inadequate supply of inputs	68	18
31.	High cost technology is deal involved in following the recommended package of practices	67	19
32.	Lack of proper technology to deal with the present problem	66	20
33.	Farmers ore not aware of the importance of irrigation in coconut gardens	63	21
34.	The seedlings distributed through agricultural department is not reliable	63	21
35.	Though training classes are arranged the idea is not duplicated in the field	63	21
36.	The coconut package committee is found ineffective in the collection of data	63	22
37.	There is the problem of soil erosion in coconut gardens	61	23
38.	There is no adequate power to control the activities of subordinates	59	24
39.	Subordinate staff are not working effectively	58	25
40.	In the preparation of plan no good suggestions are brought out by the coconut package committee	57	26
41.	Practically no help is attained from district authorities in the preparation of plan	56	27
42.	The responsibilities of extension personel is not well defined allocated or quantified	56	27

1	2	3	4
43.	Flood affect the coconut palm adversely	52	28
44.	Local disputes in sharing the water available in the area	52	28
45.	Non availability of good and disease free seedlings	52	28

c) P.P. programme

The constraints felt by the pepper growers in adopting improved practices for pepper cultivation are presented in table 32 (a) and the constraints felt by the JAOs working in PP unit are given in table 32 (b) in their rank orders.

Table 32 (a) Constraints in the implementation of PP programme as perceived by farmers of PP areas

Sl.No.	Constraints	Weightage	Rank
1.	Cost of plant protection chemicals are very high	73	1
2.	Lack of proper irrigation facilities	67	2
3.	Lack of transport facilities	63	3
4.	High cost technology is involved in following the recommended package of practices	62	4
5.	Lack of marketing facilities	57	5

Sl. No.	Constraints	Weightage	Rank
6.	The cost of plant protection equipment are very high	50	6
7.	High labour consumption is required in following the recommended package of practices	49	7
8.	Lack of communication facilities	47	8
9.	Quick and slow wilt disease	47	8
10.	Lack of adequate capital	47	8
11.	Untimely and inadequate supply of inputs	45	9
12.	High fertilizer recommendation	42	10
13.	Lack of proper supervision and guidance from the officers concerned	36	11
14.	Lack of storage facilities	35	12
15.	Pollu beetle attack	34	13
16.	Cost of fertilizers very high	33	14
17.	Non availability of good hybrid variety vines	32	15
18.	Flood	30	16
19.	The pepper vines distributed through the pepper package unit is not reliable	30	16
20.	The training camps and seminars conducted through pepper package unit is not useful	30	16
21.	Procedure for sanctioning of loans take much time	30	16

Table 32 (b) Constraints in the implementation of PP programme as perceived by JAOs working in PP units

Sl. No.	Constraints	Weightage	Rank
1.	Quick and slow wilt disease	35	1
2.	Adequate staff is not available for the basic data collection	34	2
3.	Adequate staff is not available in pepper package unit	34	2
4.	Cost of plant protection chemicals are very high	29	3
5.	JAO has to do a lot of other administrative works	27	4
6.	Adequate staff is not available to send reports in time	26	5
7.	Farmers do not use the required amount of plant protection chemicals	25	6
8.	Data obtained from village records and other establishments are not up-to-dated	23	7
9.	High labour consumption prevent farmers following the recommended package of practices	22	8
10.	Irrigation facilities are poor in the pepper package area	22	8
11.	There is no committee to help the data collection process	21	9
12.	The plant protection equipment are very costly	21	9
13.	Pollu beetle attack	21	9
14.	Untimely and inadequate supply of inputs	21	9

Sl. No.	Constraints	Weightage	Ranks
15.	Lack of flexibility and authorisation of the budget	20	10
16.	Lack of proper technology to deal with the present problems	20	10
17.	High cost technology is involved in following the recommended package of practices	20	10
18.	High investment prevent farmers from applying the recommended dose of fertilizers as per package of practices	20	10
19.	Procedure for sanctioning of loans take much time	20	10
20.	The proforma for reporting is not oriented, uniform nor objective	19	11
21.	Though training classes are arranged the idea is not duplicated in the field	19	11
22.	Time of action for other departments (like minor irrigation, Electrical cooperative etc.) are not obtained	18	12
23.	Farmers cooperation is limited in the data collection process.	17	13
24.	In the preparation of plan, the national policy in certain aspects is a barrier for the local development programme	17	13
25.	Practically no help is attained from district authorities in the preparation of plan	17	13
26.	The responsibilities of an extension personal is not well defined allocated or quantified	17	13

&&C

Sl. No.	Constraints	Weightage	Ranks
27.	Subordinate staff are not working effectively	17	13
28.	Non availability of good hybrid (Panniyoor) variety vines	17	13
29.	The viability of service cooperatives for credit is not dependable	17	13
30.	High fertilizer recommendation	16	14
30.	People's participation is limited in the pepper package units	16	14
32.	Only big farmers are interested in this scheme	16	14
33.	There is no adequate power to control the activities of subordinates	15	15
34.	Lack of adequate funds for the various programmes	15	15
35.	Misutilisation of the fertilizers and plant protection chemicals supplied through the unit	15	15
36.	The subsidy given for purchase of pumpsets, sprays, fertilizers, plant protection chemicals etc., is not properly utilised by the farmers	13	16
37.	Flood may affect the vines adversely	12	17

DISCUSSION

DISCUSSION

The discussion of the results of this study included in the chapter on results if presented below.

A. Programme participation

The findings of the study revealed that there was no significant difference in the extent of farmers' participation between the IPD areas with more than and less than five years of implementation. Similarly there was no difference in participation between the farmers of the CP areas of disease affected and disease free areas. There was no difference between the CP and IPD programme areas. Irrespective of the total duration of implementation of the programme and the crop delt with the farmers' participation in the above package programmes was at the same level. But maximum farmers participation was observed in the pepper package programme. The pepper package studied was located in the area which was cultivated by the settlers who have come there for cultivation from

Central Travancore. By nature they are venturesome and progressive. They have adopted improved agricultural practices of all crops and hence their participation was found to be maximum.

B. Farmers' knowledge about package programs

In the study, the knowledge about IPD and CP programmes included these aspects. They were knowledge about unit, knowledge about committee and knowledge about activities carried out through the respective package programmes.

The mean programme knowledge scores between the farmers of the IPD areas over five years and less than five years of implementation regarding the above mentioned three aspects showed no variation. So, as in the case of participation, the period of implementation of the IPD programme was not having any direct bearing on the farmers programme knowledge.

The result with respect to CP programme showed that of the above three, there was significant variation regarding knowledge on the activities carried out between the farmers of the CP units of disease affected and disease free areas.

Farmers of the disease affected area had more knowledge on the activities carried out through CP programme. There was no variation in the knowledge on other aspects. Farmers in the root wilt disease affected area had far less yield when compared to other areas. They might have believed that the plant protection activities included in the programme would help in increasing yield which might have prompted them for knowing thedetails of the programme.

Comparision of the mean knowledge standard scores of the farmers of IPD, CP and PP units showed that there was significant variation among them with respect to their programme knowledge. The programme knowledge of the farmers of the pepper package unit was more than that of the farmers of IED and CP areas.

C. Knowledge about improved practices

In this study the knowledge on improved practices in paddy cultivation included the knowledge on seed rate, seed treatment, fertilizer requirement, nutrients required, liming practices, pest and disease and HYVs and their duration. The knowledge level of the farmers of the IED areas were more

than that of the non IPD area with respect to all the above mentioned aspects.

Even when the data pertaining to the knowledge of the seperate aspects were analysed, no significant difference could be obtained between the IPD area having different periods of implementation. The only area were some difference could be seen was related to the knowledge of pests and diceaee. In general the results indicated that the total period of implementation of the programme had no impact of the participants knowledge level on improved practices.

The improved practices in coconut cultivation included for the study were hybrid seedlings, qualities of good seedlings, recommended spacing, fertilizer requirement, green manure, cover crops, pests and diseases. The results showed that there was no difference in the knowledge level among the farmers of the two CP areas and between package area and the control areas with regard to the three improved practices, namely, qualities of good seedlings, nutrient requirement and cover crops. There was no difference in the knowledge on hybrid seedlings and spacing between the

farmers of the CP units of the two areas, but it was higher in the programme areas than the control areas. The farmers of the disease affected area had better knowledge on fertilizer requirement than the farmers of the disease free areas and control areas. Also farmers of theCP units in disease affected areas had more knowledge with respect to pest and disease affecting coconut palm than the farmers of the CP units of the disease free areas and the control areas. The farmers of the disease free areas had more knowledge in this aspect than that of control areas. Thus it was seen that in general the farmers of the CP units located in the disease affected area had better knowledge of improved methods of coconut cultivation than the other areas. Their urgent need to increase yield, which is (was) less than the disease free areas, might have induced them to learn more about the improved agricultural practices, the adoption of which might increase the yield. Similarly the knowledge was more in package areas than the non package areas. So it was proved that the CP programme has helped in imparting the knowledge on improved methods of cultivation in farmers.

Knowledge on hybrid pepper, pit size, nutrients,

fertilizer requirement and pest and disease were studied with respect to pepper. The results showed that, in all these aspects the farmers of the pepper package area had better knowledge than the farmers of non package areas. This result also conclusively proved that the PP programme could increase the farmers knowledge on improved methods of pepper cultivation.

The knowledge on improved practices of farmers of PP area was more than that of the farmers of IPD and CP areas. But the results showed that there was no significant difference in the knowledge level between the farmers of IPD and CP areas.

The important work of the staff in these package units was agricultural extension to provide technical information to induce farmers to adopt improved agricultural practices. They were successful in their efforts in all the three types of package programmes in providing technical information to the farmers.

D. Attitude towards the programme

In general majority of the farmers had a favourable attitude towards the different package programmes. The results conclusively proved that these programmes did

create a favourable attitude in farmers without which the programme would not have succeeded. The period of implementation of the IPD programme had no impact on attitude. Farmers might have formed attitude in the beginning of the programme implementation which might have persisted and hence no difference could be observed. Similarly there was no difference in the attitude between the farmers of the CP units in the disease affected and disease free areas. This showed that in general the coconut growers of Kerala have interested and faith in the CP programme.

The results also revealed that there was no variation in the mean attitude scores of the farmers of IPD, CP and PP areas. This showed that irrespective of the crops, the farmers of the state are having faith and confidence in the functioning of the package programme.

Majority of JAOs in charge of the different package units also had a favourable attitude towards the respective package programme. This can be considered as an indication that the programme will be implemented by the officials with more interest and intensity.

E. Adoption

According to the results there was no difference in the adoption of improved practices between the farmers of IPD units over five years and less than five years of implementation. But the adoption of improved practices of paddy was more in the IPD area than the control area.

So as in the case of participation, knowledge and attitude, the period of implementation had no impact on adoption also. The rate of change in these aspects was more rapid in the initial period which might have reduced as time passed on. Hence though there was increase in knowledge, it was not significantly different in latter years.

Similarly the adoption rate was not different in the CP units of disease affected areas, than disease free areas. But it was more in package areas than the control areas. So the result proved that the CP programme did create impact in terms of adoption both in disease affected and disease free areas.

The adoption of improved cultivation practices for pepper was significantly more in PP areas than in control areas.

All the above results showed that the adoption rate was significantly higher in programme areas than in control areas, which proved that the programme produced favourable responses in the farmers. A comparison of adoption behaviour of farmers in three programme areas showed that there was no difference. This was an indication that all the programme had similar response.

F. Results from Correlation Matrix

Results revealed that all the four factors viz. knowledge about the package programme, knowledge on improved practices, participation and attitude had significant contribution on adoption behaviourof farmers in IED and CP areas The inter correlation between pairs of these factors were also significant.

Pathak and Dargan (1971) found that acceptance of improved practices had association with cultivators participation in the programme. Majumdar and Majumdar (1967) found significant positive relationship between programme knowledge of farmers and their adoption behaviour. In the studies of Johnson and Haver (1953), Williams (1958),

Rogers and Havens (1961), Bose (1964), Dasgupta (1965), Shankariah (1965), Nair (1969), Singh (1969), Singh and Singh(1970), Choubey (1972), Sharma and Nair (1974), Prasad (1978), Kaleel (1978) and Pillai (1978) it was found that knowledge on improved practices had significant influence on adoption behaviour. Rai (1965), Singh et al (1966) Majundar and Majumdar (1967) and Prasad (1978) found positive and significant influence of attitude towards the programme and adoption behaviour. The above results supported the results of the present study.

But in the PP programme, farmers knowledge on PP programme had no influence on the adoption behaviour. Similarly the knowledge on PP programme did not influence the knowledge on improved practices, attitude and participation. But the knowledge on improved practices, participation and attitude had strong influence on adoption behaviour of pepper growers. The factors were also inter correlated within themselves.

G. Results of path analysis

Results of path analysis showed that in the case of IPD programme, farmers knowledge on improved practices had maximum direct effect on their adoption behaviour followed by

participation, attitude and knowledge about the programme. Though knowledge on improved practices had maximum direct effect, participation had also made considerable contribution in adoption. Hence these two factors had greater influence on the adoption behaviour of paddy growers.

In the case of CP programme, the maximum direct effect on the adoption behaviour was by knowledge on improved practices followed by participation. So here the most important factors was knowledge on improved practices.

With regard to the PP programme the maximum direct effect was contributed by the knowledge on improved practices followed by participation. The correlation coefficient between adoption and knowledge on programme was not significant. So in this case also the most important factor which influenced adoption was knowledge on improved practices.

H. Effectiveness of Package programme as perceived by JAOs

Regarding the extent to which IPD programme has helped in carrying out developmental activities, majority of JAOs opined that it has helped to some extent only in making the farmers of the ela cultivate which was one-

same paddy variety, which was one of the important objectives of the programme. Majority of JAOs said that it has helped to very large extent in making farmers cultivate HYVs of paddy and to a 'large extent' in carrying out collective plant protection works. Most of the JAOs viewed that programme has helped to some extent only in collectively arranging inputs and in undertaking collective water management practices. According to the majority of JAOs, IPD programme has not helped in collectively carrying out farm operations and also did not motivate farmers to participate in the common nursery programme.

In the case of CP programme, 98 per cent of JAOs working in CP units perceived that the CP has helped in the supply of good quality seedlings to the farmer. Between 80 and 90 per cent of officials perceived that the programme has helped in increasing the coconut yield, increasing the economic condition of coconut growers, increasing area under intensive cultivation and in the supply of sufficient quantity of fertilizers in the right time. According to 75 per cent of JAOs the CP programme has helped the farmers in the purchase of pumpsets for irrigation.

All the JAOs working in the PP units in Kerala stated that the PP programme has helped in increasing the pepper yield and also increasing the economic condition of pepper growers. Ninety two percent and sixty seven per cent of the officials perceived that it has helped in the supply of good quality pepper vines and timely supply of sufficient quality of fertilizers respectively.

I. Constraints

The major constraints identified by the farmers in the successful implementation of IPD programme were the high susceptability of HYVs to pest and disease followed by low price of HYV paddy, high cost of PP chemicals, high cost in following scientific cultivation, non availability of labourers in peak period etc., in the rank order.

JAOs working in the IPD units perceived the high quantum of administrative work, as the most important constraint followed by untimely and inadequate supply of inputs non reliability of the data from village records, poor consumption quality of HYV of paddy, high investment for farmers in cultivating HYVs, lack taste for local varieties, lack

of adequate staff and high cost of pp chemicals. Here high cost involved and high cost of PP chemicals were the major constraints perceived by both farmers and JAOs for the successful functioning of IPD programme.

The farmers in the CP area perceived high labour requirement in following the recommended package of practices, high cost of PP chemicals , high cost involved in scientific cultivation, high cost of PP equipment, lack of irrigation facilities, high cost of fertilizers etc., as the major constraints. According to the officials of the CP programme, the high quantum of administrative work of JAOs, lack of timely action from other departments, reluctance on the part of farmers to use the required amount of pp chemicals non reliability of data from village records, lack of irrigation facilities, lack of adequate staff, misutilization of subsidy, high cost of PP chemicals etc. were the major constraints. In the case of CP programme, lack of irrigation facilities was considered as major constraints by both farmers as well as the officials of the CP programme.

High cost of PP chemicals, lack of irrigation facilities, lack of transport facilities, high cost involved in scientific cultivation, lack of marketing facilities, high cost of PP equipment etc., were the major constraints for the popper growers. The officials in charge of the PP units ranked high incidence of wilt disease, inadequate staff, high cost of PP chemicals,, heavy administrative work of JAOs reluctance on the part of farmers to use required quantities of PP chemicals, non reliability of data from village records as the major constraints.

In all the above programmes the common constraints pointed out by the JAOs in the order of importance were heavy administrative work of JAOs, non reliability of data from village records, lack of adequate staff and high cost of plant protection chemicals. Similarly farmers in all these programme areas identified high cost of plant protection chemicals and high cost involved in following scientific cultivation as the most important constraints.

SUMMARY

SUMMARY

The present study was to find out the response of the three package programmes viz. Intensive Paddy Development Programme (IPD), Coconut Package Programme (CP), and Pepper Package Programme (PP) functioning in Kerala. The specific objectives of the study were:

1. To study the farmers' knowledge and attitude towards the package programme.
2. To study the attitude of Junior Agricultural Officers towards the programme.
3. To study the effectiveness of the programme.
4. To identify the constraints in the successful functioning of the programme as perceived by both farmers and Junior Agricultural Officers.

Samples from farmers and officials were selected for the study. Sample farmers from the IPD programme was selected through a multistage sampling procedure. In the first step a district was selected by random process. The IPD units of the selected district ie. Calicut, were stratified into 2 strata ie. those with more than 5 years of

implementation and less than 5 years of implementation. From these 2 strata, one IPD unit each was selected by simple random process. CP units were also stratified into two viz., units in 'root wilt' disease free area and units in disease affected area. From the CP units in the above two area, one each was selected by random process. From the list of PP units, one unit was selected by random process. From the list of farmers of the above selected units, 30 farmers each were selected by random process. Sample farmers from areas where the package programme were not under implementation and which were similar to the selected package areas in all other respect were selected as control group. Similarly three samples of JAOs were selected from the list of officers in charge of three types of package programmes. The responses that were studied were programme knowledge, knowledge on improved practices, programme participation, attitude and adoption of improved agricultural practices of the respective crops. Data from the 240 farmers were collected through interview and from 112 JAOs through mailed questionnaire. The data were analysed using 't' test, analysis of variance and path analysis. The results of the

study are summarised as follows:-

1. There was no difference in participation in IPD programme between the farmers of the IPD areas over five years and less than five years of implementation.

2. There was no significant difference in participation in CP programme between the farmers of the CP units of the disease affected and disease free areas.

3. There was significant difference in participation between the farmers of the PP area and the CP area. It was better in PP area.

4. The farmers of the PP area showed better participation than the farmers of the IPD areas.

5. There was no significant difference in participation among the farmers of the CP areas and IPD areas implemented for less than five years.

6. The farmers of the CP area had more participation than the farmers of the IPD areas implemented for over five years.

7. There was no significant difference in participation between the farmers of the IPD units implemented for less than five years and CP units of the root wilt disease affected areas.

B. Programme knowledge

1. There was no significant difference between the farmers of the IPD areas implemented for over five years and less than five years with regard to knowledge on the unit, ela committee and IPD activities.

2. The farmers of the CP units of the disease affected and disease free areas showed no variation with regard to knowledge on CP unit and CP Committee. But farmers of the CP unit of disease affected area had better knowledge on CP activities than the farmers of the CP areas of disease free areas.

3. There was no significant difference in programme knwoeldge among the farmers of the different IPD and CP areas.

4. The farmers of the PP areas had better programme knowledge than the farmers of the IPD and CP areas.

C. Knowledge on improved practices

1. The farmers of the IPD areas had better knowledge on seed rate, fertilizer requirement, nutrient, liming and HYVs than the farmers of the control areas.

2. There was no significant difference among the farmers of CP and non CP areas with regard to knowledge on qualities of good seedlings, nutrients and cover crops.

3. The farmers of the CP areas had better knowledge on hybrid seedlings and spacing than the farmers of non-CP areas.

4. The farmers of the CP units of disease affected areas had better knowledge on fertilizer requirement than the farmers of the disease free and control areas. But there was no difference between disease free area and control area.

5. The farmers of the CP units of disease free areas had better knowledge on cover crops than the farmers of the disease affected and control areas. But the farmers of the disease affected areas had no significant difference in knowledge on this aspect than farmers of the control areas.

6. The farmers of the CP units of the disease affected areas had significant difference in the knowledge on pest and disease than the farmers of the CP units of disease free and control areas.

7. The farmers of the PP areas had better knowledge on hybrid pepper, pit size, nutrients, fertilizer requirement and pest and disease than the farmers of the non-PP areas.

8. There was no significant difference between the farmers of the IPD areas over five years and less than five years of implementation with regard to knowledge on seed rate, seed treatment, fertilizer requirement nutrients, liming and HYVs.

9. There was no difference in the knowledge on seed treatment between the farmers of the IPD areas over five years and control areas.

10. There was no difference in the knowledge on pest and disease between the farmers of the IPD units of less than five years of implementation and control areas.

11. The farmers of the PP areas had better knowledge on improved practices in cultivation than the farmers of the IPD and CP areas. There was no difference between

the farmers of CP areas and farmers of the IPD units implemented less than five years of this aspect.

D. Programme attitude

1. Majority of farmers had favourable attitude towards the different package programmes.

2. Majority of Junior Agricultural Officers had a favourable attitude towards the different package programmes.

3. There was no significant difference in attitude between the farmers of the IPD areas implemented over five years and less than five years.

4. There was no significant difference in attitude between the farmers of the CP areas of the disease free and disease affected areas.

E. Adoption

1. The adoption of improved agricultural practices for paddy was significantly more in IPD areas than in control areas.

2. The adoption of improved agricultural practices for coconut was significantly more in CP areas than control areas.

3. The adoption of improved agricultural practices for pepper was significantly more than that of control areas.

4. There was no significant difference in the adoption between the farmers of the IPD areas implemented over five years and less than five years

5. There was no significant difference in the adoption between the farmers of the CP areas of disease free and disease affected areas.

6. There was no significant difference in the adoption of improved practices among the farmers of the IPD, CP and PP areas.

E. Correlation matrix

1. In both IPD and CP programmes, programme knowledge, knowledge on improved practices, participation and attitude had significant contribution on the adoption behaviour of farmers.

2. In PP programme, only knowledge on improved practices, participation and attitude has significant contribution on the adoption behaviour of farmers. Here programme knowledge had no influence on adoption behaviour.

F. Path Analysis

1. In the case of IPD, CP and PP programme, knowledge on improved practices had maximum direct effect on adoption behaviour followed by participation.

G. Effectiveness of the package programmes as perceived by JAOs.

1. Majority of JAOs working in the IPD programme perceived that the IPD programme has helped to a very large extent in making farmers cultivate HYV,s of paddy. But the programme has not helped in collectively carrying out farm operations and making farmers participate in the common nursery programme.

2. According to 80 to 90 per cent of the JAOs working in CP programme, the CP programme has helped in increasing the yield, increasing the economic condition of farmers, increasing the area under intensive cultivation and in the timely supply of fertilizers.

3. All the JAOs of the PP programme perceived that the PP programme has helped in increasing the yield and economic condition of farmers. Majority of them opined that the programme was helped in the supply

of good quality vines and timely supply of fertilizers

Constraints

1. In the case of IPD programme the important constraints felt by farmers were high susceptability of HYVs to pest and diseases, followed by low price of HYV paddy, high cost of PP chemicals, high cost involved in following scientific cultivation, non-availability of labourers in peak period etc. The JAOs working in IPD units identified the high quantum of administrative work of JAOs, as the major constraint followed by untimely and inadequate supply of inputs, non reliability of the data from village records, poor consumption quality of HYV of paddy, high investment for farmers, the local taste for local variety, in adequate staff, high cost of plant protection chemicals etc., as the major constraints.

2. The farmers in the CP area identified high labour requirement in following the recommended package of practices, high cost of plant protection chemicals, high cost involved in scientific

cultivation, high cost of plant protection equipment lack of irrigation facilities, high cost of fertilizers etc., as the major constraints. The officials working in the CP units perceived the high quantum of administrative work of JAOs, lack of timely action from the other departments, reluctance on the part of farmers to use required amount of plant protection chemicals, non-reliability of the data from village records, lack of irrigation facilities, misutilisation of subsidy etc., as the major constraints in the functioning of CP programme.

3. In the case of the farmers of PP areas, the major constraints were high cost of plant protection chemicals, lack of irrigation facilities, lack of transport, communication and marketing facilities, high cost of plant protection equipment etc. The officials of PP area pointed out incidence of wilt disease, lack of adequate staff, high cost of plant protection chemicals, heavy administrative work of JAOs, reluctance on the part of farmers to use required quantities of plant protection chemicals, non reliability of data from

village records etc., as major constraints for the successful functioning of the PP programme.

REFERENCES

REFERENCES

Ambalagon, S. (1974). A study of factors influencing Adoption of Package of Practices for High Yielding Varieties of Paddy. 66. in Post Graduate Research in Extension., Tamil Nadu Agricultural University, Coimbatore

Basram, G.M. and Capner, H.R. (1968). Factors related to the Acceptance of New ideas and Techniques in Farming, India. Indian Journal of Extension Education. 4 (1 & 2) : 29 - 39.

Bose, S.P. (1964). The Diffusion of a farm practice in Indian Villages, Rural Sociology. 29 : 53 - 56

Brander Lowell., and Straus, (1959). Congruence Versus Profitability in the Diffusion of Hybrid Sorghum. Rural Sociology, 24 : P. 381 - 383

Chattopadhyay, S.N. (1963). A study on some psychological correlation of Adoption of Innovations in Farming. Ph.D. Thesis, New Delhi, India, Library, Indian Agricultural Research Institute.

Choubey, C.L. (1972). A study of Differential Adoption of High Yielding Wheat Varieties technology as related to and influenced by selected Demographic, Socio-Psychological and Political variables in Sehore District, Madhya Pradesh Ph.D. Thesis, Indian Agricultural Research Institute, New Delhi.

Dasgupta, S. (1965). Communication and Innovation in Indian Villages. Social Forces, 42 : 330 - 337

Edwards, A.L. (1957). Technique of Attitude Scale Construction Appleton Century Crofts, Inc., New York

Johnson, G.L. and Haver, C.B. (1953). Decision making Principles in Farm Management. Kentucky Agril.Expt. Stn. Bul. 593.

Kalcel, F.M.H. (1978). A study on the Impact of Intensive Paddy Development Programme in Kerala. M.Sc. Thesis, College of Agriculture, Vellayani.

Kerala State Planning Board. (1977). An Evaluation study of Intensive Paddy Development Programme, Evaluation division, State Planning Board, Trivandrum.

Majumdar, A.K., and Majumdar, P.K. (1967). Adoption and Some Psychological characteristics of Farmers. Indian Journal of Extension Education, 3 (3) : 138 - 142

Malhotra, S.P., Joshi, P.L., and Rao, J.S. (1974). Relative Importance of Some Socio-Economic Factors in the Adoption of Agricultural Innovations. Indian Journal of Extension Education, 10 (1 & 2) : 62 - 64

Nair, G.T. (1969). A multi variable study on adoption of High Yielding Paddy Varieties by the Farmers of Kerala State, Ph.D. Thesis. Indian Agricultural Research Institute, New Delhi.

Parameswaran, K.A. (1973). A study on the Impact of the Cotton Package Programme on the adoption of Improved Farm Practice by Farmers of Coimbatore District. M.Sc. Thesis Tamil Nadu Agricultural University,Coimbatore

Pathak, S., and Dargan, K.S. (1971). Impact of Package Programme Works on Jute Growers and their reactions to different improved practices of Jute Cultivation. Indian Journal of Extension Education, 7 (1 & 2) : 21 - 28

Pillai, G.B. (1978). A study on Adoption of Soil Conservation Measures by Farmers in Scheme areas of Trivandrum District. M.Sc. Thesis, College of Agriculture,Vellayani.

Prasad, R.N. (1978). A Study on Farmers' Functional Literacy Programme, M.Sc. Thesis, College of Agriculture, Vellayani.

Rai, H.N. (1965). Diffusion of Information and Farmers' Response in relation to an improved Farm Practices. Indian Journal of Extension Education, 1 (2) : 140

Rajendran, P. (1978). A Study of Factors affecting the Adoption of Selected Agricultural Practices, M.Sc. Thesis, College of Agriculture, Vellayani.

Rogers, E.M., and Havens, A.E. (1961). The Impact of Demonstration on Farmers' Attitude Towards Fertilizers. Wooster, Ohio Agril. Expt. Stn. R. Bul. 891.

Rogers, E.M., and Shoemaker, F.F. (1971). Communication of Innovations. A Cross - Cultural Approach. The Free Press, New York, pp. 286

Shankariah, Ch. (1965). A study of differential Characteristics of vegetable and non vegetable growers and Factors associated with Adoption of improved practices of vegetable cultivation. Unpubl. M.Sc. Thesis. Indian Agricultural Research Institute, New Delhi.

Shankariah, Ch. and Singh, K.N. (1967). Predictive Analysis of Factors related with knowledge of improved practices of vegetable cultivation. Indian Journal of Extension Education 3 (1 & 2) : 67 - 73.

Sharma, S.K. and Nair, G.T. (1974). Multivariable study of Adoption of High Yielding Varieties of Paddy. Indian Journal of Extension Education. 10 (1 & 2) : 30 - 35

* Singh, S.N. (1969). A study on Adoption of High Yielding Varieties and Investment Pattern of Additional Income by Farmers of Delhi Terriroty. PhlD. Thesis, Indian Agricultural Research Institute, New Delhi.

Singh, K.N., and Choubey, C.L. (1974). Operational Farm Size and differential Adoption of High Yielding Varieties of Wheat. Indian Journal of Extension Education. 10 (1 & 2) : 42-46

Singh, B.N., Jaiswal, N.K., and Thakur, R.S. (1966). Attitude of Farmers Towards Intensive Agricultural District Programme. Indian Journal of Extension Education, 2 (3 & 4): 156-162

Singh, S.N, and Singh, K.N. (1970). A multi variable Analysis of Adoption Behaviour of Farmers. Indian Journal of Extension Education. 6 (3 & 4) : 39 - 44

Singh, K.M.P., and Singh, R.P. (1974). Impact of National Demonstration in the Adoption of High Yielding Varieties of Wheat. Indian Journal of Extension Education, 10 (1 & 2) 65 - 67

Sinha, B.P., Jaiswal, N.K., and Singh, B.N. (1968). Analysis of the Pre-Service Training Programme of Agricultural Extension Officers. Indian Journal of Extension Education, 4 (3 & 4): 17 - 27

Snedecor, W.G., and Cochran, G.W. (1967). Statistical Methods. Oxford IBH Publishing Co., New Delhi. pp. 403 - 406

Supe, S.V. (1969). Factors related to different Degree of Rationality on Decision Making among farmers in Buldana district, Ph.D. Thesis, Indian Agricultural Research Institute, New Delhi India.

Tubbs, S.L. and Moss, S. (1977). Human Communication, Random House. Inc., New York.

Viswanathan, N. (1975). Impact of High Yielding Varieties of Rice on Small Farmers, M.Sc. Thesis, Coimbatore, Tamil Nadu Agricultural University, Coimbatore.

* Williams, M.S. (1958). Farmers Decisions in the use of Fertilizers. Journal of Farm Economics. 40 : 1407 - 17

Wolman, Benjamin. B. (1973). Dictionary of Behavioural Sciences Van Nostrand Reinhold Company, New York.

* Orginal not seen

APPENDICES

APPENDIX I

CALCULATION OF COEFFICIENT OF REPRODUCIBILITY

Respondents No.	Statements												Scores
	1		2		3		4		5		6		
	1	0	1	0	1	0	1	0	1	0	1	0	
1	x		x		x		x		x		x		6
6	x		x		x		x		x		x		6
9	x		x		x		x		x		x		6
13	x		x		x		x		x		x		6
14	x		x		x		x		x		x		6
15	x		x		x		x		x		x		6
16	x		x		x		x		x		x		6
17	x		x		x		x		x		x		6
19	x		x		x		x		x		x		6
20	x		x		x		x		x		x		6
33	x		x		x		x		x		x		6
35	x		x		x		x		x		x		6
36	x		x		x		x		x		x		6
38	x		x		x		x		x		x		6
39	x		x		x		x		x		x		6
40	x		x		x		x		x		x		6
41	x		x		x		x		x		x		6
42	x		x		x		x		x		x		6
44	x		x		x		x		x		x		6
45	x		x		x		x		x		x		6
46	x		x		x		x		x		x		6
47	x		x		x		x		x		x		6

APPENDIX I Continued

Respondents No.	Statements												Scores
	1		2		3		4		5		6		
	1	0	1	0	1	0	1	0	1	0	1	0	
48	x		x		x		x		x		x		6
49	x		x		x		x		x		x		6
50	x		x		x		x		x		x		6
51	x		x		x		x		x		x		6
52	x		x		x		x		x		x		6
53	x		x		x		x		x		x		6
55	x		x		x		x		x		x		6
57	x		x		x		x		x		x		6
58	x		x		x		x		x		x		6
61	x		x		x		x		x		x		6
62	x		x		x		x		x		x		6
63	x		x		x		x		x		x		6
69	x		x		x		x		x		x		6
78	x		x		x		x		x		x		6
2	x			x	x		x		x		x		5
3	x			x	x		x		x		x		5
4	x			x	x		x		x		x		5
5	x			x	x		x		x		x		5
7	x			x	x		x		x		x		5
8	x			x	x		x		x		x		5
10	x			x	x		x		x		x		5
11	x			x	x		x		x		x		5
12	x			x	x		x		x		x		5
21	x			x	x		x		x		x		5
22	x			x	x		x		x		x		5
23	x			x	x		x		x		x		5
24	x			x	x		x		x		x		5
25	x			x	x		x		x		x		5
26	x			x	x		x		x		x		5

APPENDIX I Continued

Respondents No.	Statements 1		2		3		4		5		6		Scores
	1	0	1	0	1	0	1	0	1	0	1	0	
27	x			x	x		x		x		x		5
28	x			x	x		x		x		x		5
29	x			x	x		x		x		x		5
30	x			x	x		x		x		x		5
31	x			x	x		x		x		x		5
32	x			x	x		x		x		x		5
37	x			x	x		x		x		x		5
43	x		x		x			x	x		x		5
54	x		x		x			x	x		x		5
56	x		x		x		x			x	x		5
59	x			x	x		x		x		x		5
60	x		x		x		x			x	x		5
64	x		x		x		x		x			x	5
67	x		x		x		x			x	x		5
70	x			x	x		x		x		x		5
75	x		x		x		x			x	x		5
80	x		x		x		x		X			x	5
10	x			x	x		x			x	x		4
34	x			x	x		x			x	x		4
66	x		x		x		x			x		x	4
72	x			x		x	x		x		x		4
65	x			x	x			x		x	x		3
73	x		x			x		x		x		x	2
71		x		x		x		x	x			x	1
74		x	x			x		x		x		x	1
76		x		x		x		x		x	x		1
77		x		x		x		x	x			x	1
79		x		x		x		x	x		x		1
68		x		x		x		x		x		x	0
f	74	6	47	33	72	8	70	10	67	13	72	8	
p & q	.93	.07	.59	.41	.90	.10	.88	.12	.84	.16	.90	.10	
σ	0	0	11	0	1	0	0	2	7	0	2	3	Σσ=26

APPENDIX II

Questionnaire for Junior Agricultural Officers.

A. I.P.D Programme

I. As the Junior Agricultural Officer of the IPD Unit, state to what extent in your opinion the I.P.D. programme has helped in carrying out the following activities by giving a tick (✓) mark in the appropriate column for each

Sl.No.	Activities	Helped to very large extent	Helped to a large extent	To some extent	Not helped
1.	Making farmers of the ela cultivate same variety of paddy.				
2.	Making farmers cultivate HYV of paddy.				
3.	Collectively ensuring the inputs by the farmers of the Ela.				
4.	Collectively conducting farm operations by the farmers of Ela.				
5.	Collectively carrying out plant protection measures by the farmers.				
6.	Ensuring collective water management practices by the farmers.				
7.	Making farmers' participation in common nursery programme.				

APPENDIX II Continued

II. Below are giv n a set of problems collected through discussion with some JAOs which may or may not be important in the functioning of IRD programme. Different people might have experienced different difficulties. Please indicate whether as a JAO you have experienced any of the following difficulties and if so to what extent by marking the a propriate column against the statements. If other problems that the ones listed have been experienced, please write them at the end.

Sl. No.	Problems	Most important	Important	Least important
1	2	3	4	5
1.	Adequate staff is not available for the basic data collection.			
2.	The JAO has to do a lot of other administrative works.			
3.	The farmers' cooperation is limited in the data collection process.			
4.	Ela committee is found ineffective in the data collection process.			
5.	Data obtained from village records and other establishments are not up-to-date.			
6.	In the preparation of plan no good suggestions are brought out by the Ela committee.			
7.	In the preparation of plant, the national policy or national priority on certain aspects is a barrier for the local development programme.			
8.	Practically no hel is attained from the district authorities in the preparation of plan.			
9.	High yielding varieties are highly susceptable to pest and diseases.			

APPENDIX II Continued

1	2	3	4	5
10.	High fertilizer recommendation for HYVs.			
11.	High investment prevents farmers from cultivating HYVs.			
12.	The consumption quality of HYV is poor.			
13.	The local taste for local variety of grains.			
14.	The high cost technology is involved in following the recommended package of practices.			
15.	Lack of proper technology to deal with present problems.			
16.	Though training classes are arranged the idea is not duplicated in the field.			
17.	Low price of HYV paddy prevent farmers from cultivating HYVs.			
18.	Eventhough farmers are aware of the liming practices, they do not apply the recommended quality.			
19.	High labour consumption prevents farmers from transplanting and to do broadcasting which results in low yield.			
20.	Local disputes in sharing water available in the area arises.			
21.	Mis utilisation of M.I. works like bunds for fish farming.			
22.	Chemical weeding not done due to high cost of chemical.			

APPENDIX II Continued

1	2	3	4	5
23.	Irrigation facilities in the IPD area is very poor.			
24.	Floods affect the crop adversely.			
25.	Cost of plant protection chemicals are very high.			
26.	The plant protection equipments cost high.			
27.	The farmers do not use the required quantity of plant protection chemicals.			
28.	The availiability of labour is limited during peak season which does not favour uniformity in cultivation.			
29.	The availability of bullock pairs and plough man is limited.			
30.	The tractor facilities are poor.			
31.	Farm labourers raise objection to tractor farming.			
32.	Fragmented holdings do not favour uniformity of cultivation.			
33.	Non cooperation of farmers act as a barrier in carrying out plant protection activity on a community basis.			
34.	As topography of land differs, varieties suitable also differe.			
35.	Farmers of an area differ in education and economic status which does not help in uniformity of cultivation.			
36.	Varietal preference of farmers is a difficulty in implementing common nursery programme.			

APPENDIX II Continued

1.	2	3	4	5
37.	People's participation is limited in the IPD units.			
38.	Raising common nursery is difficult as it difficult to get sufficient land in a compact area.			
39.	Risk due to pest, disease and other climatic conditions do not favour common nursery.			
40.	Non availability of good seeds suited to a locality.			
41.	Department loan for HYV cultivation is not given for the 1st crop.			
42.	When the procedure for sanctioning of loans are finalised, the crop will be in a late harvest stage.			
43.	Untimely and inadequate supply of inputs.			
44.	The farmers do not fully utilize the 25 % subsidy offered by the Department of Agriculture for purchase of P.P.equipments.			
45.	Non availability of HYV seeds in sufficient quantity.			
46.	Farmers misuse the subsidy availed to them.			
47.	Uncertanity regarding the availability of good quality seeds.			
48.	Delay in getting the subsidy and funds for common nursery			
49.	Demand for a particular variety of seedling.			

Any other problems (Specify)

1.

2.

3.

4.

III. Below are given 6 statements regarding the IPD programme. Please indicate your agreement or disagreement to the statement by marking (✓) against each statement in the appropriate column.

Sl. No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree.
1	2	3	4	5	6	7
1.	IPD programme has brought out a new out look in the field of agriculture					
2.	Paddy production can be increased only through IPD programme.					
3.	IPD programme is a blessing to the paddy growers.					
4.	More area must be brought under IPD programme.					
5.	IPD programme is not directly giving any help for increasing Paddy production					
6.	In IPD programme, there is nothing new to be offered to the farmers.					

APPENDIX II Continued

b) C.P Programme

I. Please give your opinion on the following by choosing one of the alternatives, either 'Yes' or 'No'.

1. Has the coconut package programme helped in increasing the coconut production of Kerala	Yes/No
2. Has the coconut package programme helped in increasing the economic condition of farmers.	Yes/No
3. Has the coconut package programme helped in the supply of good quality seedlings to farmers	Yes/No
4. Has the area of coconut under intensive cultivation increased due to the efforts of CP programme.	Yes/No
5. Has the programme helped in providing sufficient quantity of fertilizers in the right time to the farmers.	Yes/No
6. Has the programme helped the farmers to purchase pumpsets for irrigation	Yes/No

II

IV. Below are given a set of problems collected through discussion with some JAOs' which may or may not be important in the functioning of a Coconut Package Programme. Different people might have experienced different difficulties. Please indicate whether as a JAO you have experienced any of the following difficulties and if so to what extent by marking in appropriate column against the statements. If other problems than the ones listed have been experienced, please write them at the end.

Sl. No.	Problems	Most Important problem	Important problem	Least important problem
1.	Adequate staff is not available for the basic data collection.			
2.	JAO has to do a lot of work administrative works.			
3.	Farmers cooperation is limited in the data collection process.			
4.	The coconut package committee is found ineffective in the collection of data.			
5.	Data obtained from village records and other establishments are not up-to-date.			
6.	In the preparation of plan the national policy in certain aspects is a barrier for the local development programmes.			
7.	Practically no help is attained from district authorities in the preparation of plan.			
8.	In the preparation of plan, no good suggestions are brought out by the coconut package committee.			

APPENDIX II Continued

Sl. No.	Problems	Most important problem	Important problem	Least important problem
9.	The responsibilities of extension personel is not well defined allocated or quantified.			
10.	Subordinate staff are not working effectively.			
11.	There is no adequate power to control the activities of subordinates.			
12.	Timely action from other departments (like minor irrigation, electricity, cooperatives etc.) are not obtained.			
13.	Adequate staff is not available in coconut package unit.			
14.	Adequate staff is not available to send reports in time.			
15.	The proforma for reporting is not need oriented, uniform not objective.			
16.	Lack of adequate funds for the various programmes.			
17.	Lack of flexibility and authorisation of the budget.			
18.	Lack of proper technology to deal with the present problem.			
19.	High cost technology to deal involved in following the recommended package of practices.			
20.	High labour consumption prevents farmers from following recommended package of practices.			

APPENDIX II Continued

Sl. No.	Problems	Most important problem	Important problem	Least important problem
21.	Individual size of holding is very small to carry out intensive cultivation.			
22.	High fertilizer recommendations and resultant investment prevents farmers from applying the recommended dose of fertilizers as per package of practices.			
23.	Farmers are not aware of the importance of irrigation in coconut gardens.			
24.	Local disputes in sharing the water available in the area.			
25.	Irrigation facilities in the CP unit is very poor.			
26.	Flood affect the coconut palm adversely.			
27.	The seedlings distributed through agricultural department is not reliable.			
28.	Farmers are not prepared to distroy their old and diseased coconut palms for planting new ones.			
29.	Though training classes are arranged the idea is not duplicated in the field.			
30.	Peoples' participation is limited in the CP units.			
31.	The cost of plant protection chemicals are very high.			

APPENDIX II Continued

Sl. No.	Problems	Most important problem	Important problem	Least important problem.
32.	The farmers do not use the required amount of plant protection chemicals.			
33.	The PP equipment are very costly.			
34.	There is the problem of soil erosion in coconut gardens.			
35.	Lack of proper supervision and control to the works done.			
36.	Root wilt disease			
37.	Majority of farmers are not interested in grown green manure crop.			
38.	Non availability of good and disease free seedlings.			
39.	Untimely and inadequate supply of inputs.			
40.	The procedure for sanctioning of loans take much time.			
41.	The farmers are not utilizing the loans provided for purchase of pumpsets to irrigate coconut gardens.			
42.	Farmers are subsidy minded and so they will accept schemes just to avail subsidy.			
43.	The viability of service cooperative for credit is not dependable.			

Sl. No.	Problems	Most important problem	Important problem	Least important problem
44.	In commercial banks, staff for processing and sanctioning loans is insufficient.			
45.	Lack of funds.			

Any others, specify below :

1.

2.

3.

4.

III. Below are given 6 statements regarding coconut package programme. Please indicate your agreement, disagreement by marking (✓) against each statement in the appropriate position.

Sl. No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	Coconut package programme has brought out a new out look in the field of agriculture.					
2.	Coconut production can be increased only through CP programme.					
3.	Coconut package programme is a blessing to coconut growers.					
4.	More area must be brought under CP programme.					

APPENDIX II Continued

Sl. No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
5.	C.P. Programme is not directly giving any help for increasing coconut production.					
6.	In C.P. programme, there is nothing new to be offered to the farmers.					

c) Pepper Package Programme

I. Please give your opinion on the following by choosing one of the alternative, either Yes/No.

1. Has the pepper package programme helped in increasing the pepper production of Kerala — Yes/No
2. Has the pepper package programme helped in increasing the economic condition of farmers — Yes/No
3. Has the pepper package programme helped in the supply of good quality pepper cuttings to the farmers — Yes/No.
4. Has the programme helped in providing sufficient quantity of fertilizers in the right time to the farmers — Yes/No

IV. Below are given a set of problems collected through discussion with some Junior Agricultural Officers, which may or may not be i portant in the functioning of a P.P.programme. Different people might have experienced different difficulties. Please indicate whether as a JAO, you have experienced any of the following difficulties and if so to what extent by making in appropriate column against the statements. If other problems than the ones listed have been experienced, please write them at the end.

(P.P.Programme : Pepper Package Programme)

Sl. No.	Problems	Most important problem	Important problem	Least important problem
1	2	3	4	5
1.	Adequate staff is not available for the basic data collection.			
2.	JAO has to do a lot of other administrative works.			
3.	Farmers cooperation is limited in the data collection process.			
4.	There is no committee to help the data collection process.			
5.	Data obtained from village records and other establishments are not up-to-date.			
6.	In the preparation of plan, the national policy in certain aspects is a barrier for the local development programme.			
7.	Practically no help is attained from district authorities in the preparation of plan.			
8.	The responsibilities of an extension personal is not well defined allocated or quantified.			

APPENDIX II Continued

1	2	3	4	5

9. Subordinate staff are not working effectively.

10. There is no adequate power to control the activities of subordinates.

11. Time of action for other departments (like minor irrigation, Electrical, Cooperative etc.) are not obtained.

12. Adequate staff is not available in pepper package.

13. Adequate staff is not available to send reports in time.

14. The proforma for reporting is not need oriented, uniform nor objective

15. Lack of adequate funds for the various programmes.

16. Lack of flexibility and authorisation of the budget.

17. Lack of proper technology to deal with the present problems.

18. High cost technology is involved in following the recommended package of practices.

19. High labour consumption prevent farmers following the recommended package of practices.

20. High fertilizer recommendation.

21. High investment prevent farmers from applying the recommended dose of fertilizers as per package of practices.

22. Irrigation facilities are poor in the pepper package area.

1	2	3	4	5
23.	Flood may affect the vines adversely			
24.	Though training classes are arranged the idea is not duplicated in the field.			
25.	Peoples participation is limited in the pepper package units.			
26.	Cost of plant protection chemicals are very high.			
27.	Farmers do not use the required amount of PP chemical.			
28.	The PP equipments are very costly.			
29.	Pollu beetle attack.			
30.	Quick and slow wilt disease			
31.	Only big farmers are interested in this scheme.			
32.	Non availability of good hybrid (Panniyoor) variety vines.			
33.	Untimely and inadequate supply of inputs.			
34.	Procedure for sanctioning of loans take much time.			
35.	Misutilisation of the fertilizers and PP chemicals supplied through the unit.			
36.	The subsidy given for purchase of pumpsets, sprays, fertilizers PP chemicals etc. is not properly utilized by the farmers.			
37.	The viability of service cooperatives for credit is not dependable.			

If any other, specify below:

III Below are given 6 statements regarding pepper package program e. Please indicate your agreement or disagreement to the statements by marking (✓)mark against each statement.

Sl. No.	Statements	Strongly agree	Agree	Undeci ded	Dis- agr- ee	Strong- ly dis- agree
1.	Pepper package programme has brought out a new out look in the field of agri- culture.					
2.	Pepper production can be increased only through pepper package programme.					
3.	Pepper package programme is a blessing to pepper growers.					
4.	More area must be brought under pepper package programme.					
5.	Pepper package programme is not directly giving any help for increasing pepper production.					
6.	In pepper package programme, there is nothing new to be offered to the farmers.					

APPENDIX III

INTERVIEW SCHEDULE FOR FARMERS

a) I.P.D Programme

Name:

Address:

I. Do you know about IPD programme Yes/No

If yes,

1. Which is your nearest IPD Unit

2. When did it start

3. What is the main objective of IPD programme

4. Do you know about Dia Committee Yes/No

If yes

a)

b)

c)

d)

II.A. What are the activities carried out in IPD programme for achieving the objective of increasing rice production?

1.

2.

3.

4.

5.

6.

7.

B1. Do you cultivate HYVs of rice ? Yes/No

2. Do you participate in community nursery scheme Yes/No

3. Are you utilizing the minor irrigation scheme Yes/No

4. Are you adopting multiple cropping Yes/No

5. Are you participating in uniformity of cultivation Yes/No

6. Have you participated in any seminars or camps of IPD programme Yes/No

7. Are you utilising the credit facilities of IPD programme Yes/No

IV. Below are given a set of 6 statements regarding the IPD program e. Please indicate your agreement or disagreement towards each statement.

Sl.No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1	2	3	4	5	6	7
1.	IPD programme has brought out a new out look in the field of agriculture.					
2.	Paddy production can be increased only through IPD programme					
3.	IPD programme is a blessing to the Paddy growers					

1 2 3 4 5 6 7

4. Lore area must be brought under IPD programme.

5. IPD rogramme is not directly giving any help for increasing paddy production.

6. In IPD programme, there is nothing new to be offered to the farmers.

V. Below are given a set of problems collected through discussion with some of the farmers which may or may not be important to you for adopting the IPD programme. Please indicate your importance as experienced by you.

Sl.No.	Items	Most important	Important	Least important
1	2	3	4	5
1.	High fertilizer recommendation for the cultivation of HYVs of paddy.			
2.	HYVs are highly susceptable to pest and diseases.			
3.	Consumption quality of HYV is poor.			
4.	High cost technology is involved in the following the scientific method of cultivation.			
5.	Low price of HYV paddy			
6.	There is no effect for liming			
7.	Liming is expensive			
8.	High labour consumption involved for transplanting.			

1	2	3	4	5

9. High cost of chemicals for chemical weeding.

10. Irrigation facilities in the IPD area is very poor.

11. Flood

12. The cost of plant protection chemicals are very high.

13. The P.P.equipments cost high.

14. The availability of labour is limited duringpeak season which does not favour uniformity of cultivation.

15. The availability of bullock pairs and ploughmen is limited.

16. The tractor facilities are poor.

17. The seminars and discussions conducted in IPD unit is not based on cultivators needs.

18. The seedlings supplied through common nursery is not of good quality.

19. Non availability of good quality seeds.

20. Lack of proper communication facilities.

21. Lack of marketing facilities.

22. Lack of proper transport facilities.

23. Lack of Capital

24. Lack of proper storage facilities.

25. The procedure for sanctioning of loans take time.

1	2	3	4	5

26. Untimely and inadequate supply of inputs.

If any others (specify)

VI. a) How much quantity of seed material is required for scientific paddy cultivation in 1 acre.

Broadcasting . . . . . .

Transplanting . . . . . .

b) How much quantity of seed material did you use for your last crop ?

Broadcasting . . . . . .

Transplanting . . . . . .

2 a) Is there necessity for seed treatment ? Yes/No

If yes, what is the advantage ?

Do you know the method of seed treatment ? Yes/No

If yes,

Name of Chemical . . . . . .

Quantity . . . . . .

Method . . . . . .

b) Have you done seed treatment ? Yes/No

If yes,

Name of Chemical . . . . . .

Quantity . . . . . .

Method . . . . . .

3. a) What are the nutrient requirement of Paddy, and which fertilizer is the source.

Nutrient	Source
Nitrogen	
Phosphorus	
Potash	

b) Do you know the fertilizer requirement for 1 acre of paddy crop ? Yes/No.

If yes,

Name of fertilizer	Quantity	Time of application
1.		
2.		
3.		

c) Have you applied fertilizer for paddy crop ? Yes/No

If yes,

Name of fertilizer	Quantity	Time of application
1.		
2.		
3.		

APPENDIX III Continued

4. a) Is there necesity for liming in paddy fields : Yes/No

If yes,

1. What is the advantage . . . . . .

2. What is the quantity required for 1 acre of land . . . .

3. What is the quantity used by you in 1 acre of land ....kg.

5. a) What are the major pest and diseases of paddy ?

b) Mention the chemical control for each

Name of pest and diseases	Name of chemical	Quantity
1. Rice bug		
2. Stem borer		
3. Leaf roller		
4. Case worm		
5. Sheath blight		
6. Blast		
7.		
8.		

c) Was there any pest or disease problem for your last crop:Yes/No

If yes, what were they and what control did you take

Name of pest and disease	Name of chemical used	Quantity
1.		
2.		
3.		
4.		

APPENDIX III Continued

6. a) Give the names of 2 HYVs of Paddy and their duration, suitable to your locality.

Name of seed	Duration
1.	
2.	

b) Have you cultivated HYV of Paddy : Yes/No

If yes, name them

1.

2.

b) C.P. Programme

Name :

Address:

1. Do you know about Coconut Package Programme Yes/No

If yes,

1. Which is your nearest CP unit . . . . . .
2. When did it start . . . . . .
3. What is the main objective of CP programme ?

4. Do you know about CP committee Yes/No

If yes, what are the roles/functions

1.
2.
3.

II. What are the activities carried out rhrough CP programme ?

A. 1.
2.
3.
4.
5.
6.

B.1. Are you managing your coconut garden as per recommendation of package of practices — Yes/No

2. Are you doing intercropping and mixed cropping in your coconut garden — Yes/No

3. Are you growing green manure crops in your coconut garden — Yes/No

4. Have you purchased any pumpset through CP programme — Yes/No

5. Have you replanted your old and uneconomic coconut garden with new seedlings — Yes/No

6. Are you utilising the inputs and credit facilities of CP programme — Yes/No

IV. Below are given a set of 6 statements regarding the CP programme, Please indicate your agreement or disagreement towards each statement.

Sl. No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	CP programme has brought out a new outlook in the field of agriculture.					
2.	Coconut production can be increased only through CP programme.					
3.	Coconut package programme is a bless in to coconut growers.					
4.	More area must be brought under CP programme					
5.	CP programme is not directly giving any help for increasing coconut production					
6.	In coconut package programme, there is nothing new to be offered to the farmers					

APPENDIX III Continued

V. Below are given a set of problems collected through discussion with some of the farmers which may or may not be important to you adopting the CP programme. Please indicate your importance as experienced by you.

Sl. No.	Problems	Most important	Important	Least important
1.	High cost technology is involved in following the recommended package of practices			
2.	High labour consumption is required for following the recommended package of practices.			
3.	High fertilizer recommendation			
4.	Cost of fertilizers very high			
5.	Lack of proper irrigation facilities.			
6.	Flood damages the crop			
7.	The seedlings distributed through agricultural department is not reliable.			
8.	Chemical weeding is much expensive			
9.	Cost of weedicides are very high.			
10.	Cost of the seedlings are very high			
11.	The training camps and seminars conducted through CP unit are not useful.			
12.	Cost of plant protection chemicals are very high.			
13.	The cost of PP equipments are very high.			
14.	Soil erosion is a problem			

APPENDIX III Continued

Sl. No.	Problems	Most important	Important	Least important
15.	Lack of supervision and guidance from the officers concerned			
16.	Root wilt disease.			
17.	Lack of communication facilities.			
18.	Lack of transport facilities.			
19.	Lack of marketing facilities.			
20.	Green manure cultivation is a waste of money.			
21.	Untimely and inadequate supply of inputs.			
22.	Non availability of good and diseased free seedlings.			
23.	Procedure for sanctioning of loans take much time.			
24.	Lack of adequate capital			
	If any others (specify)			
	a.			
	b.			
	c.			

VI. 1. a) Name 2 hybrid varieties of Coconut

1.

2.

b) Have you planted hybrid coconut palms Yes/No

If yes, what is the benefit ?

If no, what is the reason ?

2. a) What are the qualities of good coconut seedlings.

   1.

   2.

   3.

   b) Do you observe any of the above qualities in selecting your coconut seedlings : Yes/No

3. a) What is the spacing recommended for planting coconut palms ....

   b) Have you planted the coconut palms at the above spacing? Yes/No

4. a) What is the nutrient requirement of coconut and which fertilizer is the source ?

Nutrient	Source
Nitrogen	
Phosphate	
Potash	

   b) What is the fertilizer dosage for

	N	P_2O_5	K_2O
1. Young palms			
2. Adult palms			
3. Hybrid palms			

   c) What is the quantity of fertilizer applied by you ?

	N	P_2O_5	K_2O
Young palms			
Adult palm			
Hybrid palm			

5. a) How is the weeding and intercultural operations done in coconut garden

b) Are you following weeding and intercultural operations in coconut gardens : Yes/No

6.a) Name 2 green manure crops suitable for coconut garden

1.

2.

b) Are you cultivating green manure : Yes/No

7.a) Name 2 cover crops suitable for coconut garden

1.

2.

b) Are you growing cover crops : Yes/No

8. a) What are the major pest and diseases of coconut.

b) Mention the chemical control for each:

Name of pest & diseases	Name of chemical	Quantity
1. Rhinoceros beetle		
2. Red palm weevil		
3. Black headed caterpiller		
4. Bud rot		
5. Leaf rot		
6. Root wilt		
7. Stem bleeding		
8.		
9.		

c) Is there any pest or disease problem for your coconut palms : Yes/No

APPENDIX III Continued

If yes, what are they and what control measure did you adopt ?

Name of pest and diseases	Name of chemical used	Quantity used
1.		
2.		
3.		
4.		
5.		
6.		
7.		

APPENDIX III Continued

c) PP programme

Name:

Address :

1. Do you know about pepper package programme ? Yes/No

If yes,

a) Which is the nearest PP unit . . . . . .
b) When did it start . . . . . .
c) What is the main objective of PP programme

II. What are the activities carried out rhrough PP programme

A.1.

2.

3.

4.

5.

B.1. Are you managing your pepper garden as per package of practices : Yes/No

2. Are you cultivating hybrid pepper vines : Yes/No

3. Have you purchased pumpsets through PP programme : Yes/No

4. Have you replanted your old and uneconomic pepper gardens with new vines : Yes/No

5. Are you utilising the inputs and credit facilities of PP programme : Yes/No

APPENDIX III Continued

IV. Below are given a set of 6 statements regarding the PP programme. Please indicate your agreement or disagreement towards each statement.

Sl. No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	Pepper package programme has brought out a new out look in the field of agriculture					
2.	Pepper production can be increased only through pepper package programme.					
3.	Pepper package programme is a blessing to pepper growers					
4.	More area must be brought under pepper package programme					
5.	Pepper package programme is not directly giving any help for increasing pepper production					
6.	In pepper package programme there is nothing new to be offered to the farmers					

V. Below are given a set of problems collected through discussion with some of the farmers which may or may not be important to you for adopting the pepper package programme. Please indicate your importance as experienced by you.

Sl. No.	Problems	Most important	Important	Least important
1	2	3	4	5
1.	High cost technology is involved in following the recommended package of practices.			

1	2	3	4	5

2. High labour consumption is required in the following the recommended package of practices.

3. High fertilizer recommendation.

4. Cost of fertilizers very high.

5. Lack of proper irrigation facilities.

6. Flood

7. The pepper vines distributed through the pepper package unit is not reliable

8. The training camps and seminars conducted through pepper package unit is not useful

9. Cost of plant protection chemicals are very high

10. The cost of PP equipment are very high.

11. Lack of proper supervision and guidance from the officers concerned.

12. Pollu beetle attack

13. Quick and slow wilt disease

14. Lack of communication facilities.

15. Lack of transport facilities

16. Lack of marketing facilities

17. Lack of storage facilities

18. Non availability of good hybrid variety vines.

1	2	3	4	5

19. Untimely and inadequate supply of inputs.

20. Procedure for sanctioning of loans take much time.

21. Lack of adequate capital

If any others (specify)

VI. 1. (a) Name 1 hybrid variety of pepper . . . . . .

(b) Have you planted hybrid pepper vines : Yes/No

2. (a) What is the recommended pit size for planting pepper cuttings.....

(b) What is the pit size of your pepper plantation.

2. (a) What are the nutrient requirement of pepper vines and state the source.

Nutrients	Source
Nitrogen	
Phosphate	
Potash	

(b) What is the fertilizer dosage ?

	N	P_2O_5	K_2O
Nutrient dosage (gram/vine/year)			

APPENDIX III Continued

c) What is the fertilizer dosage applied by you ?

	N	P_2O_5	K_2O
Nutrient dosage (gram/vine/year)			

4 (a) What are the major pest and disease of pepper ?

(b) Mention the control measure for each

Sl. No.	Name of pest and diseases	Name of chemical	Quantity
1.	Pollu beetle		
2.	Quick wilt		
3.	Slow wilt		

c) Is there any pest or disease problems for your pepper vines : Yes/No

If yes, what are they and what control measures did you adopt ?

Sl. No.	Name of pest and diseases	Name of chemical used	Quantity of chemical used
1.			
2.			
3.			
4.			
5.			

APPENDIX IV

ABSTRACT OF ANOVA

1) KNOWLEDGE OF FARMERS ON IMPROVED PRACTICES OF PADDY CULTIVATION

Source	df	Mean Square						
		Seed rate	Seed treatment	Fertilizer requirement	Nutritional requirement	Liming	Pest and disease	HYVs & duration
Groups	2	9.033**	6.933*	57.144**	70.433**	2.977**	10.411**	22.344**
Error	87	0.711	1.546	10.193	4.823	0.563	0.650	1.706

* Significant at 0.05 level
** Significant at 0.01 level.

2. KNOWLEDGE OF FARMERS ON IMPROVED PRACTICES OF COCONUT CULTIVATION

Source	df	Mean Square							
		Hybrid varieties	Qualities of good seedlings	Spacing	Nutrient requirement	Fertiliser requirement	Green manure	Cover crops	Pest & diseases
Groups	3	2.020**	0.727	1.030**	7.350	9.600*	1.430**	0.071	15.572**
Error	86	0.400	0.469	0.146	7.570	2.640	0.230	0.030	1.411

* Significant at 0.05 level
** Significant at 0.01 level.

APPENDIX IV Continued

3. COMPARISON OF ADOPTION ALONG PACKAGE AND NON-PACKAG AREAS

Source	IPD programme df	IPD programme MS	CP programme df	CP programme MS
Groups	2	13592.05**	3	5136.63**
Error	87	709.76	86	604.79

** Significant at 0.01 level.

4. COMPARISON OF IPD, CP AND PP AREAS WITH R SPECTS TO ADOPTION, PROGRAMME KNOWLEDGE, KNOWLEDGE ON IMPROVED PRACTICES, PARTICIPATION AND ATTITUDE OF FARMERS

Source	df	Mean Square Adoption	Programme knowledge	Knowledge on improved practices	Participation	Attitude
Groups	4	1962.656	0.098**	0.445**	0.278**	12.900
Error	145	878.949	0.023	0.036	0.057	14.522

** Significant at 0.01 level.

RESPONSE OF SPECIAL PACKAGE PROGRAMME FOR AGRICULTURAL DEVELOPMENT IN KERALA

BY

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ABSTRACT OF A THESIS
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ABSTRACT

This study was designed to measure the programme participation, programme knowledge, knowledge on improved practices and adoption of farmers in the IPD, CP and PP units of Kerala State. Samples of farmers from the three types of units were selected by random sampling process. Sample of JAOs of the units was also selected to collect data. The analysis revealed the following.

1. There was no significant difference in programme participation between the farmers of the IPD units implemented over five years and less than five years and also between the farmers of the CP areas of disease free and disease affected areas.

2. The farmers of PP areas showed better participation than the farmers of IPD areas. But there was no difference between the farmers of the PP and CP areas.

3. There was no significant difference in programme knowledge among the farmers of the different IPD and CP areas.

4. Farmers of PP areas had better programme knowledge than the farmers of the IPD and CP areas.

5. The farmers of IPD areas had better knowledge on seed rate, fertilizer requirement, nutrients, liming and HYVs than the farmers of the control areas. The farmers of CP areas had better knowledge on hybrid seedlings and spacing than control areas. The knowledge on hybrid pepper, pit size, nutrients, fertilizer requirement and pest and diseases were more in the case of farmers of PP areas than control areas.

6. Majority of JAOs and farmers had a favourable attitude towards the respective package programmes.

7. The adoption of improved agricultural practices was more in all the package areas than the control areas.

8. In both IPD and CP programmes, programme knowledge knowledge on improved practices, participation and attitude had significant influence on adoption behaviour. But in the case of PP program e, programme knowledge had no significant influence.

9. The results of path analysis showed that in all the three programmes, knowledge on improved practices had maximum direct effect on adoption behaviour.

10. In all the three package programmes the major common constraints perceived by the JAOs were heavy administrative work, non-reliability of data from village records, in-adequate staff and high cost of plant protection chemicals. But in the case of farmers, high cost of plant protection chemicals and high cost involved in following scientific cultivation were the major common constraints.