FEASIBILITY ANALYSIS OF GROUP APPROACH IN THE TRANSFER OF PEPPER PRODUCTION TECHNOLOGY

By

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THESIS

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DECLARATION

I hereby declare that this thesis entitled, **"Feasibility analysis of group approach in the transfer of pepper production technology"**, is a bonafide record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title, of any other University or Society.

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CERTIFICATE

Certified that this thesis entitled, **"Feasibility analysis of group approach in the transfer of pepper production technology"**, is a record of work done independently by **Mr. John, T.D.,** 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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CHAPTER I

INTRODUCTION

Pepper, otherwise known as the 'King of Spices' is one of the most important spices grown in India. Among the export oriented spices commercially cultivated in the country, pepper has a unique position.

Among the pepper producing countries of the world, India stood first both in area and production, till recently. During 1989, Indonesia surpassed India's production pushing it to the second position. However, India still holds a key position in the world scenario as far as pepper production is concerned, which is clear from Table 1 which presents the area, production and productivity of pepper in major pepper producing countries.

Among the spices exported from India, pepper is the most important one, as it brings home a sizeable chunk of the foreign exchange earned from export of spices. The annual export earnings from pepper ranges from 153 to 240 crores of rupees which account for 55 to 80 per cent of the total earnings from spices. The export of pepper from India and its share in the total export of spices is furnished in Table 2.

Among the pepper producing states in India, Kerala has a distinct position as 97 per cent of the area under cultivation

Table 1. Area, production and productivity of pepper in major pepper producing countries (1988-'89)

Country	Area (in ha)	Production (in M. Tonnes)	Productivity (in kg/ha)
Brazil	30,000	30,000	1000
India	1,68,260	45,000	267
Indonesia	1,00,000	50,000	500
Malaysia	11,300	27,500	2433
Madagaskar	6,470	3,380	522
Sri Lanka	18,000	3,500	194
Thailand	8,006	15,120	529
Vietnam	7,964	7,083	889

Source: Pepper Statistical Year Book - 1989, International Pepper Community, Jakarta, Indonesia.

Table 2. Export of pepper from India and its share in the total export of spices

Year	Total export of spices		Export of pepper		
	Quantity (M.T.)	Value (Rs. in crores)	Quantity (M.T.)	Value (Rs. in crores)	Percentage in export earnings
1985-86	74,501	282.52	37,620	172.48	61.05
1986-87	82,827	281.99	37,083	200.33	71.04
1987-88	70,279	298.08	41,011	240.58	80.70
1988-89	99,946	274.80	36,981	164.63	59.90
1989-90	1,02,170	275.76	34,482	152.96	55.46

Source: 'Spices Statistics' compiled by Spices Board - 1991

and also production is from Kerala. Other states where pepper is cultivated include Karnataka, Tamil Nadu and Pondichery. Of late, it is being gradually introduced to the North Eastern States. Table 3 presents the statewise area and production of pepper in India.

Pepper is one of the most important cash crops cultivated in Kerala. The agro-climatic conditions prevailing in the state are very congenial for the cultivation of pepper. In Kerala, pepper is generally cultivated as a mixed crop under homestead conditions except in Idukki and Wayanad where pepper is mostly cultivated as a pure crop. The districts of Idukki and Wayanad account for 35.50 per cent of the total area under pepper in the state and 49.90 per cent of the production of black pepper.

The productivity of pepper in India is one of the lowest in the world (Table 1). The pepper cultivation in Kerala, especially of Idukki and Wayanad districts, is facing a major threat on account of quick wilt disease, which has spread to an alarming degree since last two years.

An expert committee constituted by the Department of Agriculture, Government of Kerala which had gone deep into the problem had recommended for an integrated approach for scientific crop management and disease management to revive the pepper cultivation. A group approach has been suggested by the committee to implement the programmes effectively. The different

Table 3. State-wise area and production of pepper in India (1988-89)

State	Area ('000 ha)	Percentage	Production ('000 M.Tonnes)	Percentage
Kerala	157.01	97.67	43.24	97.92
Karnataka	2.68	1.66	0.69	1.57
Tamil Nadu	1.04	0.64	0.22	0.49
Pondichery	0.01	0.03	0.01	0.02
Total	160.74	100.00	44.16	100.00

Source: Agricultural Statistics in India 1989, Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi.

programmes organised by the Government of Kerala celebrating 1989-90 as pepper year, also highlighted the severity of quick wilt disease and its control besides measures for increasing productivity and quality control.

Encouraged by the experience of group management in farming in other countries as well as selected pockets of Kerala, the Government of Kerala has introduced "Group Farming for Rice Development" from the kharif season of 1989. It proved that from every hectare of land a minimum additional yield of 500 kg rice, and a saving in cultivation expenses of Rs.1000/- per ha could be ensured (Bhaskaran and Menon, 1990).

According to Menon (1990), the basic concept of group farming is superimposing of group management of key farm operations over individual farm ownership and initiative with the objective of efficient management of farmers' resources to reduce cost of production and to increase productivity even in very small farm holdings. A conspicuous feature of this approach is that farmers are motivated to form small groups to pool their resources to handle selected farm operations without surrendering the ownership of their land. However, this demands the identification of technological parameters to be brought under group management, treating group management as a critical input.

Encouraged by the experience of group farming in paddy production, the Government of Kerala have started group management

in coconut from 1990 to revive the coconut cultivation in Kerala and to enable the coconut farmers to reduce the overall cost of cultivation and to increase the yield.

Group approach in farming is being extended to other crops also. Latest in this direction is the group management in pepper being implemented from 1990-91 season onwards in Idukki and Wayanad districts of the State. The following are the main objectives of group management in pepper.

1. Revival of pepper gardens affected by quick wilt disease by replanting and gap filling using good quality planting materials.
2. Adoption of scientific cultivation and management practices.
3. Adoption of prophylatic/control measures against quick wilt disease.
4. Reducing the production costs by means of group approach.

Scope and need for the study

Pepper is an export oriented spice, the future of which is dependant on international market. All the pepper producing countries export their produce to the international market and hence there exists a very tough competition between these countries in selling the produce. Because of the surplus production, pepper market is said to be a buyer's market.

As could be seen from Table 1, India's productivity is one of the lowest in the world. To compete with other countries, we have to increase our productivity and at the same time reduce the cost of production.

The present study assumes much importance in the existing scenario of pepper production in the country having lowest productivity as compared to other important pepper producing countries.

The Task Force on Pepper appointed by the Ministry of Agriculture, Government of India has identified non adoption of recommended package of practices as one of the important reasons for the low productivity of pepper (Velappan, 1987). The other reasons for the low productivity of pepper in Kerala, which is the largest pepper producing state in the country are reported to be the presence of a sizeable number of senile and unproductive vines and the severe occurrence of quick wilt disease in the pepper gardens. It is thus evident that pepper production can be increased substantially by adoption of recommended package of practices.

The present study becomes much relevant in the context of a group approach being suggested by an Expert Committee consisting of Scientists from National Research Centre for Spices and Kerala Agricultural University and representatives of Department of Agriculture (Government of Kerala) and Directorate

of Cocoa, Arecanut and Spices (Government of India) to augment pepper production in the State. Thus, the results of this study may help the Department of Agriculture (Government of Kerala), the Spices Board (Government of India) and other developmental agencies engaged in the development of pepper to evolve suitable strategies of group action by the farmers and formulate suitable developmental schemes involving farmers' participation to increase the production and productivity of pepper.

Objectives of the study

Keeping in view the scope and utility of the study, the following objectives havebeen formulated.

1. To identify the effect of size and type of groups in the transfer of pepper production technology.
2. To identify group related processes that contribute to the transfer of technology.
3. To analyse the selected personal and behavioural characteristics of pepper growers in relation to transfer of pepper production technology.
4. To identify the constraints of group approach in pepper cultivation.

Limitations of the study

Since the present study was undertaken as a part of the post graduate programme, the study had the inherent limitation in terms of coverage due to temporal, financial and physical constraints. Being a post graduate research work, the study could be confined only to three Panchayats in the selected two districts. Even then, utmost care was taken to make the study as systematic and objective as possible. Although the study may have some limitations in making generalisations to other areas, it is expected that findings of this study would certainly provide definite clues in evolving suitable strategies in the direction of group action of farmers and in formulating suitable developmental schemes for pepper development.

Presentation of the study

The study is presented under five chapter headings. The first chapter already covered the scope and need, objectives and limitations of the study. The second chapter deals with the theoretical orientation covering the review of literature pertaining to the study while the third chapter deals with methodology comprising description of the study area, selection of respondents, empirical measurement of variables, tools for data collection and the statistical techniques used for analysis and interpretation of the data. The fourth chapter deals with the results of the study and the discussion of results obtained. The final chapter gives the summary and conclusions of the study. The references and appendices are given at the end.

Theoretical Orientation

CHAPTER II

THEORETICAL ORIENTATION

The main objective of this chapter is to develop an orientation to the concepts pertaining to the study and to link different research findings that exist in the area of study with the research problem. There is not much research conducted in the field of group approach in relation to farming that could be traced by the researcher. However, an earnest attempt has been made to probe into the related research studies and review the available literature available in the area of study.

Based on the objectives of the study, the review of literature is presented under the following heads.

1. Theoretical concepts related with the study
    a. Concept of group management in farming
    b. Concept of transfer of technology (T.O.T.) process
2. Group characteristics in relation to group performance
    a. Concept of group
    b. Size of group
    c. Type of group
3. Group related process in relation to group performance
    a. Social participation
    b. Interpersonal liking

c. Interpersonal trust

d. Interpersonal contact

e. Co-operation

f. Farmer to farmer interaction

4. Selected personal and behavioural characteristics related with group performance

A. Personal characteristics

a. Age

b. Education

c. Farm size

d. Area under pepper cultivation

B. Behavioural characteristics

a. Information souce utilization

b. Extension participation

c. Knowledge about pepper cultivation

5. Constraints of group approach in farming

1. Theoretical concepts related with the study

a. Concept of group management in farming

It has been mentioned by many authors that one of the main causes for low agricultural production and productivity in India is the fragmentation of agricultural land with little or no resource with the owner farmers for the efficient utilization of these holdings. While about 75 per cent of the operational

holdings in India belongs to the small and marginal category (less than 2 ha), 56 per cent of them are less than one ha (In the state of Kerala, the corresponding figure is 87 per cent). These small holdings are too uneconomic for the optimum use of resources, adoption of scientific technology, efficient management of farm operations etc.

Moczarski (1973) reported that organising potato farmers into a group in Lesotho had helped in increasing the production and reducing the cost. The results were so encouraging that during next season (after initial attempt) another group of farmers volunteered to pool their land and to grow the crop under group farming system.

Swaminathan (1988) stated that group endeavour should be promoted in areas like land and water management, pest management, nutrient supply and post harvest technology. Unless individual initiative, group endeavour and government support become mutually reinforcing, the efficiency of small farm management will continue to be low, particularly in rainfed areas, where water harvesting and equitable distribution of the conserved rain water are extremely important for higher and more stable production.

According to Menon et al. (1989), the basic concept of group approach in farming is superimposing of group management of key farm operations over individual farm ownership and

initiative with the objective of efficient management of farmers' resources to reduce cost of production and to increase productivity even in very small farm holdings. A conspicuous feature of this approach is that farmers are motivated to form small groups to pool their resources to handle selected farm operations without surrendering the ownership of their land. However, this demands the identification of technological parameters to be brought under group management treating group management as a critical input.

The very rationale of group management in farming is to motivate farmers to form groups or associations with the primary objective of superimposing community or group management of key farm operations over individual initiative and land ownership. Obviously the thrust is to undertake key farm operations such as raising of nursery, pesticides and fertilizer applications, water management, marketing and processing under group management which an individual family cannot hope to achieve efficiently and profitably. Group farming encourage individual initiative and enterprise by providing them with common services such as tillage, irrigation, marketing etc. which will certainly make cultivation more profitable by spreading the overhead costs as also by ensuring scientific application of fertilizers and pesticides. In group farming, management is considered as a critical input in making farming operations more efficient and cost effective.

According to Rao (1989), there are many resources at farm level that can be used more efficiently on group basis. The basic resource of the farm is the land, which can be pooled together while retaining the individual right, management of irrigation could be done on a group basis. Technology which are very costly and uneconomic for an individual farmer can be used more economically at the group level. Similarly human resources, financial resources and market resources can be used in a better way on a group basis. For small and marginal farmers who face many structural shortcomings, organising them into group farming may prove to be a better solution.

It was reported that cassava farmers' organisations were found to be effective in handling processing and marketing of the produce of the members (CIAT Annual Report, 1989).

Swaminathan (1989) pointed out that yield is a product of interaction between genetic efficiency of the plant and the management efficiency of the small farmer. Group action is particularly necessary for adopting ecologically sound cultural practices such as integrated pest management, scientific water management and improved post harvest technology. In the peculiar agricultural situation obtaining in India, it could be said with conviction that group management in farming will be the answer in the long run for the survival of the small and marginal holdings.

Menon (1990) had stated that the idea of group effort in farming has been put into practice in various farm enterprises in various parts of the world such as India, Java, Bali, Taiwan, Mexico, Colombia, Malaysia and Indonesia. Cultivation of crops such as rice, vegetables, cassava, sugarcane etc. and enterprises such as dairying, poultry etc. have been brought under group management with varying degrees of success in those countries.

According to Raghavan (1990), Kerala witnessed a novel strategy for paddy cultivation commencing from kharif season 1989. This great kharif experiment namely 'Group farming for rice development', has been widely acclaimed by one and all, to be of maximum benefit to paddy cultivators for obtaining higher yields with minimum cultivation expenses. He opined that considering the specialities of farming conditions in Kerala, it is evident that group management is the only answer to make available to our farmers the fruits of modern technology.

b. Concept of transfer of technology (T.O.T) process

When maximum number of potential adopters understand, accept and actually practice the recommended technology with the minimum time lag and maximum possible material and financial benefits, effective transfer of technology can be said to have been accomplished (Reddy, 1981).

For effective transfer of technology, all the four systems in the T.O.T. process viz. Research, Extension, Client and Support systems should work hand in hand. An integrated approach of the various agencies involved in the different systems is highly essential for the success of the T.O.T. process.

Swaminathan (1973) had remarked, "to produce 100 million tonnes of food grains, the country ought to need only 10 million hectares of land, if all the results of scientific work can be adopted on such areas".

It has been pointed out by extension educationists that efficient transfer of technology process is a major factor contributing to its adoption. Review of various literature on adoption reveals that adoption is a multivariate phenomenon and unless the different variables that are related with adoption are studied together, we cannot get a complete and true picture of adoption.

The term adoption has been applied to acceptance and use of improved practices. Wilkening (1952) postulated adoption of innovation as a process composed of learning, deciding and acting over a period of time. The adoption or a decision to act has a series of actions and thought decisions.

Copp et al. (1958) defined adoption as an activity of the farmers taking place over a period of time. They perceived

adoption of farm practices as a bundle of related events flowing through time, not an instantaneous metamorphosis.

Emery and Oesor (1958) viewed adoption of farm practices as a consequence of communication.

Ramsey et al. (1959) postulated that adoption behaviour involves two components - behavioural and cognitive. Behavioural adoption involves the critical use of the practices and cognitive adoption includes obtaining knowledge and critical evaluation of the practices in terms of the individual situations.

Rogers (1962) defined adoption process as a mental process through which an individual passes from the first hearing about an innovation to its final adoption.

Katz et al. (1963) defined diffusion adoption process as the acceptance overtime of some specific items - an idea or practice by an individual, group or adopting unit.

Chattopadhyay (1963) viewed adoption as a stage in the adoption process where decision making is complete regarding the use of a practice and action with regard to such a decision commences.

Das and Sarkar (1970) stated that farmers adopt farming practices only for economic gains, and higher the economic motivation, the more will be the favourable attitude towards improved farming practices and the adoption will be quicker.

Rogers and Shoemaker (1971) defined adoption as a decision to continue the full use of an innovation as the best course of action.

Raghavan (1990) opined that group farming is in effect a massive technology transfer programme, in which thrust is given to unite the farmers and take up paddy cultivation by adopting modern scientific methods of cultivation.

2. Group characteristics in relation to group performance

a. Concept of group

Many authors have defined group in terms of one or more of the following characteristics.

1. Perception and cognition of group members
2. Motivation and need satisfaction
3. Group goals
4. Group organisation
5. Interdependence of group members, and
6. Interaction

Smith (1945) defined social group as a unit consisting of a plural number of separate organisms who have a collective perception of their unity and who have the ability to act and/or are acting in a unitary manner toward their environment.

Cattell (1951) defined group as a collection of organisms in which the existence of all is necessary to the satisfaction of certain individual needs in each. Bonner (1959) defined group as a number of people in interaction with one another, and it is this interaction process that distinguishes the group from an aggregate.

Bass (1960) defined group as a collection of individuals whose existence as a collection is rewarding to the individuals.

Hare (1962) gives an analytical definition of group maintaining that there are five characteristics which separate a group from a collection of people. According to him, the members of the group are in interaction with one another. They share a common goal and set of norms which give direction and limits to their activity. They also develop a set of roles and a network of interpersonal attraction, which serve to differentiate them from other groups.

According to Mills (1967), groups are units composed of two or more persons who come into contact for a purpose and who consider the contact meaningful.

Fiedler (1967) considered group as a set of individuals who share a common fate, that is, who are interdependent in the sense that an event which affects one member is likely to affect all.

McDavid and Harari (1968) defined a social-psychological group as an organized system of two or more individuals who are interrelated so that the system performs some function, has a standard set of role relationships among its members, and has a set of norms that regulate the function of the group and each of its members.

Cartwright and Zander (1968) defined group as a class of social entities having in common the property of interdependence among their constituent members.

Sprott (1970) noticed the degree of interaction between members as making the difference between a group and a collectivity.

Sharma (1979) explains that groups have the following characteristics. The members of a group are related to each other, group involves sense of unity, members of a group have a sense of we-feeling, the interest, ideals and values of the group members are common, similarity of behaviour of members, control of action of members by the group and the members of the group are affected by its characteristics.

b. Size of group

According to Shaw (1977), the number of persons in a group has several important consequences for group process. The range of abilities, knowledge, and skill that are available to

the group increases with increase in group size. The advantages of these added resources for effective performance are obvious. The larger group also provides a greater opportunity to meet interesting people and attract others with whom interaction may be rewarding.

On the other hand, as group size increases organizational problems crop up which hinder the performance of the group. As the size of the group increases, subgroups are more likely to form in large groups and potential for conflict is correspondingly greater. So also, as the size of the group increases, the amount of time available for each member to participate in the activities of the group decreases. It is noted that the larger the group, less the opportunity each member gets to participate in discussions and to express his opinion.

Group size is a variable that limits the amount and quality of communication acts that can take place between individual group members.

Hemphill (1950) pointed out that as the group becomes larger, the demand upon the leader's role become greater, more numerous and tolerance for leader-centered direction of group activities becomes greater.

Gibb (1951) reported that group members often feel greater threat and greater inhibition of impulses to participate in larger groups than in smaller groups.

According to Bales et al. (1951) a few members tend to dominate the discussion with others participating relatively less as the size increases.

Hare (1952) found that in larger groups, as compared to smaller groups, there was less consensus. He also found that as the group size increased, member satisfaction decreased.

Carter et al. (1962) concluded that in small groups each individual had sufficient latitude or space in which the basic abilities of each individual could be expressed. But in large groups only more forceful individuals were able to express their abilities and ideas, since the amount of freedom in the situation was not sufficient to accommodate all the group members.

Bales et al. (1962) found that as the size of the group increased, the most frequent contributor assumed a more and more prominent role in the discussion. The bigger the group, the greater the gap in the participation between the most frequent contributor and the other members of the group.

In a study of decision making in groups, Beal (1962) made the following tentative generalizations.

1. As the size of the group increased from 5 to 12, the degree of member consensus, resulting from the discussion decreased when time for discussion was limited.

2. Group members in small groups would change their opinion more towards consensus than would those in the group of 12 or more.

3. As the group becomes larger than 12, there seemed to a trend towards factionalisation.

Indik (1965) made an intensive study of three organizations and found that as the size of the organization increases, the rate of communication decreases. He suggested that as the size of the organization increases, interpersonal attraction will be lower, which in turn leads to decreased interpersonal communication.

Kunju (1972) reported that in smaller groups of 9-10 members, there were comparatively high communication acts and a high degree of group cohesiveness. He had concluded that it is desirable to limit the number of farmers in the case of organizing charcha mandals (farmer discussion groups) to about 10 members.

According to Rao et al. (1987), the size of the group can have profound implication on how the group behaves internally with regard to other groups. It is an important factor determining the number of interactions in a group. In a smaller group, face to face interaction is quite easy and uncomplicated.

Research evidences confirm the fact that small groups are effective though there is no definite conclusion available

about the effective size. However, some studies have indicated definite numbers. It has been reported that seven is the ideal maximum for a decision making group and 14 is the maximum for a fact finding group (Rao et al., 1987).

c. Types of groups

MacIver and Page (1950) explained that affiliation of an individual to the type of group depends on his area of primary relations and areas of secondary relations. According to the area of primary relations, the types of groups are dyads, cliques, clubs, study group, local congregation, business associates, family circle etc. According to the area of secondary relations, the types of groups include state, political party, large business, church, school, ethnic, racial, class groups etc.

Cartwright and Zander (1953) assumed that formal properties of group goals do not differ from the properties of individual goals. Thus the activities of group members with respect to group goals are similar to the activities of individuals with respect to individual goals.

The type of group is dependent on the goals of individuals constituting the group. Each type of group will have a different goal which synchronises with the individual goals of the group members. The type of group also depends on the type of task which the group has been assigned to fulfil.

Sherif and Sherif (1953) demonstrated that boys who were interested in the same activities tended to form groups and that the group boundaries can be rearranged by providing common group goals.

An experimental group is a special kind of group that is ordinarily formed for some explicit purpose that presumably can be achieved through participation in groups. Lakin (1972) pointed out that essential characteristic of the experimental group is that members hope to benefit from the group experience itself.

Experimental groups occur in many forms and for different reasons. T-groups, sensitivity training groups, therapy groups, encounter groups, authentic encounter groups, personal growth groups, human relations groups are some of them. Although all such groups have in common the general purpose of benefiting from the experience itself, they differ in the particular kinds of benefits that are emphasised and desired by the group members.

Norman et al. (1988) had reported the experiences of the Agricultural Technology Improvement Project (ATIP) conducting on-farm research in Botswana in conjunction with limited resource farmers. It is clearly indicated that ATIP is firmly committed to the use of the group in order to facilitate Farmer Participatary Research (FPR) in the context of Farming System (FS) research. In order to encourage farmers' participation and

develop thinking they have developed a typology of groups which distinguishes between design groups, focused-testing groups and options-testing groups.

The different types of groups as envisaged by ATIP have distinct objectives. The objective of design group is farmer involvement in technology design. The focused-testing groups have the objectives of discussing farmers' own problems and measuring economic benefits. Increased farmer and extension involvement and large scale assessment are the objectives of options-testing groups.

Researchers are the primary client of the design groups whose function is to develop knowledge about the contributions of components to modified production systems.

The focused-testing groups primarily serve as a vehicle for organizing and assessing farmer implemented trials. An important feature is the opportunity for farmers facing similar circumstances to discuss and assess the relevance of a limited number of options for improving their farm productivity.

The option-testing group is important in technology assessment process in which a wide range of options are presented to a large number of volunteer farmers. This enables an assessment of farmer's reactions to a proposal to try an option, as well as to the option itself.

In addition to the above typology of groups, another type of group has also been identified by the ATIP referred to as dissemination and monitoring groups, which are viewed as extension groups. These groups are organized and managed by the extension service - village extension agents with the support of subject matter specialists and the local farming systems team and the emphasis is on facilitating exposure to new technologies rather than assessment of potential options.

It can be concluded from the above reviews that the type of group depends on the objective of forming the group.

3. Group related process in relation to group performance

a. Social participation

Social participation was reported by many researchers to have positive and significant association with the adoption of farm practices. (Roy et al., 1968; Chandrakandan, 1973; Bhilegaonkar, 1976; Palaniswamy, 1978; Sadamate, 1978; Mishra and Sinha, 1980; Ravichandran, 1981; Kamarudeen, 1981; Pillai, 1983). However, researchers like Sundaraswamy (1971), Rao (1972) and Sakthivel (1979) had reported non-significant association between social participation and adoption.

Karim and Mahboob (1974) reported a positive and significant relationship between organisational participation and adoption of fertilizers among transplanted Aman rice growers in Bangladesh.

However, Somasekharappa and Manimegalan (1987) found no association between organisational participation and fertilizer use.

Many researchers had indicated that participation of group increases the group performance. Shaw (1932) showed that group was superior to individuals as far as task performance is concerned.

According to Shaw (1977) group members who are attracted to the group, work harder to achieve the goals of the group, which leads to higher productivity by more cohesive groups.

Douglas (1979) opined that group exerts pressures of various kinds upon its members, which leads to conformity resulting in effective performance.

b. Interpersonal liking

Moreno (1934) investigated the bonds which he felt joined the members of a group together and observed that group cohesion was based up on interpersonal attraction.

Festinger (1950) stated that cohesion is the resultant of all forces acting on members to remain in the group. Cohesion is equated with an emotional binding of members to their group or with the degree of attraction the group has.

New Comb's (1961) ABX theory of attraction relates attraction between persons to the attitudes that they hold in common toward objects.

Konopka (1963) described cohesion as a feeling of belonging. Byrne and his associates (1966) have demonstrated that an individual is attracted to another person in proportion to the extent that he perceives the other person to hold attitudes similar to his own.

Byrne and Clore (1966) stated that the more similar in attitude the other person appeared to be, the more he was liked.

Curry and Emerson (1970) found that individuals liked other persons who had favourable attitudes towards them.

Lang (1972) referred to a sense of commoness, interpersonal attraction, norms, cohesion and awareness of membership as the group process.

According to Shaw (1977) the primary variables that influence the attraction of one person to another are attitude, similarity, value congruence, personality characteristic etc. Studies tended to consider that secondary determinants like proximity, contact and interaction provide the opportunity for the operation of the primary variables for interpersonal likings. He explained that proximity refer to the physical distance between individuals, contact to situations in which

individuals are likely to be in each others presence frequently, and interaction to situations in which the behaviour of each person influences the other.

c. Interpersonal trust

Gibb (1964) suggested that there were two contrasting climates - defensive and supportive. The climate of a group in terms of trust and openness depends upon and also affect the way the group works.

Vraa (1974) opined that warmth and hostility were emotional climates in a group which affect the interpersonal trust between members in a group.

Secord and Backman (1974) reported that the members of a group are motivated both to co-operate and compete. Basic to such relations between persons is interpersonal trust, which is present when an individual perceives the other person as having or likely to behave in a helpful manner. The trusting person is more likely to co-operate while distrust leads to competition and attempts to achieve maximum gains for oneself at the expense of the other. They also opined that co-operation may be used as a strategy to gain the other person's trust. Making concessions in negotiation has been considered as a way of gaining trust.

d. Interpersonal contact

Festinger et al. (1950) established through their study that proximity is very much essential for interpersonal contact.

Maissonneuve et al. (1952) observed that proximity and liking choices were related in boarding school classes.

Byrne and Buehler (1955) found that seat neighbours in college classes had more contact. Sommer (1959) noted that persons who seat near each other in cafetaria interacted more than persons in distant positions.

New Comb (1961) revealed that proximity is the primary determinant of attraction and attraction was found to be a function of similarity of attitudes.

According to Shaw (1977) the variables of interpersonal attraction are proximity, interpersonal contact and interaction. Proximity referred to the physical distance between individuals, interpersonal contact as the frequency of individuals in the presence of others and interaction to the behaviour of each person which influences the other.

Many investigations reveal that interpersonal contacts results in more favourable attitudes in members of the group and an increased willingness to affiliate with them. Interpersonal contact provides the opportunity for individuals to learn about

the characteristics of others that make them attractive (Shaw, 1977).

Sharma (1979) reported that social relationships depend upon the social interaction of the constituent members of society. Some or the other kind of social interaction is set into motion whenever two of its members come into contact. When two persons come into contact there will be attraction or repulsion, co-operation or conflict. He opined that there can be no social interaction between individuals in the absence of interpersonal contact and communication. Though interpersonal contact can be established through different media of communication, interpersonal contacts are more strengthened by physical contact. Interpersonal contact can be considered the beginning point of social interaction.

e. Co-operation

Sharma (1979) defined co-operation as a form of social interaction wherein two or more persons work together to gain a common end. According to him, co-operation is the process by which individuals or groups combine their efforts, in a more or less organised way, for the attainment of common objectives.

Tasks vary in the degree to which they require interrelated and co-ordinated action by group members. Some tasks require much co-ordination of efforts for successful completion.

Obviously, the requirements of co-operation imposed by the group task should influence the performance of the group. Magnitude of this effect is determined by other characteristics of the group and the situation in which it must function. However, empirical evidence concerning these effects are extremely limited.

A study by Schutz (1955) revealed that the problems attempted by compatible and incompatible groups varied in the degree to which they required co-operation among the group members. The study clearly brought out that the compatibility of the members and the degree of co-operation between the members influenced the successful completion of the task and the attainment of the goal.

Rao (1989) pointed out that the essential element of group action is the co-operation between the members of the group, and which can be achieved only by a dedicated leadership.

The available evidences, although limited, clearly demonstrated that co-operation requirement of the task is an important determinant of group effectiveness, and that its effects may be modified by other influences upon group process.

f. Farmer to farmer interaction

Isreal (1956) opined that interaction facilitates goal achievement.

Hare (1962) pointed out that members of the group are in interaction with one another. They share a common goal and set of norms, which give direction and limits to their activity. They also develop a set of roles and network of interpersonal attraction, which serve to differentiate them from other groups.

Beal (1962) reported that group productivity can be increased through efforts both of the entire membership and of individual members to improve their human relation skills to foster both group interaction and also by continued evaluation of progress towards goals and of the means used to attain such progress.

Collins and Guetzkow (1964) remarked that interaction enhances conformity of opinion.

Truax (1968) indicated that interaction generates understanding. Bochner (1975) pointed out that interaction serves to spread information. The farmer to farmer interaction helps in the transfer of technology among them.

According to Douglas (1979) interaction is the reciprocal response of people to each other and is thus concerned with communication of all kinds and at all levels. He explained that in reality, interaction is depended on the need of human beings to make known their need of contact, all the basic factors of support, affirmation, self-image confirmation,

etc. are involved. As interaction is so basic, it is considered to be a generative factor in all the other process and is thus susceptible to influence behaviour for enormous variety of needs.

Norman et al. (1988) stated that groups can be effective in increasing and improving the pattern of farmer participation in the technology development process. Groups keep farmers in the foreground, provide a means of using social dynamics constructively and create a multiplier effect which assist the farmer to farmer spread of relevant improved technologies.

It was reported based on the experiences of working with Eucodorian cassava farmers' associations that the farmer-to-farmer technology transfer approach has proven to be a very effective form of extension (CIAT, 1989).

Different researchers had mentioned different factors that affect interaction. McLennan and Felsenfeld (1968) opined that frequency and intensity of exposure of members to each other is a strong factor that affect interaction.

Dunnette and Champbell (1969) and Anderson (1972) indicated primacy of communication as an important factor of interaction. Equally the perception of group members is also important.

Diedrich and Dye (1972) opined that perception of similarity is an important factor that affect interaction.

4. Selected personal and behavioural characteristics related with group performance

In the present study, adoption of improved practices by the pepper growers was taken as an indicator of group performance and hence the relationship between selected characteristics and adoption behaviour is reviewed.

A. Personal characteristics

a. Age

Balasubramanian (1980), Sanoria and Sharma (1983) and Yadav and Jain (1984) reported that age and adoption were significantly related.

Manivannan (1980) reported that age was negatively and significantly correlated with extent of adoption.

Godhandapani (1985) and Wilson and Chaturvedi (1985) also found negative and significant correlation of age with adoption behaviour of groundnut cultivators and tobacco cultivators respectively.

However, Kamarudeen (1981) and Vijayakumar (1983) reported a negative and non-significant relationship between age and adoption.

Balu (1980) and Sohi and Kherde (1980) reported no association between age and adoption. Somasekharappa and

Manimegalan (1987) also found no association between adoption and age of farmers.

Thus, it could be seen that the results are not conclusive and different relationships were reported by different researchers between age and adoption.

b. Education

Sundaraswamy (1971) stated that education had significant influence on the adoption behaviour of hybrid jowar growers.

Many other researchers also established positive relationship between education of the farmers and adoption of improved agricultural practices by them (Hussain, 1971; Perumal and Duraiswamy, 1972; and Ramamoorthy, 1973). Similar results were also obtained by Janakiram-Yaju (1978), Prasad (1978) and Sinha and Sinha (1980).

Nair (1969), Bhaskaran (1978) and Ravi (1979) observed that education had no significant relationship with adoption.

Supe and Salode (1975) also reported that formal education had no significant relationship with adoption of improved farm practices.

Thus it could be seen that the results are not conclusive and no uniform trend in relationship was reported between education and adoption.

c. Farm size

Acharya (1970) reported significant and positive association between farm size and adoption. Oliver (1971), Chandrakandan (1973), Ramamurthy (1973), and Anbalagan (1974), Janakiram-Sharma and Nair (1974), Srinivasan (1974) and Yaju (1978) reported that farm size had positive and significant association with the extent of adoption of farm technology.

Vijayaraghavan (1977) concluded that farm size was positively and significantly associated with adoption of high yielding varieties of paddy. Sen (1981) observed that the adoption rates vary from one size group of farmers to another.

Tantray (1987) also observed that the rate of acceptance of fertilizers, weedicides and soil testing showed in increasing tendency as the land holding increased.

Supe and Salode (1975), Ravi (1979) and Sinha and Sinha (1980) did not find any association between farm size and adoption.

d. Area under pepper cultivation

Karim and Mahboob (1974) reported that effective farm size and adoption of fertilizers in paddy are positively correlated.

There were no studies found reported on the relationship between cropped area and adoption.

B. Behavioural characteristics

a. Information source utilization

Perumal (1970) reported that mass media played a significant role in influencing farmers to adopt the practices of hybrid maize.

Chandrakandan (1973) concluded that the higher the media participation, the better was the adoption of IR-8 paddy.

Manivannan (1980) reported that mass media exposure had positive and significant relation with extent of adoption in the case of sunflower growers. This was supported by the studies of Balasubramanian (1980), Sohi and Kherde (1980), Sanoria and Sharma (1983), who had also observed similar results.

Jayakrishnan (1984) reported that mass media participation was positively and significantly associated with the extent of adoption of low-cost technology among paddy growers.

Balasubramanian (1985), Godhandapani (1985), Jayapalan (1985), Wilson and Chaturvedi (1985) also observed positive and significant relation between extent of adoption and mass media participation.

A contrasting result was observed in the study of Nanjayan (1985) wherein mass media exposure was found to have no significant association with the extent of adoption by small farmers.

Choudhary (1970) reported positive and significant relation of use of personal cosmopolite sources with adoption, of nitrogenous and phosphatic fertilizers.

Singh and Ray (1985) reported that personal cosmopolite sources of information contributed positively and significantly to the level of adoption by small farmers.

b. Extension participation

Gangappa (1975) and Mahadevaswamy (1978) found that farmer's participation in extension activities yielded a positive influence on the adoption behaviour.

Jayaramaiah (1987) observed a significant relation between participation in extension activity and adoption of NPK fertilizers in groundnut, potato and jowar.

Ramegowda and Siddaramaiah (1987) reported that extension participation was positively and significantly related with innovativeness of farmers in adopting MR-301 paddy variety.

c. Knowledge about pepper cultivation

English and English (1958) defined knowledge as the body of understood information possessed by an individual or by a culture. Knowledge is knowing what to do next, skill is knowing how to do it and virtue is doing it.

Singh and Singh (1970) revealed that knowledge of package of practices significantly contributed in explaining the adoption behaviour of the farmers.

Rogers and Shoemaker (1971) opined that knowledge of innovation could create a motivation in the farmer for its adoption.

Many researchers have established positive and significant association of knowledge with adoption of farm practices (Ernest, 1973; Jha, 1974; Bhilegaonkar, 1976; Somasundaram, 1976; Balasubramaniam, 1977; Tripathy, 1977; Vijayaraghavan, 1977; Kaleel, 1978; Prasad, 1978; Pillai, 1978; Samad, 1979; Mishra and Sinha, 1980; Surendran, 1982).

Sethy et al. (1984) reported that knowledge of technology is basic to adoption of high yielding rice technology for all categories of farmers.

Jayaramaiah (1987) reported that knowledge of fertilizer and its utility was significantly associated with adoption of NPK in groundnut, potato and jowar.

5. Constraints of group approach in farming

Groups are faced with a number of problems that do not arise when individuals work alone. Group performance is the result of efficiency of the individuals who compose the group.

Efficient group action, therefore, requires co-ordination of individual effort.

Shaw (1977) pointed out problems of co-ordination, deindividuation in groups, pressures toward uniformity as some of the constraints in group approach.

Adequate co-ordination leads to the formation of group structure in the form of roles, status, norms, power differentials and more or less fixed patterns of communication. Time and energy are required for providing organization and co-ordination in groups and consequently groups are slow compared to individuals.

Festinger et al. (1952) pointed out that in some situations, individuals in groups behave as if they were "submerged in the group". Group members do not pay attention to other individuals as individuals and the members do not feel that they are being singled out by others in the group. This state of affairs is referred to as "deindividuation". They have noted the positive consequences of reduction of inner restraints which permits individual group members to satisfy certain needs that they cannot satisfy otherwise.

Sometimes there will be strong pressures toward uniformity of opinion and behaviour in groups resulting in conformity in group process and performance. In many instances, such pressures interfere with efficient group action and in

extreme cases may lead to disastrous group decisions (Shaw, 1977). Janis (1972) used the term 'group think' to refer to the 'deterioration' of mental efficiency, reality testing, and moral judgement that results from in-group pressures.

Douglas (1979) stated that group constraints are those factors which were in existence before the group and will exert some form of limiting effect upon it. According to him most of the constraints are of a permanent nature and continue to influence the group as long as it exists. The group constraints identified by him were:

1. The environment
    a. organizational structure
    b. accessibility
    c. climate or ethos
2. The membership
    a. qualities
    b. availability
    c. background
    d. experience
3. Time
4. Resources
    a. material
    b. skill
    c. knowledge
    d. potential

5. Group size
6. Open/closed group state
7. Matching
8. Activity choice
9. Scale of intervention, leadership acts
10. Contract

He opined that out of the above ten constraints, the first four may be seen either as 'fixed' or 'manipulable' according to the circumstances.

There are several constraints in group approach in farming as reported in the National Workshop on Group Farming organized by the National Institute for Rural Development (1989).

One of the important constraints pointed out is that a farmer especially of the subsistence level does not like to bear the joint risk of farm operation at the production level.

Unless group farms are provided with necessary support services like credit, input, marketing and price policy their objectives may, in many case, be frustrated to a great extent. Lack of true leadership is another constraint identified. Lack of co-operative spirit among the farmers may also lead to failure. A resourceful institutional back up is very essential for the success of group approach in farming.

Methodology

CHAPTER III

METHODOLOGY

The chapter deals with the methods employed in the study which are presented under the following heads.

1. Location of the study
2. Selection of the sample
3. Selection of variables for the study
4. Operationalisation and measurement of the variables included in the study
5. Procedure of data collection
6. Statistical tools used in the study

1. Location of the study

A. Selection of the districts

The study was conducted in Wayanad and Kozhikode Districts of Kerala State. These districts were purposively selected for the study since they satisfied the following conditions.

1. The study should cover two areas, one representing pure crop area and another homestead area.
2. There should be substantial area under pepper in the selected districts.

3. The selected districts should be adjacent ones for convenience of the study.

Accordingly Wayanad district was purposively selected to represent pure crop area and Kozhikode district to represent homestead crop area.

Both the selected districts only satisfied other conditions also, as both are adjacent districts and had a sizeable area under pepper cultivation. As per the recent statistics available, Wayanad district has 20,970 ha under pepper while Kozhikode district has 15,046 ha under pepper cultivation as could be seen from Table 4.

B. Selection of Taluks

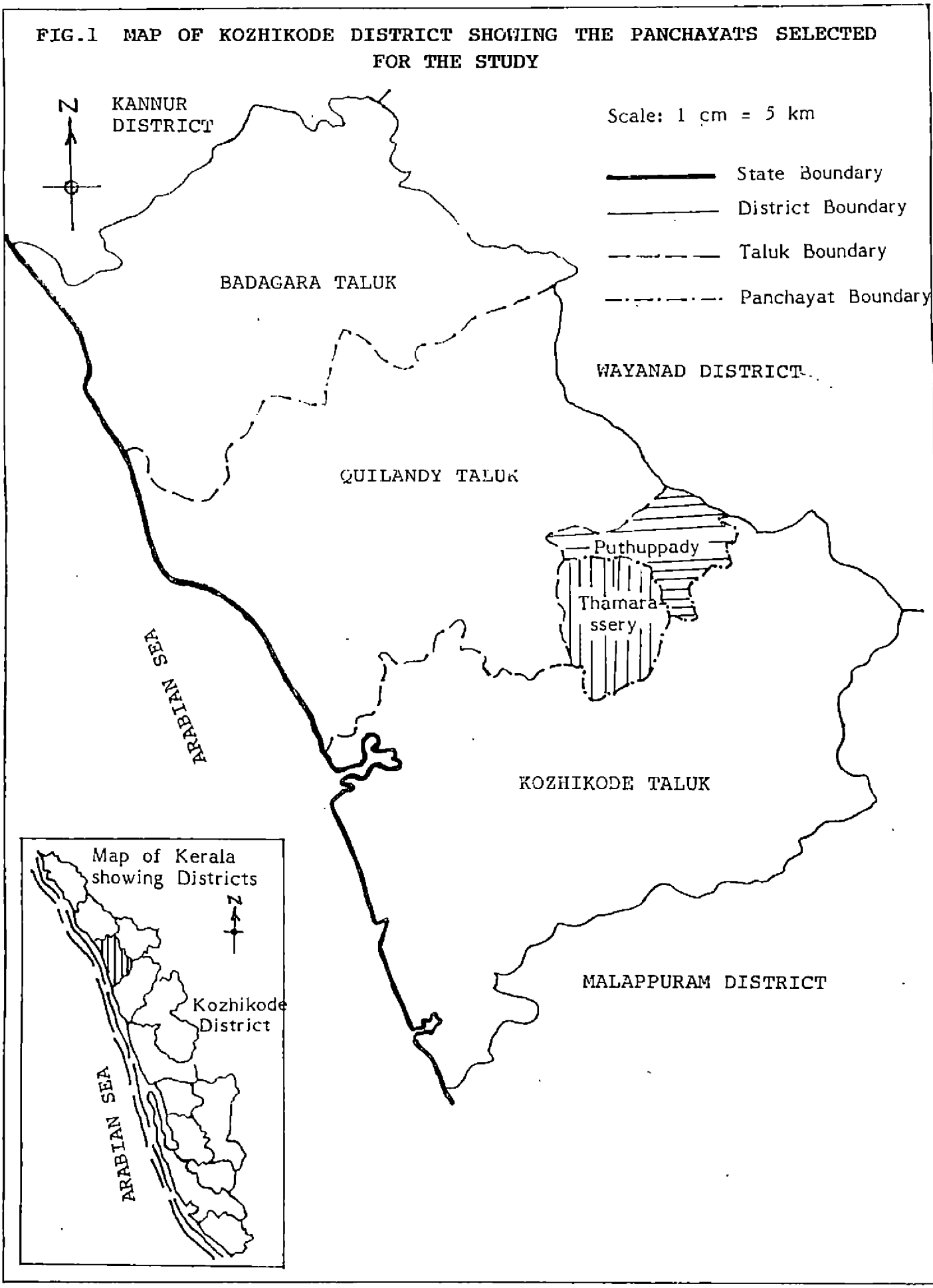
From each selected district, one taluk with highest area under pepper was selected for the study. Out of the three taluks in Wayanad district (Vythiri, Sulthanbathery and Mananthavady), Sulthanbathery had the highest area under pepper cultivation and hence this taluk was selected, for the study. Among the three taluks in Kozhikode district (Kozhikode, Quilandy and Badagara), Kozhikode taluk had the highest area under pepper cultivation and hence this taluk was selected for the study.

Table 4. District-wise area under pepper in Kerala State

District	Area in ha (1989-90)
Thiruvananthapuram	4,668
Kollam	8,120
Pathanamthitta	5,028
Alappuzha	3,035
Kottayam	10,505
Idukki	32,258
Ernakulam	7,115
Thrissur	4,629
Palakkad	2,147
Malappuram	5,694
Kozhikode	15,046
Wayanad	20,970
Kannur	23,739
Kasaragod	8,469
STATE	1,51,423

Source: Directorate of Economics and Statistics, Thiruvananthapuram

FIG.1 MAP OF KOZHIKODE DISTRICT SHOWING THE PANCHAYATS SELECTED FOR THE STUDY



C. Selection of Panchayats

Two panchayats were selected for the study from Kozhikode taluk and one panchayat from Sulthanbathery taluk. The list of all panchayats in these taluks with substantial area under pepper was prepared and two panchayats were randomly selected from Kozhikode taluk which represented the study areas in Kozhikode district. The selected panchayats were Puthuppady and Thamarassery.

One panchayat was randomly selected from Sultanbathery taluk as the study area in Wayanad district. The selected panchayat is Pulpally. The location of the study is clearly shown in Fig.1&2.

2. Selection of the sample

There are three types of groups viz., Existing Group (E.G.), Focused Group (F.G.) and Identified Focused Group (I.F.G.) formed for the study purpose which were represented by Puthuppady panchayat, Pulpally panchayat and Thamarassery Panchayat respectively. The three types of groups were formed by the researcher as detailed below.

A brief description about the three types of groups is presented.

FIG.1 MAP OF KOZHIKODE DISTRICT SHOWING THE PANCHAYATS SELECTED FOR THE STUDY

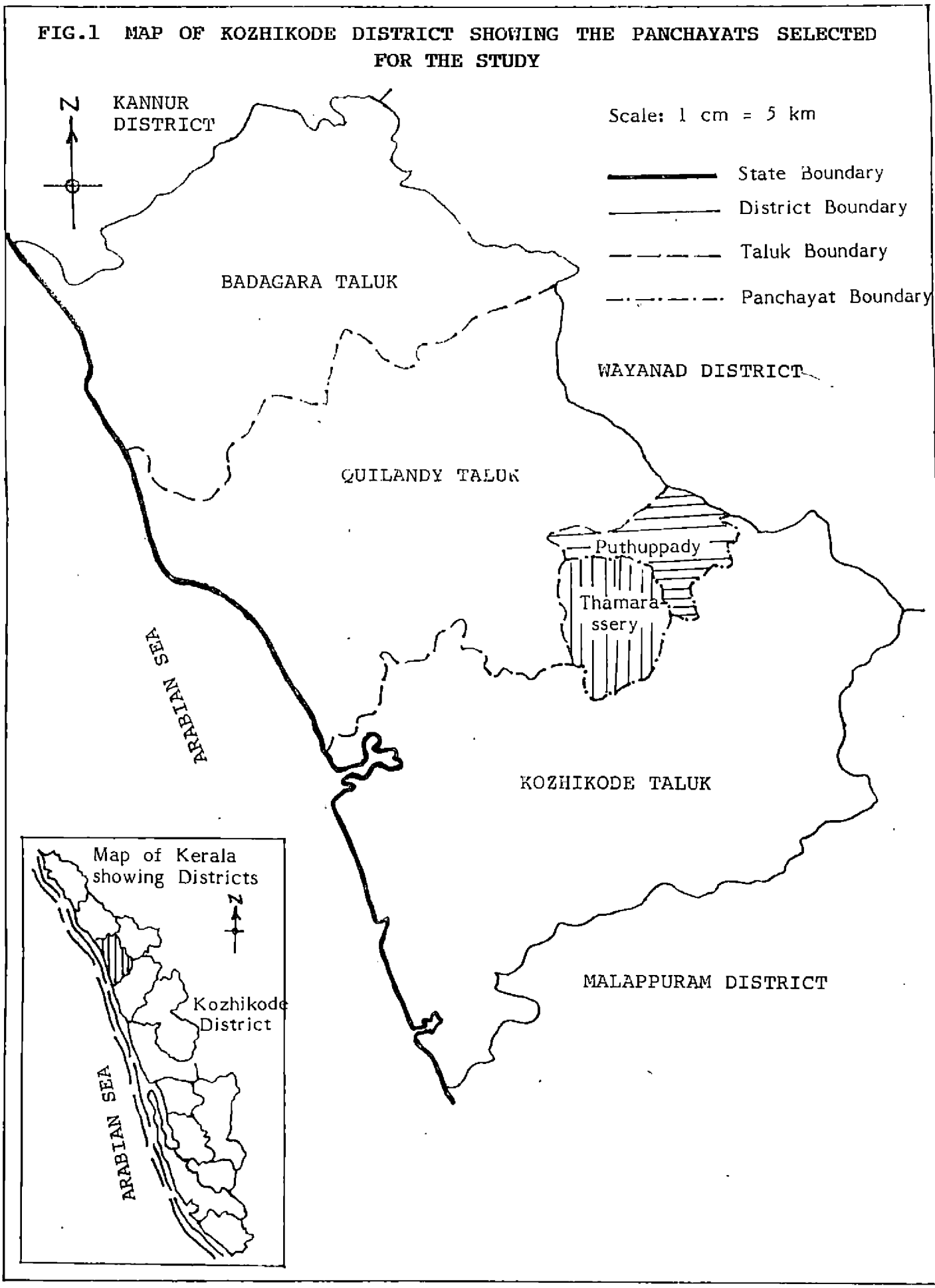
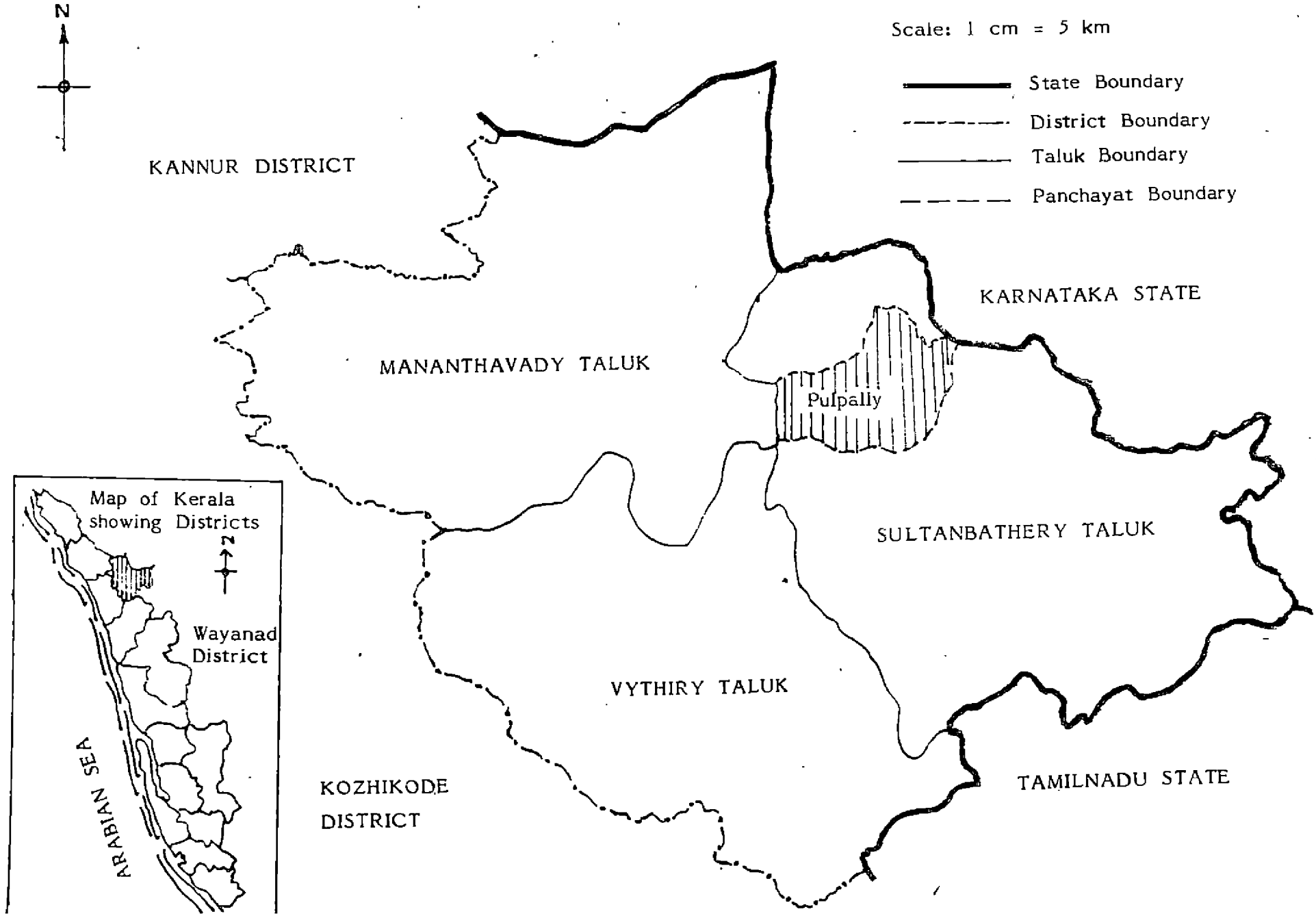


FIG.2 MAP OF WAYANAD DISTRICT SHOWING THE PANCHAYAT SELECTED FOR THE STUDY



A. Existing group

In this group, the members (respondents) selected shall invariably be a member of any of the farmer groups already functioning in the locality. In the present case, membership in the Padasekhara Committee under the paddy group farming implemented through Krishi Bhavan was considered. Such farmers who were members under Paddy Group Farming, who also had pepper cultivation as a mixed crop were included as respondents in this group. A list of such farmers was prepared with the help of officials of Puthuppady Krishi Bhavan and the sample was selected from this list in such a way that the selected farmers should be as far as possible, from the same locality.

B. Focused group

The members selected under the focused group are confined to those who cultivate pepper as a pure crop. A list of those farmers who cultivated pepper as a pure crop under Pulpally Krishi Bhavan was prepared and the sample was selected from this list as in the case of existing group.

C. Identified focused group

In the identified focused group the farmers are confined further to those who own pepper cultivation of not more than 250 vines under homestead situation, with coconut as the major

crop. A list of such farmers in Thamarassery Krishi Bhavan was prepared and the sample was selected from this list as in the case of the other two categories.

Under each type of group (one in each panchayat), three different sizes of groups (n_1 = between 10 and 14; n_2 = between 15 and 19; n_3 = between 20 and 24) were selected. Thus the number of farmers included in each group were varied to signify size of group. Thus there were three types of groups and three different sizes of groups in the three panchayats selected for the study.

Besides the groups, individual pepper farmers (n = 50) were also selected from nearby areas of the three selected panchayats having similar agro-climatic conditions to serve as control for the study.

The list of pepper growers prepared from the Krishi Bhavans of the selected panchayats was used for drawing samples. The required number of farmers for each size group under each category was selected in such a way that the farmers shall be from the adjacent areas, as far as possible. However, there was no restriction imposed on the selection of individual farmers in the control group.

The details about the sample of farmers selected for the study is furnished in Table 5.

Table 5. Details about the sample of farmers selected for the study

Type of group	Name of Panchayat	Size of group			Control	Total
		Group I (n=10-14)	Group II (n=15-19)	Group III (n=20-24)		
Existing group (EG)	Puthuppady	10	16	23	18	67
Focused group (FG)	Pulpally	10	15	20	15	60
Identified focused group (IFG)	Thamarassery	11	16	22	17	66
Total		31	47	65	50	193

3. Selection of variables for the study

Based on the objectives of the study, review of relevant literature and discussion with experts, the following variables were selected for the study.

A. Dependent variable

1. Adoption of recommended management practices of pepper

B. Intervening variable

1. Type of group
2. Size of group
3. Group related processes
   a. Social participation
   b. Interpersonal liking
   c. Interpersonal trust
   d. Interpersonal contact
   e. Co-operation
   f. Farmer to farmer interaction

C. Independent variables

1. Behavioural characteristics
   a. Information source utilization
   b. Extension participation
   c. Knowledge about pepper cultivation
2. Personal characteristics
   a. Age
   b. Education
   c. Farm size
   d. Area under pepper cultivation

4. Operationalisation and measurement of variables included in the study

A. Dependent variable

The group performance was considered in terms of the adoption of recommended practices in pepper cultivation and hence adoption was taken as the dependent variable for the present study.

1. Adoption of recommended management practices of pepper

Different researchers have developed different methods to measure the adoption behaviour. Wilkening (1952) used an index for measuring the adoption of important farm practices. The index of adoption used by him was the percentage of practices adopted to the total number of practices applicable for the farmer.

Marsh and Coleman (1955) used "practice adoption" scores computed as the percentage of applicable practices adopted.

Fliegel (1956) constructed an index of adoption of farm practices using the correlation of several adoption variables. He used factor analysis of each of the 11 factors selected. A score of one was given for adoption and zero for non-adoption.

Chattopadhyay (1963) used adoption quotient for measuring adoption which is a ratio scale that measurers a

farmer's behaviour on dimensions of applicability, potentiality, extent, time, consistency and differential nature of innovations.

Supe (1969) developed a scale, namely, Cotton practices adoption scale. He selected 10 practices of cotton and for each practice, a score of six was assigned for complete adoption. The practices which were divisible were assigned partial score for partial adoption.

In the present study a simple procedure in line with Supe's procedure was employed for measuring the adoption of recommended management practices for pepper. A score of one was assigned for adoption of each recommended practice, while zero score was given for non-adoption of the practice, except in the case of chemical fertilizers, where the scoring pattern was different. In the case of adoption of chemical fertilizers, a score of three was assigned, one score each for N, P and K respectively. Half the scores were assigned for partial adoption in all the cases.

The recommended management practices selected for the study is given below.

1. Weeding
2. Irrigation during summer months
3. Application of organic manure
4. Application of lime

5. Application of chemical fertilizers
6. Application of insecticides
7. Application of fungicides

The adoption score of a farmer was calculated by summing up the scores obtained by him for the different individual recommended practices. A farmer adopting all the recommended practices could get a maximum score of nine, while the minimum was zero. The adoption score was computed in respect of all the respondents immediately after the formation of groups and after one crop season.

B. Intervening variables

1. Type of group

In the present study, type of group referred to the specific nature and characteristic of the group which is applicable to all the members.

For the present study, three types of groups were formed, namely, the existing group, the focused group and the identified focused group besides the control group as described earlier in this chapter.

It was postulated that the group approach will be effective than individual approach in the transfer of pepper production technology and that there will be variation in effectiveness with respect to the different types of groups.

For measuring the effect of the type of group in the transfer of pepper production technology, the adoption score of the members of each type of group immediately after the formation of groups and after one crop season was computed.

2. Size of group

For the present study each group was divided into three subgroups of different sizes (n between 10 and 14; n between 15 and 19 and n between 20 and 24) as already mentioned in this chapter. The different sizes of groups were formed for the study based on the assumption that smaller groups will be more cohesive and have more interaction and hence the farmer to farmer transfer of technology will be more faster and effective in the smaller groups.

3. Group related processes

a. Social participation

Sadamate (1978) defined social participation as participation of an individual in various formal social institutions either as a member or as an office bearer.

In this study social participation was operationally defined as the degree of involvement of the respondent in various social organisations as a member or as an office bearer and his regularity in attending the meeting, activities, which also included his extent of involvement in groups of pepper farmers formed for the study.

Social participation was measured using the scale developed by Kamarudeen (1981) having two dimensions namely membership in organisation and participation in organisational activities. For membership, scores were given as

Member - 1

Office bearer - 2

For frequency of participation, the scoring was as follows:

Attended all meetings/activities - 2

Attended some meetings/activities - 1

Not attended any of the meetings/activities - 0

The scores obtained by a respondent on the above two dimensions were summed up across each item for all the organisations which gave the social participation score. The social participation scores were obtained for the respondents immediately after the formation of groups as well as after one crop season.

b. Interpersonal liking

In this study interpersonal liking was operationally defined as the degree of affection of an individual with other members of the group, to which he belongs. The degree of liking or disliking of the respondent towards other members of the group in which he is a member was taken as a measure of interpersonal liking.

The degree of liking or otherwise were rated on a five point continuum with response pattern as follows.

Response	Score
Very much liking	4
Liking	3
Neutral	2
Dislike	1
Strongly dislike	0

The interpersonal liking of each respondent immediately after the formation of groups and after one crop season were measured for the study.

c. Interpersonal trust

Interpersonal trust was operationally defined in this study as a reflection as to how a member of the group views other members in terms of faith or confidence. Each respondent was asked to indicate his degree of faith or confidence in other members of the group. The response was rated on a three point continuum with response pattern as follows:

Response	Score
Full faith in others	2
Some faith in others	1
No faith in other	0

The interpersonal trust of each respondent immediately after the formation of groups and after one crop season were measured for the study.

d. Interpersonal contact

In this study, interpersonal contact was operationally defined as the extent of contact of an individual with other individuals of the group on different matters concerned with pepper cultivation. The extent of contact was indicated by a respondent in terms of the frequency of contact made by him with other members of the group.

The following scoring pattern was followed for measuring the frequency of contact.

Frequency	Score
Regular (once a week)	3
Often (once a fortnight)	2
Occassional (once a month)	1
Never	0

The interpersonal contact of each respondent immediately after the formation of groups and after one crop season were measured for the study.

e. Co-operation

In this study co-operation was operationally defined as the tendency of an individual to associate and work with other members of the group in different matters concerned with pepper cultivation such as sharing of information, procuring planting materials, undertaking cultural operations, marketing of pepper, and the like.

Co-operation was measured directly by asking the respondent to indicate as to whether he had co-operated with other members of his group or not. If the response is positive, a score of one was assigned, while a score of zero was assigned for negative response.

The co-operation of each respondent immediately after the formation of groups and after one crop season were measured for the study.

f. Farmer to farmer interaction

According to Douglas (1979) interaction is the reciprocal response of the people to each other and is thus concerned with communication of all kinds at all levels.

Farmer to farmer transfer of technology among the members of a group will be more intense and faster when there is a closer interaction between the members.

Interaction was operationally defined in this study as the tendency of a farmer to get in touch with other members of his group and freely mix with them without observing any formality and inhibition. The interaction was measured using a dichotomous response pattern as to whether the respondent could freely mix with other members of his group or not. If the respondent was positive in his response, a score of one was assigned while a score of zero was assigned if his response was negative.

The interaction of each farmer immediately after the formation of groups and after one crop season were measured for the study.

C. Independent variables

1. Behavioural characteristics

a. Information source utilization

The information source utilization was studied in terms of utilization of both mass media sources and interpersonal sources of communication.

The mass media source utilization was operationally defined as the extent of use of different mass media sources by a farmer with a view to obtain information about improved agricultural practices.

The procedure followed by Nair (1969) was adopted in the present study to develop an index of mass media source utilization. Each respondent was asked to indicate as to how often he obtained information regarding improved agricultural practices from each of the listed mass media sources.

The range of response and scoring pattern was as follows:

Frequency	Score
Most often (once a week)	4
Often (once a fortnight)	3
Sometimes (once a month)	2
Rarely (once a year)	1

The scores were summed up across each item to form the index of mass media utilization.

Interpersonal source utilization was operationally defined as the extent of use of different personal sources by a farmer with a view to obtain information about improved agricultural practices.

The procedure followed by Nair (1969) was adopted in this case also to develop an index of interpersonal source utilization.

Each respondent was asked to indicate as to how often he received information regarding improved agricultural practices from each of the listed personal sources.

The range of response and the scoring pattern was as follows:

Frequency	Score
Most often (once a week)	4
Often (once a fortnight)	3
Sometimes (once a month)	2
Rarely (once a year)	1

The scores were summed up across each item to form the index of interpersonal source utilization.

The index for information source utilization of each respondent was arrived at by summing up the indices of both mass media source utilization and interpersonal source utilization.

b. Extension participation

Extension participation was operationally defined as the extent of participation by a farmer in various extension programmes/activities conducted in the area, during the previous crop season.

The participation of each respondent in the various extension activities whenever conducted during the previous year was used to arrive at extension participation score.

Frequency	Score
Always attended	2
Sometimes attended	1
Never attended	0

c. Knowledge about pepper cultivation

Cronbach (1949) defined knowledge test as one in which procedures, apparatus and scoring have been fixed so precisely that the same test can be given at different times and places.

A standard knowledge test defined by Noll (1957) is one that has been carefully constructed by experts in the light of acceptable objectives or purposes and procedures for administering, scoring and interpreting scores which are specified in detail so that the results should be comparable and norms and averages for different age and status have been pre-determined.

In this study the extent of knowledge of a farmer about pepper cultivation practices was measured using a knowledge test developed for the purpose. The steps followed in developing the knowledge test are detailed below.

Collection of items

The content of a knowledge test is composed of questions called items. An item pool of questions was prepared by reviewing literature such as package of practices recommendations

of Kerala Agricultural University (1989) and conducting discussion with subject matter specialists and extension personnel of the University. Finally a thorough scrutiny of the item pool was made with the assistance of the subject matter specialists. The selection of items was done on the basis of the following criteria.

1. The item should promote thinking
2. It should differentiate the well informed pepper farmers from the poorly informed ones, and
3. It should have certain difficulty index

Twenty three items (questions) which covered all aspects of pepper cultivation were selected to carry out item analysis for developing a standardised knowledge test (Appendix I).

Item analysis

The initially prepared 23 items were administred to 30 respondents prior to the preparation of final schedule. The respondents were randomly selected pepper farmers who were altogether different from the sample selected for the main study and at the same time having identical conditions.

Item analysis yields two kinds of information. The index of item difficulty reveals how difficult an item is, whereas the index of discrimination indicates the extent to which an item discriminates the well informed individuals from the poorly informed ones.

The scores of value one and zero were given to correct and incorrect responses respectively. There was thus a possibility of respondents scoring a maximum of 23 for all correct answers and minimum of zero for all wrong answers.

The scores obtained by the 30 respondents were arranged in descending order of total scores, from the highest to the lowest and the respondents were divided into three equal groups. The three groups were G_1, G_2 and G_3 with ten respondents in each group. For item analysis, the middle group namely G_2 was eliminated retaining only the terminal ones with high and low scores.

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

Calculation of item difficulty index

The index of item difficulty as worked out refers to the percentage of the respondents answering an item correctly. As Coombs (1950) pointed out, the difficulty of an item varied for different individuals. In the present study, the items with P value ranging from 23 to 57 were considered for final selection of the knowledge test.

Calculation of discrimination index

The second criteria for item selection was the discrimination index indicated by $E^{1/3}$. Mehta (1958) in using $E^{1/3}$ method to find out item discrimination values emphasised that this method was somewhat analogous to, and therefore, a convenient substitute for the phi coefficient as formulated by Perry and Michael (1951).

In the present study, the items with $E^{1/3}$ values above 0.20 were considered for the final selection as definite criteria is not advocated by any of the researchers.

In their studies, Lokhande (1973), Reddy (1976), Sadamate (1978) and Pillai (1983) had selected statement with $E^{1/3}$ values between 0.35 to 0.55, 0.17 to 0.79, 0.12 to 0.87 and 0.35 to 0.50 respectively in the knowledge test developed by them.

An example of the calculation of the difficulty and discrimination indices is presented below.

Difficulty and discrimination index of knowledge test items

Item number in the initial test	Frequency of correct answers		Total frequencies (N=30)	Percentage of respondents giving correct answers (P)	$E^{1/3}$
	S_1	S_3			
2	8	4	12	40	0.40
5	7	0	7	23.33	0.70
11	8	4	12	40	0.40

$$P = \text{index of item difficulty} = \frac{S_1 + S_3}{N} \times 100$$

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

where $E^{1/3}$ = index of discrimination

S_1 and S_3 are frequencies of correct answers in the Group G_1 and G_3 respectively.

N = Total number of respondents in the sample

Substituting the value of item number (2) of the above table, the value arrived at was

$$E^{1/3} \text{ for item } 2 = \frac{8-4}{30/3} = 0.40$$

Based on the difficulty and discrimination indices, seven items were finally selected to form the knowledge test.

Reliability

The split half method was used to test the reliability of the test. All the seven items of the knowledge test were divided into two equal halves, each having four odd and three even numbers and were administered to 30 respondents. The coefficient of correlation between the two sets of scores was 0.79 which was significant at one per cent level of probability. This indicated that the reliability of the test was high.

Content validity

Content validity is a kind of validity by assumption as described by Guilford (1971). Care was taken to include items covering the entire universe of relevant aspects of knowledge in the cultivation of pepper. Items were collected from various sources such as experts in the Kerala Agricultural University, subject matter specialists of Department of Agriculture and experts in the Spices Board so that it was assumed that the test could measure the knowledge of the pepper farmers in pepper cultivation practices.

Method of scoring

All the seven selected items were included in the interview schedule for measuring knowledge. Each respondent was assigned one score for correct answer and zero for the incorrect answer. The total knowledge score for each respondent was calculated by summing up the scores given for each item. Thus the maximum score that could be obtained by a respondent was seven and the minimum zero.

2. Personal characteristics

a. Age

Age was calculated as the number of years the respondent has completed at the time of investigation since birth. The

respondents were asked to indicate the number of years which was directly noted as a measure of age.

b. Education

In this study education is operationally defined as the extent of formal education undergone by the respondent at the time of investigation.

This was measured by assigning scores for different levels of education as per the scoring system followed in the socio-economic status scale of Trivedi (1963). The categorisation of respondents and the corresponding scores assigned are given below.

Category	Scores
Illiterate	0
Can read only	1
Can read and write	2
Primary School	3
Middle School	4
High School	5
Collegiate	6

c. Farm size

Farm size is defined in terms of the area of land owned and cultivated by a farmer, which include both wet land and

dry land. The total land holding including both wet land and garden land was considered for measuring the farm size which was expressed in hectares.

d. Area under pepper

Area under pepper is defined in terms of the area of land under pepper cultivation either owned or leased-in by a farmer.

In the pure crop area, actual area under pepper cultivation was considered which is expressed in terms of hectares. In mixed crop area, 550 vines is equated with one hectare in which case, the number of vines under cultivation was noted and converted to hectares. This procedure is being adopted by the Bureau of Economics and Statistics for conversion of mixed cropped area under pepper to pure crop area.

5. Procedure for data collection

The collection of data was done in two phases. The first phase of collection was conducted immediately after the formation of groups by the researcher and just before the start of the season's cultural operations, while the second phase of data collection was done after about one year towards the end of harvest season of pepper.

The first phase of data collection was done during May, 1990, while the second phase of data collection was during April-May, 1991.

During the first phase, as a treatment, the groups as well as the individual farmers were subjected to a training in which an exposure was given to them about the package of practices to be followed in pepper cultivation. An exposure to the scientific method of pepper cultivation was given in a uniform manner by the researcher himself by arranging group meeting and discussion. A leaflet on scientific pepper cultivation prepared by the researcher was supplied to all the groups as well as the individual farmers (Appendix III).

The data were collected from the farmers using well structured and pre-tested interview schedule prepared for the purpose. The same interview schedule used during the first phase was used during the second phase also, except for some modification (Appendix IV & V). The farmer respondents were directly interviewed by the researcher during both the phases of data collection.

6. Statistical tools used in the study

The following statistical tools were employed to analyse and interpret the data.

1. Student's 't' test

Student's 't' test was used to test the significance of difference between means to compare the selected characteristics of pepper farmers immediately after the formation of groups and after one crop season. The following formula was used.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

where,

$\bar{X}_1$ = Mean of sample before treatment

$\bar{X}_2$ = Mean of sample after treatment

S_1 = Standard deviation of sample before treatment

S_2 = Standard deviation of sample after treatment

n_1 = Size of sample before treatment

n_2 = Size of sample after treatment

2. Analysis of variance (ANOVA)

ANOVA test was used to compare the difference between the types of groups and the different subgroups within a group in respect of adoption of management practices in pepper cultivation.

The method of partitioning the total variation into components assignable to different causes is known as analysis

of variance and the table showing various mean squares together with the corresponding degrees of freedom is called analysis of variance Table. The ANOVA table provides a ready means of testing the significance of difference between class means. A comparison of the mean square due to any cause with the error mean square provides a test of significance of difference arising from that particular cause. The comparision is done by finding the ratio of the mean square concerned to the error mean square. This ratio is known as the variance ratio and is denoted by F. The F value thus obtained is compared with the table value of F to find out the significance at different levels of probability (Panse and Sukhatme, 1978).

Results and Discussion

CHAPTER IV

RESULTS AND DISCUSSION

The findings of the present study and discussion thereon are presented in this chapter under the following heads.

1. Effect of type and size of group in relation to group performance
2. Influence of group related processes in relation to group performance
3. Influence of selected personal and behavioural characteristics related to group performance
4. Constraints of group approach in pepper cultivation

1. Effect of type and size of group in relation to group performance

The results of analysis of variance presented in Table 6 reveal that there was significant difference in adoption of pepper management practices among the group types when studied immediately after the formation of groups. However, there was no significant difference in the adoption of pepper management practices among the group types, when studied after a lapse of one season.

The data clearly indicate that before the formation of groups, there existed variation in the extent of adoption of

Table 6. Results of ANOVA of adoption of pepper management practices by different group types

	Source	df	T.S.S.	M.S.S.	F
I	**Immediately after the formation of groups**				
	Between group types	2	19.431	9.716	4.224**
	Between size groups	6	15.797	2.633	1.145^{NS}
	Within size groups	134	308.199	2.300	
	Total	142	343.427		
II	**After one crop season**				
	Between group types	2	12.337	6.169	1.617^{NS}
	Between size groups	6	38.248	6.375	1.671^{NS}
	Within size groups	134	511.303	3.816	
	Total	142	561.88		

** Significant at 1 per cent level

NS Not significant

practices among the pepper growers who constituted the three groups. It could be possible that one of the three groups (existing group) selected for the study comprising of farmers who were already members of rice group farming was superior to the other groups in respect of adoption of management practices. The mean adoption scores for the three groups worked out immediately after the formation of groups as given in Table 7 substantiate this possibility. Thus one could expect a distinct difference in the extent of adoption of pepper management practices among the group types. However, after a lapse of one season after the formation of groups and uniform training imparted to all the members of the different groups, there was no significant difference in the extent of adoption between the group types . This probably might be due to the exposure of the farmers of different groups to the same stimuli through the training resulting in more or less uniform pattern of adoption practices. The observed results after a lapse of one season thus is logical and justifiable.

The results obtained in the present study do not support the hypothesis that there will be variation in the extent of adoption of improved practices by the farmers under different group types. On the contrary, it was observed that in respect of the type of group, there was no significant variation noticed in the extent of adoption of pepper practices by the farmers.

The results of ANOVA indicate that there was no significant difference between the size groups on the adoption of

pepper management practices studied immediately after the formation of groups and also after a lapse of one crop season. The result revealed that the size of the groups is not related with the adoption of pepper management practices which was taken as a measure of group performance. Thus it is rather clear from the study that it is not the size of the group that matters when the situation is more or less uniform and the membership is also homogeneous with respect to nature of task to be undertaken by the members.

Table 7 presents the adoption scores immediately after the formation of groups and after a lapse of one crop season. It is evident from the results that there was significant difference in the mean adoption scores immediately after the formation of groups and after one crop season in the case of focused group and also identified focused groups, whereas in the case of existing group and control group, no significant difference was noted in the mean adoption scores (Fig.3).

The mean adoption scores of different size groups with in a group type immediately after the formation of groups and after the lapse of one season are presented in Table 8.

From the results it could be observed that there was significant difference in the mean adoption of pepper management practices studied immediately after the formation of groups and after one crop season among all the three size groups in the

Table 7. Comparison of mean adoption scores by different group types

Group type	No. of members	Mean adoption score		't' value
		Immediately after the formation of group	After one crop season	
Existing group	49	3.75	4.26	1.211^{NS}
Focused group	45	2.88	4.00	4.164**
Identified focused group	49	3.10	4.71	4.553**
Control	50	3.40	3.04	1.043^{NS}

** Significant at 1 per cent level

NS Not significant

FIG.3 COMPARISON OF MEAN ADOPTION SCORES BY DIFFERENT GROUP TYPES

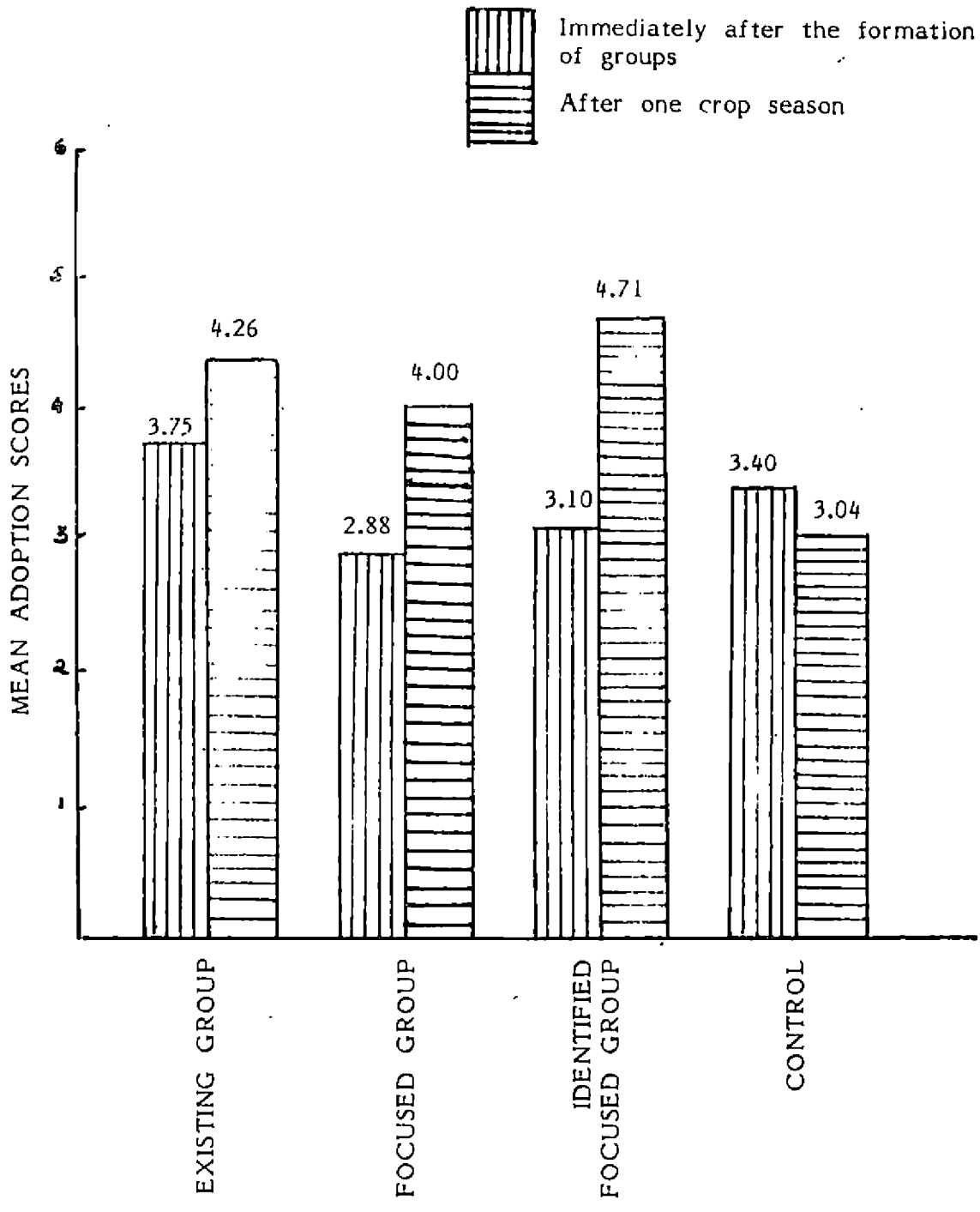


Table 8. Comparison of mean adoption scores of different size groups

Group type	Group size	No. of members	Mean adoption score		't' value
			Immediately after the formation of group	After one crop season	
Existing group (E.G.)	I	10	3.40	3.90	1.751^{NS}
	II	16	3.43	4.06	0.816^{NS}
	III	23	4.13	4.56	0.700^{NS}
Focused group (F.G.)	I	10	3.00	4.00	1.714^{NS}
	II	15	2.93	3.80	1.860^{NS}
	III	20	2.80	4.15	3.497**
Identified focused group (I.F.G.)	I	11	2.45	3.63	2.277*
	II	16	2.93	4.25	2.382*
	III	22	3.54	5.59	3.766**

** Significant at 1 per cent level

* Significant at 5 per cent level

NS Not significant

case of identified focused group and in the case of only third group (n 20-24) under focused group. The difference in the mean adoption scores of the above size groups were statistically significant. In all other cases, though there was difference noted between the mean adoption scores immediately after the formation of groups and after a lapse of one crop season, the mean scores were not statistically significant.

It could be argued that the identified focused group was more homogeneous compared to other groups since homogenity of the members was ensured with respect two aspects viz. the number of vines cultivated and the major crop under cultivation. As mentioned earlier, farmers under the identified group were selected following the condition that they shall not have more than 250 pepper vines under homestead situation and the major crop shall be coconut. It is reasonable to expect that farmers selected with such specific criteria as above tend to behave more positively resulting in a higher adoption of the management practices which might have resulted in the present results.

Since the members of the existing group were already exposed to the group situations, the group processes might have already influenced them in adoption of pepper management practices and as such the adoption scores worked out after the lapse of one crop season might not be enough to evidence significant results.

In the case of control group which comprised of scattered individual farmers, there may not be the influence of the group process and hence no significant change could be expected of them. In the case of focused and identified focused group, the farmers were exposed to group situations which might have acted as stimulus for higher adoption of the management practices.

2. Influence of group related processes in relation to group performance

Social participation

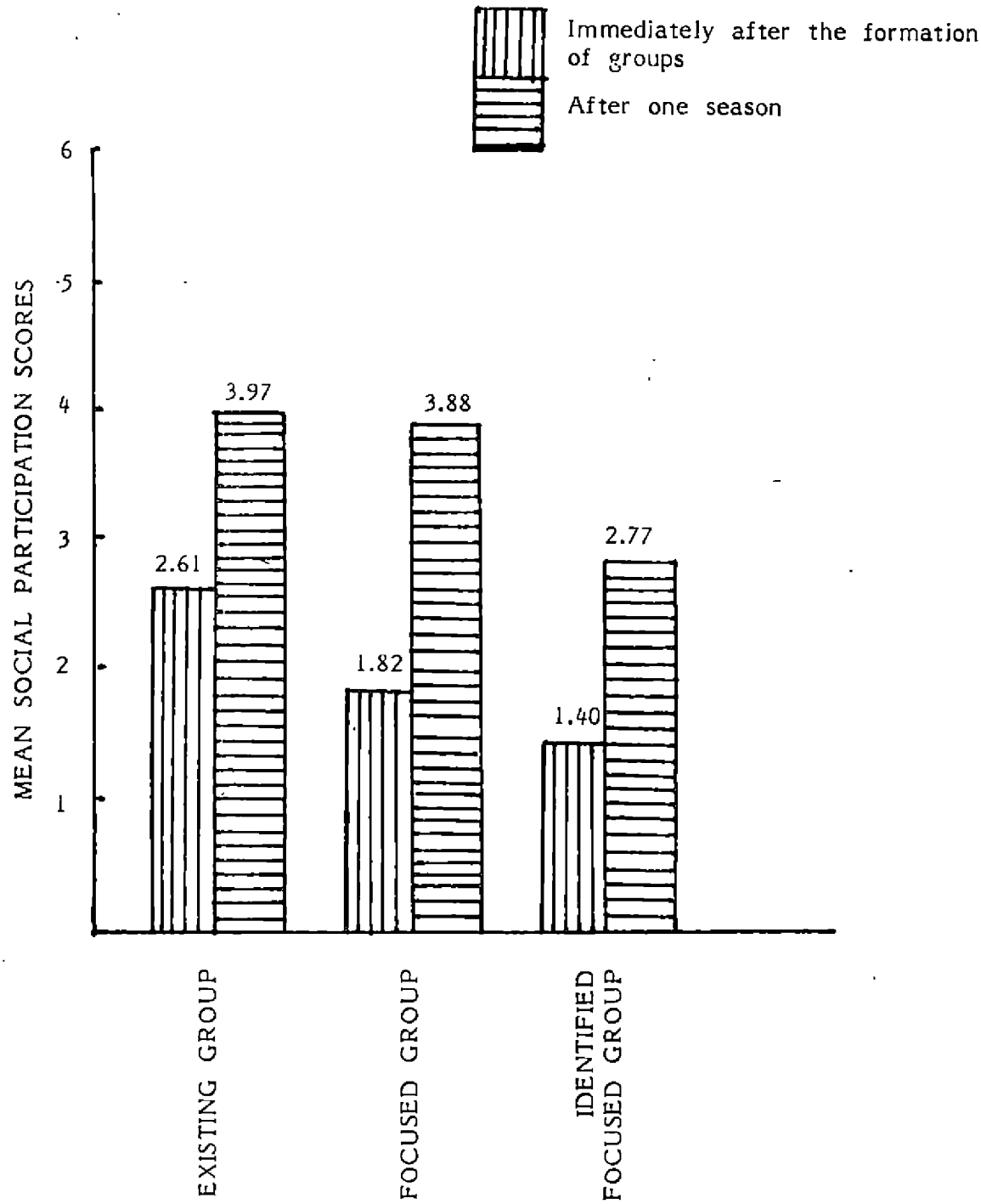
The mean scores of the different group types on social participation worked out immediately after the formation of groups and after one season is furnished in Table 9. There was significant difference between the mean scores noted in the case of all the three groups. It is obvious from the result that after the formation of groups and their functioning for one season, the social participation of members in terms of their involvement and participation in various social organisations had been increased considerably. The higher adoption scores obtained in the case of all the three groups after one season (indicated as mean adoption scores) as evident from Table 7 could be the result of the increased social participation of the members (Fig.4).

Table 9. Comparison of mean social participation scores by different group types

Type of group	No. of members	Mean score on social participation		't' value
		Immediately after the formation of group	After one crop season	
Existing group	49	2.61	3.97	5.625**
Focused group	45	1.82	3.88	5.738**
Identified focused group	49	1.40	2.77	4.649**

** Significant at 1 per cent level

FIG.4 COMPARISON OF MEAN SOCIAL PARTICIPATION SCORES BY DIFFERENT GROUP TYPES



It has been pointed out by many researchers that participation of members in group activities increases the group performance. Shaw (1932) opined that group was superior to individuals as far as task performance is concerned. According to Shaw (1977), group members who are attracted to the group, work harder to achieve the goals of the group which leads to higher productivity. Douglas (1979) also expressed the same view.

Table 10 presents the extent of social participation of the members of the different groups studied immediately after the groups were formed for the study purpose. It could be seen from the table that all the pepper growers included under the existing group recorded social participation since they were already members of the paddy group farming. However, in the case of focused and identified focused groups, only 71.11 and 53.06 per cent of members respectively had social participation in terms of membership in any of the organisations/associations. The extent of social participation after one season was not taken into account, since it was assumed that all the members under the different groups will have social participation at least in terms of membership in the groups that were formed.

nterpersonal liking

The mean scores on interpersonal liking of the three immediately after the formation of groups and after one

Table 10. Distribution of respondents in relation to their social participation

Type of group	No. of members	Participation in organisations		Non participation	
		Frequency	Per cent	Frequency	Per cent
Existing group	49	49	100.00	0	--
Focused group	45	32	71.11	13	28.89
Identified focused group	49	26	53.06	23	46.94
Total	143	107	74.83	36	25.17

crop season is furnished in Table 11. The results indicate that there was significant difference between the mean scores in the case of focused and identified focused groups, while existing group showed no significant difference in the mean scores(Fig.5).

It is quite understandable that the farmers who are members of the existing group had already developed interpersonal liking toward other members whereas in the case of other two groups, the formation of the group was instrumental in initiating interpersonal relations resulting in liking among the members. Hence the observed result is logical and reasonable. It could also be possible that the members of focused and identified focused groups were comparatively more homogeneous and similar in their attitude which had resulted in the present finding.

Many authors had indicated that similarity of attitude between the members leads to attraction and interpersonal liking. Byrne and Clore (1966) stated that the more similar in attitude the other person appeared to be, the more he was liked.

The theory of attraction of Newcomb (1961) relates attraction between persons to the attitudes that they hold in common toward objects. Curry and Emerson (1970) found that individuals liked other persons who had favourable attitude towards them.

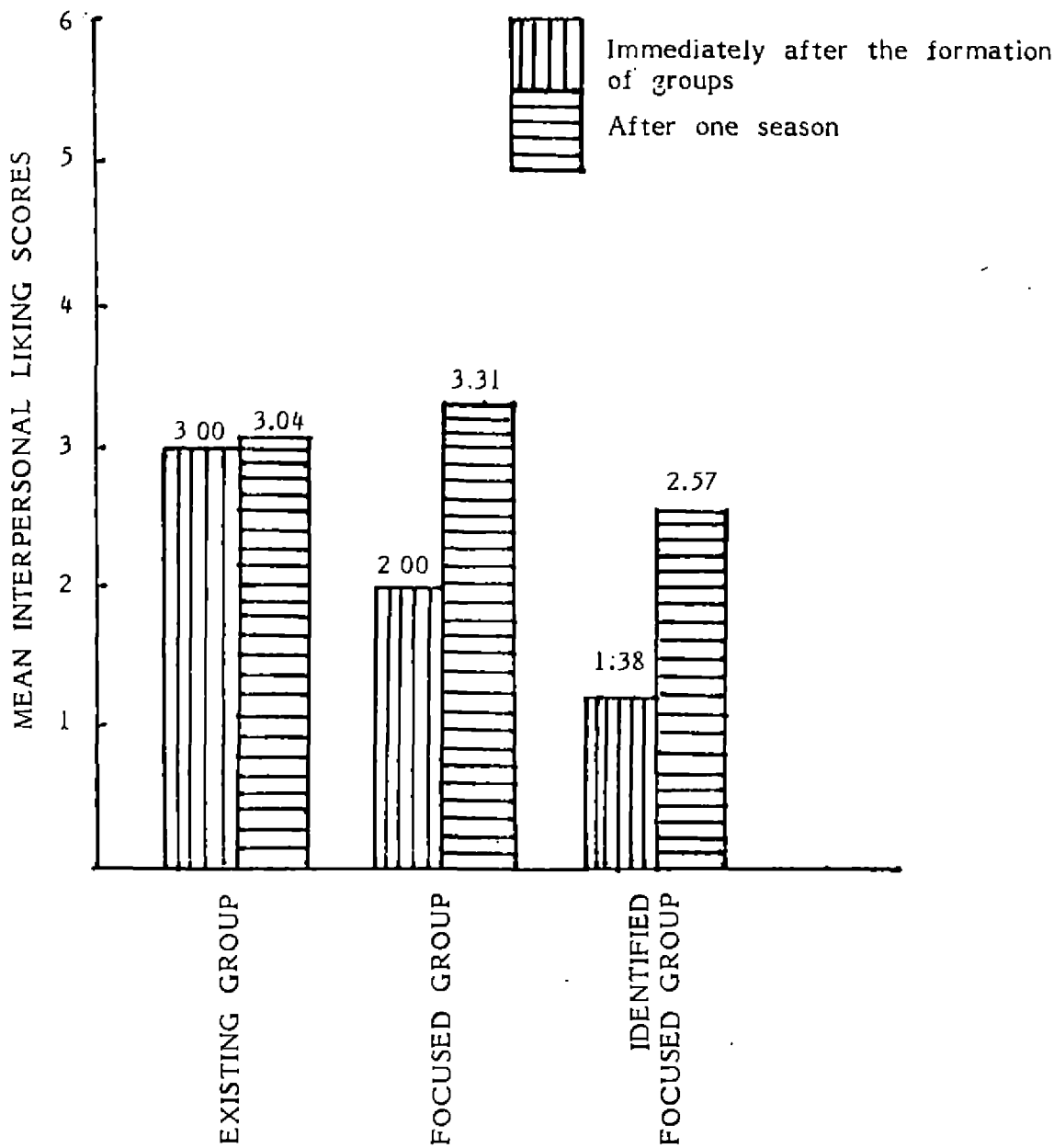
Table 11. Comparison of mean interpersonal liking scores by different group types

Type of group	No. of members	Mean score on interpersonal liking		't' value
		Immediately after the formation of groups	After one crop season	
Existing group	49	3.00	3.04	0.266^{NS}
Focused group	45	2.00	3.31	5.650**
Identified focused group	49	1.38	2.57	5.406**

** Significant at 1 per cent level

NS Not significant

FIG.5 COMPARISON OF MEAN INTERPERSONAL LIKING SCORES BY DIFFERENT GROUP TYPES



Since the focused and identified focused groups could be considered relatively more homogeneous, the members in those groups can be expected to develop similarity of attitude and hence more interpersonal liking is possible which was confirmed by the observed result.

Table 12 outlines the liking of members of the group studied after one season of the formation of groups. It could be observed from the table that in all the three groups, majority of members indicated that they had interpersonal liking. However, more than one-third of the members distributed more or less uniformly in all the groups were neutral in their response to the question of interpersonal liking.

A glance at Table 13 reveals the reason for interpersonal liking as perceived by the pepper growers who had responded positively (n=86) to this aspect. A vast majority of members (81.39%) indicated 'members are co-operative' as the reason for their liking others. 'Members are not selfish' (5.82%), 'members have helping nature' (5.82%), 'members are manageable' (4.65%), and 'members have similar views' (2.32%) were the other reasons reported for interpersonal liking. It is possible to conclude from the results that co-operation of members in different activities leads to better interpersonal liking. Secord and Backman (1974) suggested that persons who co-operate with each other will have more interpersonal liking and trust.

Table 12. Distribution of respondents in relation to their interpersonal liking

Type of group	No. of members	Interpersonal liking					
		Yes		Neutral		No	
		Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
Existing group	49	31	63.26	17	34.70	1	2.04
Focused group	45	27	60.00	18	40.00	0	0.00
Identified focused group	49	28	57.14	19	38.78	2	4.08
Total	143	86	60.14	54	37.76	3	2.10

Table 13. Reasons for interpersonal liking as perceived by the pepper growers

Sl.No.	Reason	Percentage (n = 86)
1.	Members are co-operative	81.39
2.	Members are not selfish	5.82
3.	Members have helping nature	5.82
4.	Members are manageable	4.65
5.	Members have similar views	2.32

Interpersonal trust

The mean scores on interpersonal trust measured immediately after the formation of groups and after one season are furnished in Table 14. The result indicate that in the case of focused and identified focused groups there was significant differences between the mean scores, whereas in the existing group no significant difference was noted. Both liking, towards others and trust in others develop over a period of time due to constant interaction with the members. In the case of focused and identified focused groups, it is possible that after one season, the members might have got enough opportunities to get acquainted with others and in this process they might have developed both liking and trust. The reasons discussed earlier for interpersonal liking holds good in the present case also. The interpersonal trust expressed in terms of faith or confidence is inevitable for group cohesion and co-operation between the members. It is to be noted here that the interpersonal liking toward others lead to the development of faith or confidence in them (Fig.6).

Gibb (1964) suggested that there were two contrasting climates - defensive and supportive. In a group where supportive climate is dominant in the members, interpersonal liking between the members will be more, which helps the members to develop openness and trust between them. This enables the

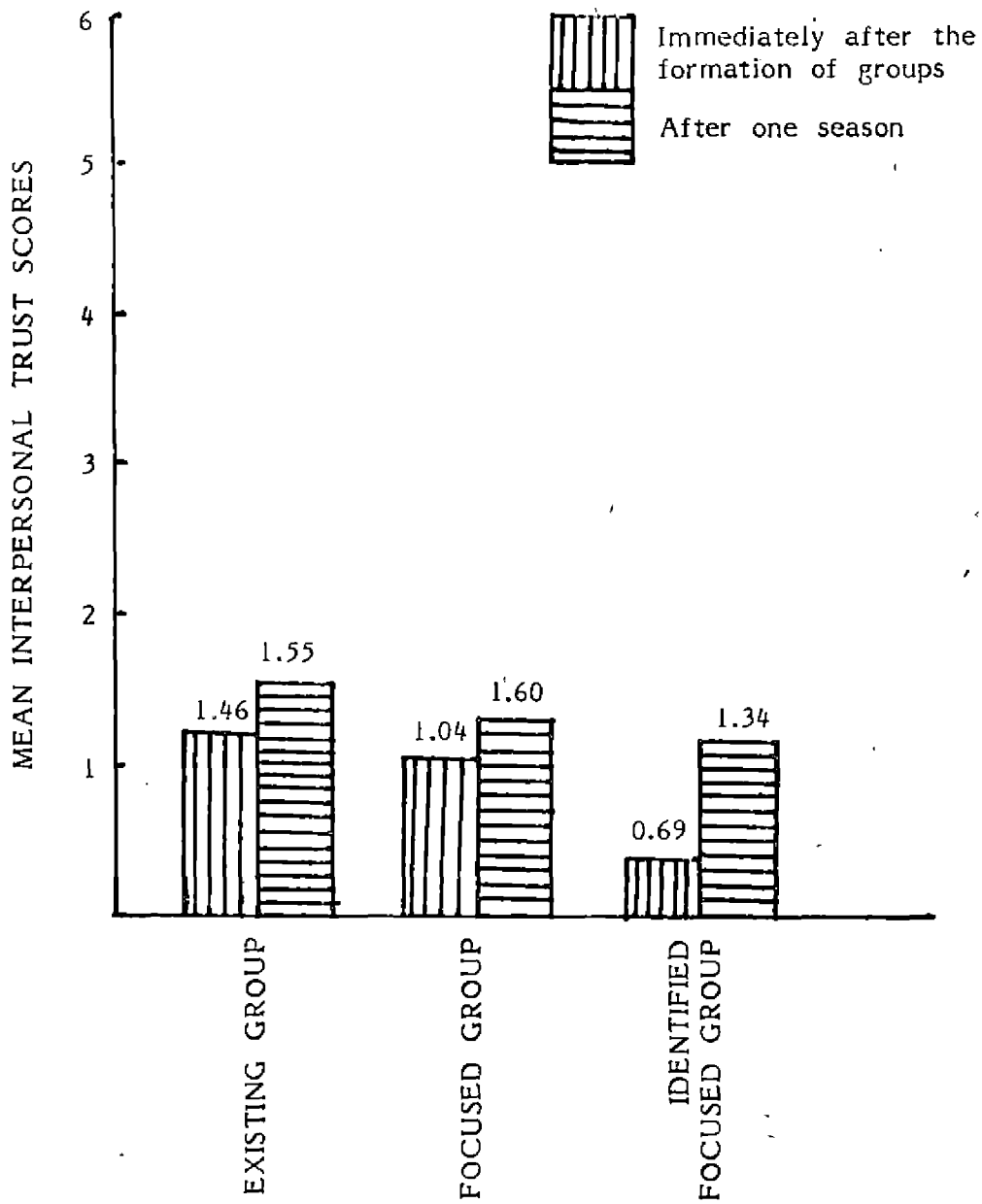
Table 14. Comparison of mean interpersonal trust scores by different group types

Type of group	No. of members	Mean score on interpersonal trust		't' value
		Immediately after the formation of group	After one crop season	
Existing group	49	1.46	1.55	0.672^{NS}
Focussed group	45	1.04	1.60	3.682**
Identified focused group	49	0.69	1.34	4.766**

** Significant at 1 per cent level

NS Not significant

FIG.6 COMPARISON OF MEAN INTERPERSONAL TRUST SCORES BY DIFFERENT GROUP TYPES



group for higher group performance. This view is supported by Vraa (1974). In the present case, the group presents a supportive climate for its members and hence the finding is justifiable.

According to Secord and Backman (1974), interpersonal trust is basic to co-operation between members of a group. Interpersonal trust leads to cohesion of the group and co-operation among members, which results in higher group performance.

Table 15 presents the pattern of response of the members in the different groups who had interpersonal trust. A glance at the table reveals that majority of members in all the three groups had trust in others and only a minority (less than 10%) had responded negatively.

The resons for the interpersonal trust as perceived by the respondents who had trust in other (n = 129) is furnished in Table 16. Nearly three-fourth of the respondents (72.87%) had indicated past experience with the members as the reason for interpersonal trust. Other reasons pointed out were 'members are not selfish' (10.07%), 'members are co-operative' (8.53%), 'members are dependable' (6.20%), and 'members are not corrupt' (2.33%).

The above finding confirms the 'leniency effect' as pointed out by the social psychologists. People tend more often

Table 15. Distribution of respondents in relation to their interpersonal trust

Type of group	No. of members	Response			
		Yes		No	
		Frequency	Per cent	Frequency	Per cent
Existing group	49	43	87.75	6	12.25
Focused group	45	41	91.11	4	8.89
Identified focused group	49	45	91.84	4	8.16
Total	143	129	90.20	14	9.80

Table 16. Reasons for interpersonal trust as perceived by the pepper growers

Sl.No.	Reasons	Percentage (n = 129)
1.	Past experience with the members	72.87
2.	Members are not selfish	10.07
3.	Members are co-operative	8.53
4.	Members are dependable	6.20
5.	Members are not corrupt	2.33

to be positive than negative in evaluating people in general. Person perception showing this tendency to give positive evaluation is termed leniency effect.

Interpersonal contact

The mean scores on interpersonal contact of group members immediately after the formation of groups and after one season are presented in Table 17. The results show that only in identified focused group, there was significant difference between the mean scores. Interpersonal contact in the present study was defined as the extent of contact of an individual with other members of the group on different matters concerned with pepper cultivation, which was measured in terms of regularity of contact with other members. In the existing and focused groups, no significant difference was noted between the mean scores(Fig.7).

The results indicate that regularity of contact among the members after the formation of groups was significantly more in the case of identified focused group compared to the other two groups. In the case of existing group, there were regular contacts among the members earlier also and as such it might have continued. In the case of focused group comparatively more interpersonal contact was noted initially and though there was increase in the mean score noted after one season, the increase might not be large enough to produce a significant difference.

FIG.7 COMPARISON OF MEAN INTERPERSONAL CONTACT SCORES BY DIFFERENT GROUP TYPES

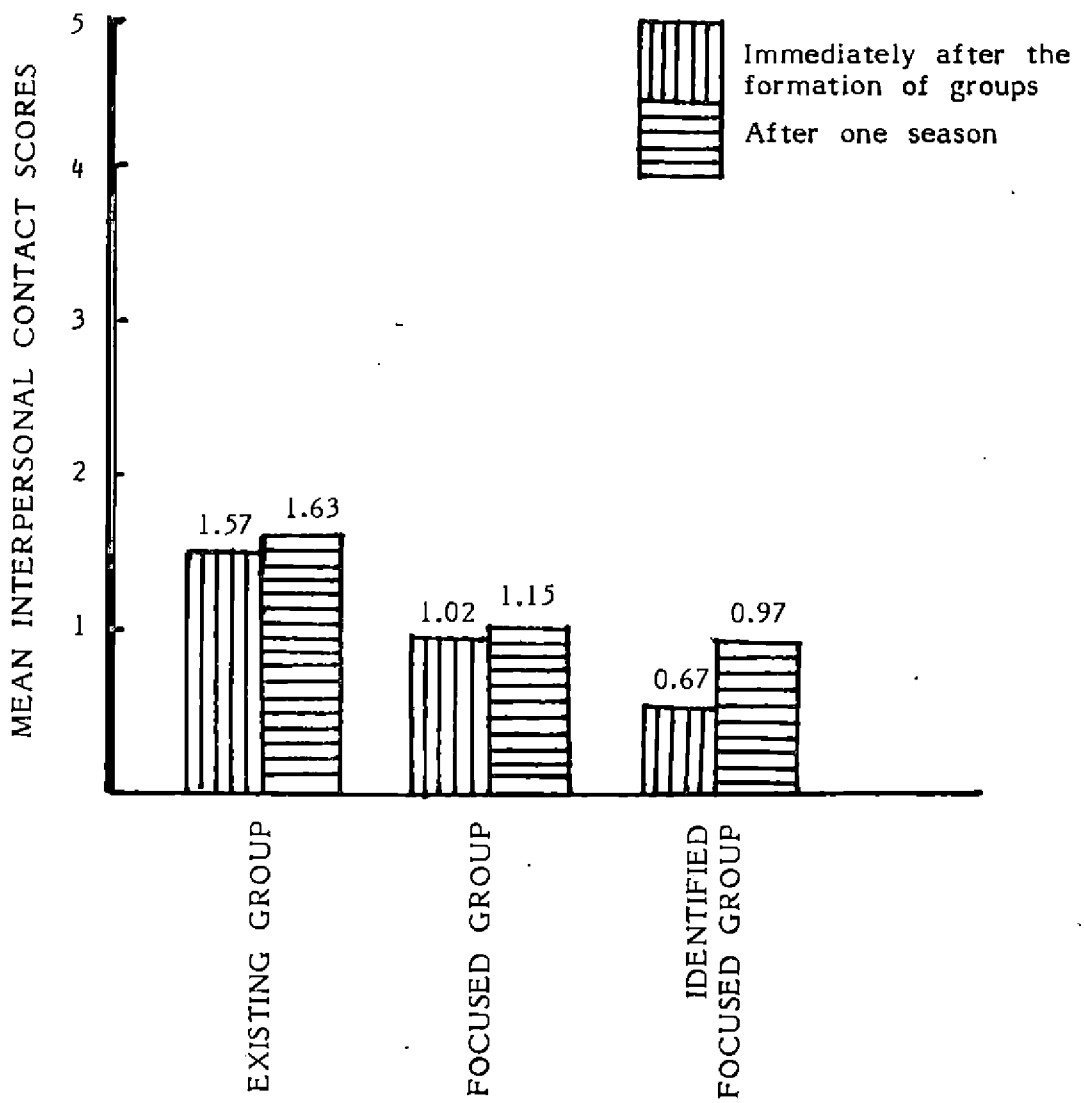


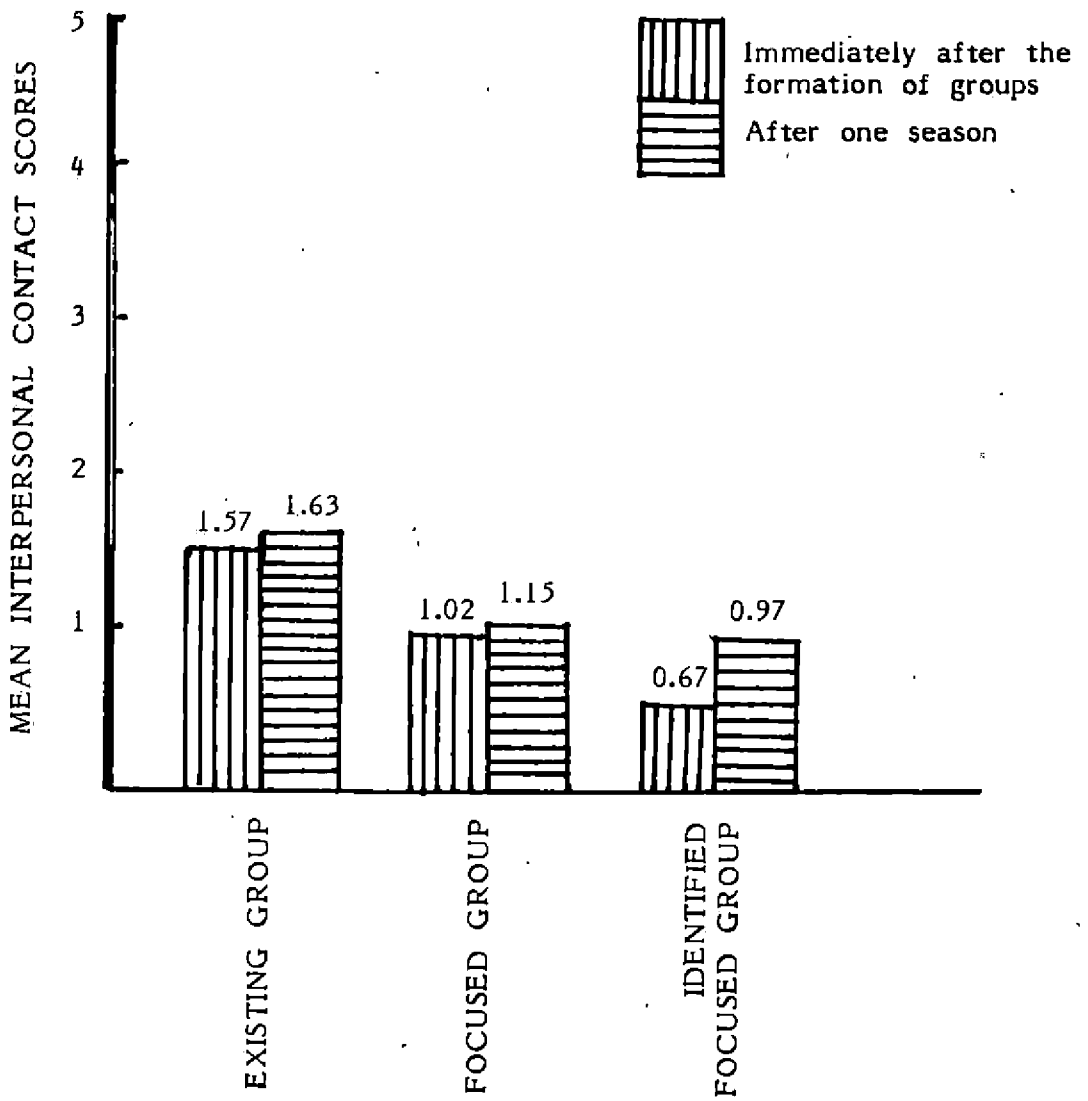
Table 17. Comparison of mean interpersonal contact scores by different group types

Type of group	No. of members	Mean score on interpersonal contact		't' value
		Immediately after the formation of groups	After one crop season	
Existing group	49	1.57	1.63	0.303^{NS}
Focused group	45	1.02	1.15	0.768^{NS}
Identified focused group	49	0.67	0.97	2.185*

* Significant at 5 per cent level

NS Not significant

FIG.7 COMPARISON OF MEAN INTERPERSONAL CONTACT SCORES BY DIFFERENT GROUP TYPES



Many investigations have revealed that interpersonal cotnact results in more favourable attitude in members of the group. Sharma (1979) opined that social relationship depends upon social interaction of members of the society. Norman et al. (1988) stated that groups keep farmers in the foreground, provides a means of using social dynamics constructively and create a multiplier effect which assist the farmer to farmer spread of improved technologies.

Frequent and regular contact of individuals with other members results in knowing the other individuals better and also evaluating them in terms of their abilities and potentialities. Thus, once an individual understands others fully, they will be contacted as and when required with a view to utilize these resources in fulfilling the different tasks or solving the problems.

Table 18 clearly brings out the fact that nearly one-fourth of the members (22.38%) more or less equally distributed among all the three types of groups did not have any contact with other members which is quite embarassing. It is to be noted in this context that one cannot expect to have inter-personal contact developed only by becoming member of a group. This factor has to be taken into account while formulating the different tasks to be undertaken by the group. The size of group also could be a factor which promotes interpersonal contact among members. With increasing group size, the absence

Table 18. Distribution of respondents in relation to their interpersonal contact

Type of group	No. of members	Response			
		Yes		No	
		Frequency	Per cent	Frequency	Per cent
Existing group	49	39	79.60	10	20.40
Focused group	45	33	73.33	12	26.67
Identified focused group	49	39	79.60	10	20.40
Total	143	111	77.62	32	22.38

of contact tends to be more. The first stage of group maintenance involves a period of approach-avoidance on the part of members. Anxiety may be shown by some members about the new situation which can be compared with the inclusion period suggested by Schutz (1958). Lack of contact with other members observed in the present study could also be attributed to this phenomenon.

Table 19 presents the reasons for interpersonal contact as perceived by those who had interpersonal contact (n = 111). It was noted that 53.85 per cent members contacted others for seeking information while 50.35 per cent contacted for clarifying information and 23.08 per cent for conveying information on pepper cultivation. Thus, it is evident that interpersonal contact was mainly for seeking and clarifying information connected with pepper cultivation.

Co-operation

Perusal of Table 20 reveals that a large number of farmers in the three different group types extended co-operation among themselves. However, it was observed that a few members did not show any signs of co-operation with others tending to act independently, inspite of being a member of the group (Fig.8).

A study by Schutz (1955) brought out that compatability of group members and the degree of co-operation between the members influenced the successful completion of the task and

Table 19. Persons for interpersonal contact as perceived by the pepper growers

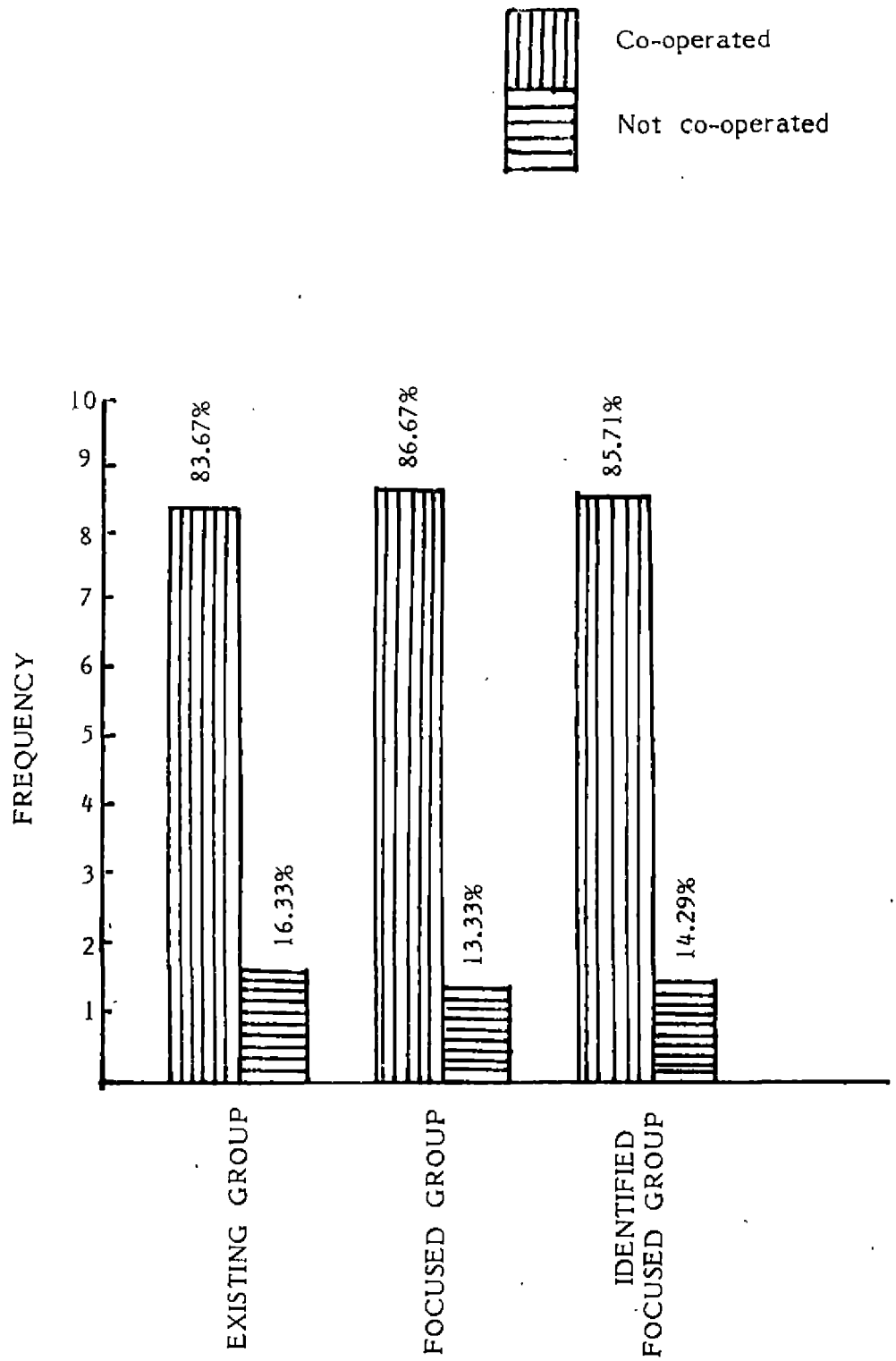
Sl.No.	Reason	Percentage* (n = 111)
1.	For conveying information	23.08
2.	For seeking information	53.85
3.	For clarifying information	50.35

* The percentage do not add upto 100 due to multiple responses

Table 20. Distribution of respondents in relation to their co-operation

Type of group	No. of members	Response			
		Yes		No	
		Frequency	Per cent	Frequency	Per cent
Existing group	49	41	83.67	8	16.33
Focused group	45	39	86.67	6	13.33
Identified focused group	49	42	85.71	7	14.29
Total	143	122	85.31	21	14.69

FIG.8 DISTRIBUTION OF RESPONDENTS IN RELATION TO THEIR CO-OPERATION



attainment of the goal of the groups. Co-operation among the members of the group is inevitable for the success of the group and only if there exists co-operation, there would be better group performance.

The concept of 'social space' as given by Simmel which is defined by boundaries as in the case of groups pave way for more co-operation. The interaction of an individual and his orientation could be considered as the different areas of social space he occupies as a member of the group.

The kind of co-operation between the members of the groups is furnished in Table 21. It reveals that 84.61 per cent of the members co-operated with others for sharing information on pepper cultivation, while 34.26 per cent in purchasing/ application of manures and fertilizers. Other areas where members co-operated with others were spraying against pest and disease (21.68%), in harvesting and processing (16.78%) and marketing of pepper (13.28%). It is thus evident from the table that the members of the pepper farmers' group co-operated in all the important aspects in pepper production.

Farmer to farmer interaction

Table 22 furnishes the frequency of interaction between the members. It is obvious from the table that a large number of farmers in all the three type groups had interacted with others. However, it was noted that there were some farmers in all the three groups who were not found to interact with others (Fig.9).

Table 21. Kind of co-operation among the members of the pepper farmers' group

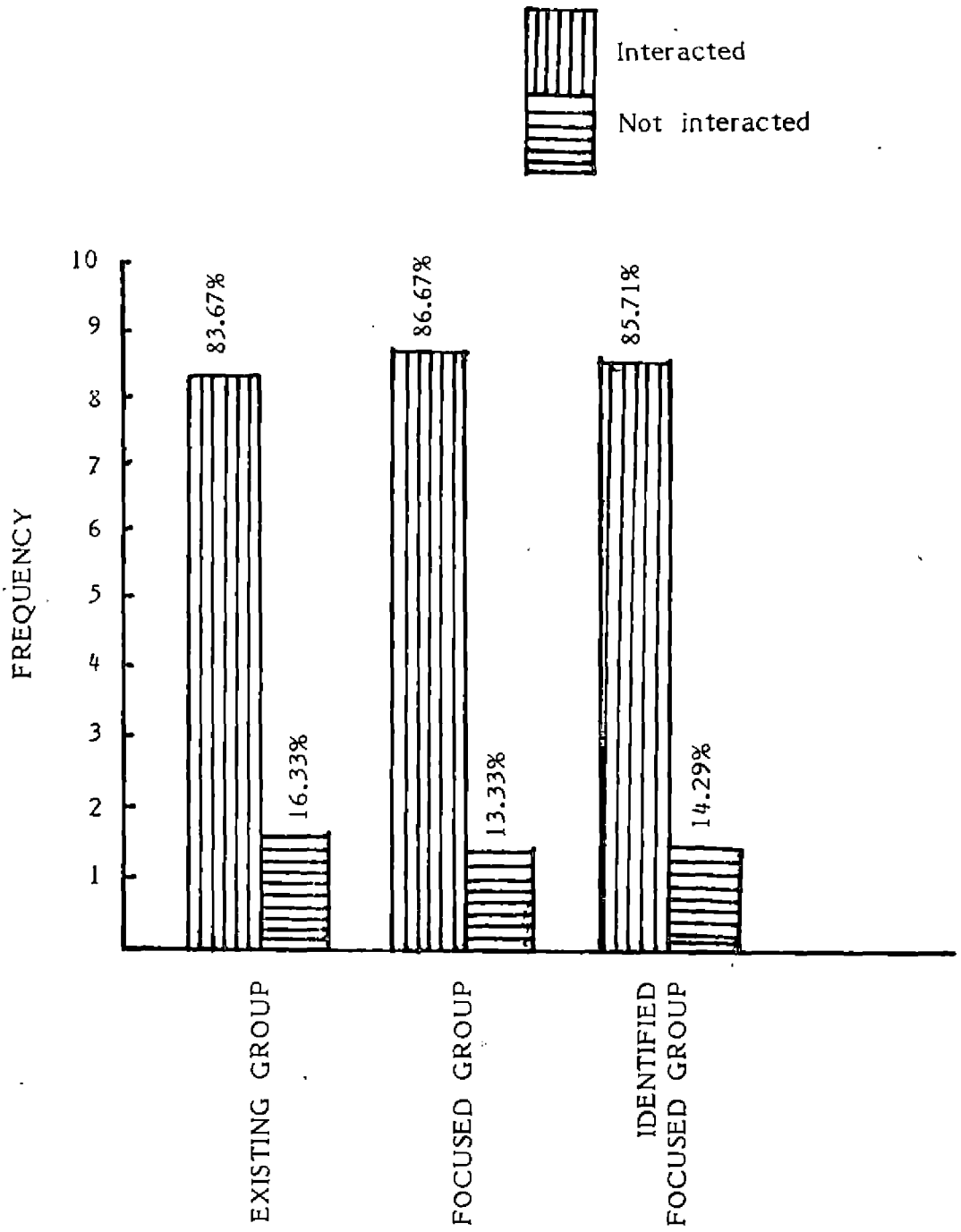
Sl.No.	Item of co-operation	Percentage* (n = 122)
1.	Sharing information	84.61
2.	In purchasing/application of manure/ fertilizer	34.26
3.	In spraying against pest and diseases	21.68
4.	In harvesting and processing of produce	16.78
5.	In marketing of pepper	13.28

* The percentage do not add upto 100 due to multiple responses

Table 22. Distribution of respondents in relation to farmer to farmer interaction

Type of group	No. of members	Response			
		Yes		No	
		Frequency	Per cent	Frequency	Per cent
Existing group	49	41	83.67	8	16.33
Focused group	45	39	86.67	6	13.33
Identified focused group	49	42	85.71	7	14.29
Total	143	122	85.31	21	14.69

FIG.9 DISTRIBUTION OF RESPONDENTS IN RELATION TO FARMER TO FARMER INTERACTION



According to Bales (1950), the term 'interaction' implies that the consensus about symbolic acts is sufficient to enable participants to adopt roles and, through time, evolve norms about both their behaviour toward one another and the topic at hand.

According to Douglas (1979) interaction is the reciprocal response of the people to each other and Isreal (1956) had reported that interaction facilitatesgoal achievement.

Though a higher amount of interaction was noticed, it has to be admitted that interaction always necessarily need not be in the positive direction. It is a fact that interaction might have occurred to deal with and resolve what Collins and Guetzekow (1964) refer as 'interpersonal obstacles', such as individualisation, competitive motivation, dislike and so on which make the group uncomfortable.

It was noted that the number of farmers who had interacted and co-operated with others in the groups were slightly higher than the number of farmers who indicated interpersonal contact among the members, which is a curious observation. This probably had occurred as some of the respondents might have considered only the formal contact with others in the group environment while indicating their response to the item on interpersonal contact, thus vitiating the result.

It could be seen from the present study that there was substantial increase in the group related processes like social participation, interpersonal liking, interpersonal trust, interpersonal contact, co-operation and farmer to farmer interaction when measured immediately after the formation of groups and after functioning of the group for one season. It may also be noted in this context that all these social processes are interrelated in one way or other. It could be inferred that group exerts substantial influence on the members which is manifested in the increased response towards different group related processes.

3. Influence of selected personal and behavioural characteristics related to group performance

A. Personal characteristics

Age, education, farm size and area under pepper cultivation were the selected personal characteristics included in the study. The data with respect to these variables were collected from all the group members immediately after the formation of groups and also from the control group.

Age

The comparison of mean scores with respect of age among different groups is presented in Table 23. The result indicates that there was no significant difference between the mean scores

Table 23. Comparison of mean age of respondents by different combinations

Between group types	Mean score		't' value
E.G. and F.G.	47.12	42.13	1.913^{NS}
E.G. and I.F.G.	47.12	46.69	0.14^{NS}
E.G. and C	47.12	42.78	1.751^{NS}
F.G. and I.F.G.	42.13	46.69	0.573^{NS}
F.G. and C	42.13	42.78	0.435^{NS}
I.F.G. and C	46.69	42.78	1.771^{NS}

NS - Not significant

with respect to any group as far as age was concerned, which implied that the pepper growers included in all the groups did no differ significantly in respect of age. The age of individual members in all the group are more or less evenly distributed. Also predominance of any age group under specific group type was not found to exist, which resulted in the non-significance of mean age among groups.

Education

The mean education scores in respect of different groups are presented in Table 24. The result indicates that except between identified focused group and control group, there was no significant difference in the mean scores as far as education was concerned. Between identified focused group and control group there was significant difference in the mean scores. It could be inferred from the result that the average education of members of all the groups is more or less the same.

The farmers under the control group were selected randomly without any condition imposed on selection. In the case of farmers selected under control group there could be the possibility of wide variation in education with some members having higher educational status resulting in high mean education scores. However, in the case of other three groups, there were some conditions imposed in the selection of farmers which could have reduced the chance of variability in the education scores.

Table 24. Comparison of mean education scores of respondents by different combinations

Between group types	Mean score		't' value
E.G. and F.G.	3.75	3.22	1.837^{NS}
E.G. and I.F.G.	3.75	3.22	1.775^{NS}
E.G. and C	3.75	3.86	0.400^{NS}
F.G. and I.F.G.	3.22	3.22	0.017^{NS}
F.G. and C	3.22	3.86	0.539^{NS}
I.F.G. and C	3.22	3.86	2.038*

* Significant at 5 per cent level

NS Not significant

A glance at the table reveals that the mean education score of the existing group is higher compared to the other two groups and it could be argued that education might have indirectly influenced the members in the existing group to get associated with the group farming in paddy. This probably points to the fact that education acts as a stimulus for involvement of activities like group farming.

Farm size

The mean scores in respect of farm size of different groups are presented in Table 25. The comparison of means reveals that there was significant difference in the mean scores between existing and focused group, existing and control group and focused and identified focused group. In all the other cases, there was no significant difference noted between the mean scores.

The data indicate that the existing group had a higher mean score than all other groups, followed by the identified focused group and control group. It was observed that there was high variability in farm size in the case of existing group and relatively small variability in the case of focused group which might have contributed in a higher mean score in the case of existing group and lower mean score in respect of focused group.

Table 25. Comparison of mean farm size of respondents by different combinations

Between group types	Mean		't' value
E.G. and F.G.	1.28	0.88	3.438**
E.G. and I.F.G.	1.28	1.11	1.477^{NS}
E.G. and C	1.28	1.00	2.222*
F.G. and I.F.G.	0.88	1.11	8.836**
F.G. and C	0.88	1.00	1.100^{NS}
I.F.G. and C	1.11	1.00	0.788^{NS}

** Significant at 1 per cent level

* Significant at 5 per cent level

NS Not significant

Area under pepper cultivation

The mean scores in respect of area under pepper cultivation of different groups are furnished in Table 26. The data reveal that there was significant difference in the mean scores of area under pepper between the existing and focused group, focused and identified focused group and focused and control group. In other cases, there was no significant difference between the mean scores.

As such, it is but natural to expect relatively small area under pepper cultivation in the case of existing group compared to the focused group comprising of farmers cultivating pepper under pure crop situation in which case area under pepper will be more. Since the selection of farmers in the identified focused group was conditional in terms of the number of pepper vines and main crop, one cannot expect much variation of area under pepper in the case of identified focused group.

The farmers under control group were randomly selected from a scattered area and hence there could be variation in area under pepper cultivation for such farmers. Viewed in this angle, the result obtained could be justified.

B. Behavioural characteristics

Information source utilization

Table 27 presents the mean scores of information source utilization, studied immediately after the formation of groups

Table 26. Comparison of mean area under pepper of respondents by different combinations

Between group types	Mean		't' value
E.G. and F.G.	0.33	0.66	4.534**
E.G. and I.F.G.	0.33	0.37	0.883^{NS}
E.G. and C	0.33	0.38	0.903^{NS}
F.G. and I.F.G.	0.66	0.37	4.658**
F.G. and C	0.66	0.38	3.571**
I.F.G. and C	0.37	0.38	0.375^{NS}

** Significant at 1 per cent level

NS Not significant

Table 27. Comparison of mean information source utilization scores by different group types

Type of group	No. of members	Mean		't' value
		Immediately after the information of groups	After one crop season	
Existing group	49	7.65	8.22	0.816^{NS}
Focused group	45	7.88	9.46	1.628^{NS}
Identified focused group	49	7.34	8.97	2.118*
Control	50	7.58	7.28	0.427^{NS}

* Significant at 5 per cent level

NS Not significant

and after a lapse of one season. The result revealed that there was significant difference obtained between mean scores only in the case of identified focused group. However, it is evident from the table that the mean scores calculated after one crop season since the formation of groups was higher than the scores worked out immediately after the formation of groups, in all the three group types. Also, it is quite obvious that the information source utilization after the formation of groups was much higher compared to the control group, indicating that groups had definite influence on the members as far as the information source utilization is concerned.

As revealed from Table 7, the mean adoption scores of farmers in the case of all the three group types had substantially increased after the formation of groups. Many researchers have reported that information source utilization was positively and significantly related with the extent of adoption (Perumal, 1970; Chandrakandan, 1973; Manivannan, 1980; and Jayakrishnan, 1984).

Extension participation

The mean scores of extension participation of members of different groups measured immediately after the formation of groups and after one season are presented in Table 28. The result reveal that there was no significant difference between the mean scores in any of the groups. However, the mean

Table 28. Comparison of mean extension participation scores by different group types

Type of group	No. of members	Mean		't' value
		Immediately after the formation of groups	After one crop season	
Existing group	49	2.42	2.53	0.212^{NS}
Focused group	45	0.91	1.53	1.845^{NS}
Identified focused group	49	0.77	1.10	1.806^{NS}
Control	50	1.44	1.62	0.483^{NS}

NS - Not significant

extension participation scores for all the groups calculated after one season since the formation of groups were higher than scores worked out immediately after the formation of groups as revealed from the table.

The groups as such did not provide any chance for higher participation in extension activities by the farmers as the groups did not strive for organising such activities. However, it was observed that the mere membership in groups itself had enhanced the extension participation of the members.

The higher mean adoption scores observed after one season since the formation of groups as revealed from Table 7 could be the resultant of higher extension participation. Gangappa (1975) and Mahadevaswami (1978) found that farmers' participation in extension activities yielded a positive influence on the adoption behaviour. This view was supported by Jayaramaiah (1987) and Ramegowda and Siddaramaiah (1987).

Knowledge on pepper cultivation

Table 29 presents the mean scores on the level of knowledge of the farmers measured immediately after the formation of groups and after a crop season. The results indicate that there was significant difference in the knowledge scores in the case of all the groups. This implies that the initial knowledge of the group members on various aspects of pepper cultivation was low, which had increased after the formation of groups.

Table 29. Comparison of mean knowledge on pepper cultivation scores by different group types

Type of group	No. of members	Mean		't' value
		Immediately after the formation of groups	After the crop season	
Existing group	49	3.97	5.59	7.109**
Focused group	45	4.75	5.75	4.237**
Identified focused group	49	3.85	5.59	10.017**
Control	50	3.70	4.38	2.764**

** Significant at 1 per cent level

As mentioned in the methodology, immediately after the formation of groups, a meeting was organised separately for each group. In these meetings, the researcher himself provided adequate exposure to the members on the package of practices to be followed in pepper cultivation. A concise note on pepper cultivation was also distributed to the members. The exposure of all the members to the similar learning experience coupled with the influence of group processes that followed might have resulted in the increased knowledge of farmers.

The results are in line with the findings of Ramanna and Channegowda (1990) according to whom group meetings or group meetings with flip chart had significantly influenced participant farmers in gaining knowledge of sunflower technology. This is also in conformity with the findings of Vishnoi and Bose (1961), Singh and Akhouri (1966), Nagnur (1986) and Syed Sadaquat (1986).

4. Constraints of group approach in pepper cultivation

The important constraints that are likely to affect group approach in pepper cultivation were identified and listed in the interview schedule. The respondents were asked to identify the constraints which they felt important from this list. They were also given freedom to indicate other constraints which they felt as relevant and important. The constraints were ranked based on the frequency of a particular constraint being identified as important by the farmers.

The major constraints in group approach in pepper cultivation as perceived by the respondents and their respective ranks are furnished in Table 30.

A glance through the table reveals that 'absence of a government agency in organising the farmers and providing proper guidance' was pointed out as the most important constraint, which was ranked first followed by the lack of knowlege/awareness about group approach in pepper cultivation. However, both these constraints can be considered to be solved with the introduction of group management in pepper being implemented by the Department of Agriculture, Government of Kerala from 1990-91 onwards. Since the Government have now a definite programme and plan for group action in pepper, the pepper growers can be educated and made aware of the benefits of group approach.

Another important constraint pointed out by the respondents was decline in pepper cultivation due to quick wilt disease. Majority of the respondents included in the study were concerned about the devastating nature of this disease. Due to the severity and fast spreading nature of this disease, many of the pepper gardens are in a declining stage. The farmers had pointed out this as a constraint in group approach. But in fact, the government had introduced Group Management for pepper cultivation with the main objective of controlling this disease. The farmers have to be convinced about this fact.

Table 30. Constraints of group approach in pepper cultivation as perceived by the pepper farmers

Sl.No.	Constraints	Percentage*	Rank
1.	Absence of a government agency in organising the farmers and providing proper guidance	67.13	I
2.	Lack of knowledge/awareness about group approach in pepper cultivation	24.47	II
3.	Decline in pepper cultivation due to quick wilt disease	22.37	III
4.	Very small holding size/less number of vines owned by a grower	21.68	IV
5.	Absence of beneficial programmes for pepper cultivation	15.38	V
6.	Lack of co-operation among the farmers	13.28	VI
7.	Use of family labour for various operations	9.09	VII
8.	Group approach affects the individual initiative of pepper growers	8.39	VIII
9.	Seasonal nature of operations	6.29	IX
10.	Scarcity of labour during peak season	5.59	X
11.	Lack of input subsidy by the government	5.59	XI
12.	Traditional method of cultivation followed by farmers (non-application of fertilizers, pesticides and fungicides)	4.89	XII
13.	Since crop will be at different stages of growth, sharing of expenditure is difficult	3.49	XIII
14.	Group approach is not feasible in marginal pepper growing areas	2.09	XIV

* The percentage do not add up to 100 due to multiple responses

Very small size of the holding less number of vines owned by a farmer and absence of beneficial programmes for pepper cultivation were some other constraints identified by the farmers. Since the number of pepper vines cultivated by a farmer will be low in a vast majority of cases, it is but natural that the farmers may not show much interest in group approach for pepper. It is also evident that until and unless beneficial programmes are chalked out, the pepper farmers may not come forward to participate in such programmes.

Difficulty in sharing the expenditure since the crop will be at different stages of growth and non feasibility of group approach in marginal pepper growing areas obtained the lowest ranks among the constraints as perceived by the respondents.

Since the pepper growers as such are not exposed to the benefit of group approach, there is a tendency of motivated selectivity, operating on them, as a result of which they deliberately seek supportive information to reinforce their views and avoid unsupportive information. The results furnished in Table 30 cogently points out this observation.

Summary

CHAPTER V

SUMMARY

Pepper, otherwise known as 'King of spices', is one of the most important spices grown in India. Among the pepper producing countries of the world, India has a unique position in terms of both area and production. Pepper is the most important spice exported from India, earning foreign exchange worth Rs.200 crores annually.

Among the pepper producing states in India, Kerala has a distinct position as 97 per cent of the area and production is from the state. In Kerala, pepper is generally cultivated as a mixed crop under homestead conditions except in Idukki and Wayanad districts where it is cultivated as a pure crop. The districts of Idukki and Wayanad contribute to about 35 per cent of the area and 50 per cent of the production in the state.

The productivity of pepper in India is one of the lowest in the world when compared to other pepper producing countries. The Task Force on Pepper appointed by the Ministry of Agriculture, Government of India has identified non adoption of recommended package of practices as one of the important reasons for the low productivity of pepper in India. The pepper cultivation in Kerala, especially of Idukki and Wayanad districts is facing a major threat on account of quick wilt

disease, the severity of which is increasing year after year. An expert committee consisting of scientists from National Research Centre for Spices (NRCS), Kerala Agricultural University (KAU) and representatives of the Department of Agriculture (GOK), and Directorate of Cocoa, Arecanut and Spices (GOI) which had gone deep into the problem had recommended for an integrated approach for scientific crop management and disease management to revive the pepper cultivation in the State. A group approach has been suggested by the committee to implement the programmes effectively.

Encouraged by the success of group management in farming in other countries as well as selected pockets of Kerala, the Government of Kerala had introduced group farming for rice development in Kerala from 1989. The success of paddy group farming in the state has prompted the government to implement group management in coconut. Latest in this direction is the group management in pepper being implemented from 1990-91 season in Idukki and Wayanad districts.

As such, no systematic study is reported to have been conducted in field of group approach in farming. Against this background, the present study was undertaken with the following specific objectives.

1. To identify the effect of size and type of groups in the transfer of pepper production technology.

2. To identify group related processes that contribute to the transfer of technology.

3. To analyse the selected personal and behavioural characteristics of pepper growers in relation to transfer of pepper production technology.

4. To identify constraints of group approach in pepper cultivation.

The study was conducted in Wayanad and Kozhikode districts, which were purposively selected to represent pure crop and mixed crop area respectively. From each of these districts, one taluk with highest area under pepper cultivation was purposively selected for the study. Two panchayaths from Kozhikode taluk and one panchayath from Sultanbathery taluk were randomly selected for the study purpose.

Three types of groups were formed for the study purpose namely existing group (EG), focused group (FG) and identified focused group (IFG) which were represented by Puthuppady, Pulpally and Thamarassery panchayaths respectively. In the case of existing group, it was so decided that the members should invariably be a member of any of the farmers' group already functioning in the locality and also should have pepper cultivation as a mixed crop. Under the focused group those farmers who cultivated pepper as a pure crop only were selected.

In the identified focused group, the members were confined to those who owned pepper vines of not more than 250 under homestead situation with coconut as the major crop.

Under each type of group, three different sizes of groups (n_1 = between 10 and 14; n_2 = between 15 and 19; n_3 = between 20 and 24) were selected. Thus there were three types of groups, one in each panchayath and three subgroups under each of the three panchayaths selected for the study. Thus, altogether there were 143 farmers selected for the study. Besides these, 50 individual pepper farmers having similar agro-climatic conditions were also selected to serve as control for the study.

Adoption of recommended management practices of pepper was selected as the dependent variable for the study. The intervening variables were type of group, size of group and group related processes (social participation, interpersonal liking, interpersonal trust, interpersonal contact, co-operation and farmer-to-farmer interaction). The dependent variables selected for the study included personal characteristics of the pepper growers consisting of age, education, farm size and area under pepper cultivation and behavioural characteristics comprising of information source utilization, extension participation and knowledge about pepper cultivation.

The collection of data was done in two phases. The first phase of data collection was done immediately after the

formation of groups and just before the start of the cultural operations, while the second phase of data collection was done after about one year towards the end of the harvest season of pepper. During the first phase, as a treatment, the groups as well as the individual farmers were subjected to a training situation by the researcher himself by arranging group meetings and discussion in which an exposure was given to them about the package of practices to be followed in pepper cultivation.

The data were collected using structured interview schedule prepared for the purpose. Analysis of the data was done employing students' 't' test and analysis of variance.

The salient findings of the study are summarised and presented below.

1. There was significant difference between the types of groups in the extent of adoption of pepper cultivation practices immediately after the formation of groups. However, after a lapse of one season, no significant difference was noted between the types of groups in the extent of adoption of management practices of pepper.

2. The results of ANOVA indicated that there was no significant difference between the size groups in the extent of adoption of pepper cultivation practices studied immediately after the formation of groups and after one season.

3. There was significant difference between the mean adoption scores in the case of focused and identified focused groups studied immediately after the formation of groups and after one season.

4. Significant difference was noted between the mean scores on social participation immediately after the formation of groups and after one season, in all the three types of groups.

5. Significant difference was noted between the mean scores on interpersonal liking in the case of focused and identified focused groups when studied immediately after the formation of groups and after one season.

6. There was significant difference between the mean scores on interpersonal trust in the case of focused and identified focused groups studied immediately after the formation of groups and after one season.

7. Significant difference on interpersonal contact was noticed only in the case of identified focused group, studied immediately after the formation of groups and after one season.

8. Significant difference on information source utilization was noticed only in the case of identified focused group studied immediately after the formation of groups and after one season.

9. There was no significant difference in the case of extension participation in all the three groups studied immediately after the formation of groups and after one season.

10. Significant difference was noticed between the mean scores on knowledge on pepper cultivation, studied immediately after the formation of groups and after one season.

11. Absence of a government agency in organising the farmers and providing proper guidance to them was perceived as the most important constraint by the farmers in group approach in pepper cultivation, followed by lack of knowledge about group approach and decline in pepper cultivation due to quick wilt disease.

Implications and recommendations

The following implications and recommendations are suggested based on the findings of the study.

1. Since no significant effect for either the type of the group or size of the group was observed in the adoption of pepper management practices, pepper farmers can be grouped irrespective of the nature of pepper cultivation into convenient groups without even giving much emphasis to the size of the group.

2. Groups have distinct influence on its members as far as adoption of pepper management practices is concerned, which is evident from the finding that all the three groups had higher mean adoption scores after a season since the formation of groups, while the mean adoption score in respect of control group in fact showed a slight decrease. Hence, it is advisable to organise the pepper farmers into groups for better adoption of management practices of pepper.

3. Newly formed farmers' groups showed better performance than the already existing groups in respect of adoption of management practices. Hence it is beneficial to form new groups if immediate results are expected and the existing groups have to be energised to maintain the level of performance.

4. Even after being members of the group for more than a season, a few members did not show any co-operation and interaction with other members of the group, which suggests that the group influence is not uniform in all the members.

5. The study revealed that co-operation between members is possible in all aspects of pepper cultivation. It was observed that the members exhibited very high co-operation in sharing the information. It is obvious from the results that trickling down of information and farmer to farmer

transfer of technology occur under group situations. Hence it could be concluded that group approach is feasible for the transfer of pepper production technology.

Suggestions for future research

1. A more systematic and comprehensive study on effectiveness of group approach in pepper cultivation covering a representative sample of pepper farmers' groups in the wake of Group Management in Pepper being implemented by the Department of Agriculture, Government of Kerala may be undertaken, as the present study had the inherent limitation on account of being conducted on an experimental setting.

2. In the present case though the study was on groups, it was assumed that since individuals are the units of response, they must also be the units of analysis. Even when the individual provides the response data, unit of analysis could be different. Considering this, studies could be undertakenwith groups as unit of analysis.

3. Action research could be undertaken on the group processes relating to group performance in which case more systematic and reliable data could be generated as a result of close observation and monitoring by the researcher.

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*Originals not seen

Appendices

Appendix - I

List of items initially selected for the knowledge test

Sl.No.	Item		
1.	Name an important pepper variety	:	
2.	Name one hybrid variety in pepper	:	
3.	Panniyur-1 is to be grown comparatively in open areas	:	Yes/No
4.	What is the common method of propagation in pepper?	:	
5.	Name the shoot from which pepper cuttings are collected for propagation	:	
6.	Rooted cuttings establishes more quickly than fresh cuttings	:	Yes/No
7.	Tender shoots are good for propagation	:	Yes/No
8.	Name a suitable tree that can be used as a standard for growing pepper	:	
9.	It is better to plant "Murukku" (standard) and pepper cutting simultaneously	:	Yes/No
10.	Pepper cannot be grown in dead standards	:	Yes/No
11.	Planting the standards in narrow holes is good for establishment	:	Yes/No
12.	Mention the recommended spacing for pepper in plain lands	:	
13.	In slopy lands same distance is recommended between plants in rows across the slope and between the rows	:	Yes/No
14.	More spacing means more yield for pepper	:	Yes/No
15.	Intercropping pepper with other crops is disadvantageous	:	Yes/No

Contd.

Appendix - II

Difficulty indices and discrimiination indices of the items of knowleldge test

Sl. No. of Item	Frequencies of correct answers given by each group of respondents		Total frequency of correct answers	Difficulty index	Discrimination index
	G_1	G_3	(N=30)	P	$E^{1/3}$
1	10	10	20	66.66	0.00
*2	8	4	12	40.00	0.40
3	10	5	15	50.00	0.50
4	10	10	20	66.66	0.00
*5	7	0	7	23.33	0.70
6	9	9	18	60.00	0.00
7	10	8	18	60.00	0.20
8	10	10	20	66.66	0.00
9	6	6	12	40.00	0.00
10	10	4	14	46.66	0.60
*11	8	4	12	40.00	0.40
*12	8	3	11	36.66	0.50
13	8	7	15	50.00	0.10
14	10	7	17	56.66	0.30
15	10	8	18	60.00	0.20
16	10	10	20	66.66	0.00
*17	10	7	17	56.66	0.30
18	10	6	16	53.33	0.40
19	10	9	19	63.33	0.10
*20	9	6	15	50.00	0.30
21	10	10	20	66.66	0.00
*22	10	4	14	46.66	0.60
23	10	4	14	46.66	0.60

* Items selected for the knowledge test

Sl.No.	Item		
16.	Name a suitable crop that can be intercropped with pepper	:	
17.	Banana is recommended as an intercrop in pepper even after 3-4 years	:	Yes/No
18.	Name the important pest affecting pepper	:	
19.	Pests in pepper can be controlled by spraying 1% Bordeaux mixture	:	Yes/No
20.	Spraying must be done only after the pest attack	:	Yes/No
21.	Name the most important disease affecting pepper	:	
22.	What is the control measure for quick wilt disease?	:	
23.	Name the chemical required for preparing Bordeauk mixture (in addition to lime)		

Appendix - II

Difficulty indices and discrimiination indices of the items of knowleldge test

Sl. No. of Item	Frequencies of correct answers given by each group of respon-dents G_1	G_3	Total frequency of correct answers (N=30)	Difficulty index P	Discrimi-nation index $E^{1/3}$
1	10	10	20	66.66	0.00
*2	8	4	12	40.00	0.40
3	10	5	15	50.00	0.50
4	10	10	20	66.66	0.00
*5	7	0	7	23.33	0.70
6	9	9	18	60.00	0.00
7	10	8	18	60.00	0.20
8	10	10	20	66.66	0.00
9	6	6	12	40.00	0.00
10	10	4	14	46.66	0.60
*11	8	4	12	40.00	0.40
*12	8	3	11	36.66	0.50
13	8	7	15	50.00	0.10
14	10	7	17	56.66	0.30
15	10	8	18	60.00	0.20
16	10	10	20	66.66	0.00
*17	10	7	17	56.66	0.30
18	10	6	16	53.33	0.40
19	10	9	19	63.33	0.10
*20	9	6	15	50.00	0.30
21	10	10	20	66.66	0.00
*22	10	4	14	46.66	0.60
23	10	4	14	46.66	0.60

* Items selected for the knowledge test

APPENDIX III

കുരുമുളക്

കൃഷിരീതികളും സസ്യസംരക്ഷണവും

ഭാരതത്തിൽ കുരുമുളക് കൂടുതലായി കൃഷി ചെയ്യുന്നത് കേരളത്തിലാണ്. മറ്റു കുരുമുളകു കൃഷി ചെയ്യുന്ന രാജ്യങ്ങളുമായി താരതമ്യം ചെയ്യുംപോൾ നമ്മുടെ ഉത്പാദനക്ഷമത തുലോം കുറവാണ്. ശാസ്ത്രീയമായ കൃഷിരീതികൾ അവലംബിച്ചാൽ നമ്മുടെ ഉത്പാദനം കാര്യമായി വർദ്ധിപ്പിക്കാൻ സാധിക്കും. കുരുമുളകിന്റെ ഉത്പാദനം വർദ്ധിപ്പിക്കാൻ താഴെ പറയുന്ന കാര്യങ്ങൾ ശ്രദ്ധിക്കേണ്ടതാണ്.

കാലാവസ്ഥ

കുരുമുളകിന് അനുയോജ്യമായ അന്തരീക്ഷ ഊഷ്മാവ് 20° സെൽഷ്യസിനും 30° സെൽഷ്യസിനും ഇടയിലാണ്. തുടർച്ചയായ മഴയും ഈർപ്പമുള്ള കാലാവസ്ഥയുമാണ് ഉത്തമം. അടുപ്പിച്ച് രണ്ടുമണിക്കൂറിലധികം നിൽക്കുന്ന വരൾച്ച കൊടികളുടെ വളർച്ചയെയും ഉൽപാദനക്ഷമതയെയും കാര്യമായി ബാധിക്കും.

അനുയോജ്യമായ മണ്ണ് :

നല്ല നീർവാർച്ചയും ഒരു മീറ്ററിൽ കുറയാതെ ആഴമുള്ള മണ്ണും കുരുമുളകു കൃഷിക്ക് ആവശ്യമാണ്. മണ്ണിൽ ധാരാളം ജൈവാംശം ഉണ്ടായിരിക്കണം.

ഇനങ്ങൾ:

പന്നിയൂർ - 1, കരിമുണ്ട, കൊറ നാടൻ, കുതിരവാലി, ഓറകുളംമുണ്ട, കല്ലുവള്ളി തുടങ്ങിയവയാണ് പ്രധാന ഇനങ്ങൾ. ഇതിൽ പന്നിയൂർ-1 താരതമ്യേന തുറസ്സായ സ്ഥലത്ത് കൃഷി ചെയ്യണം.

നടീൽ വസ്തുക്കൾ:

പോളിത്തീൻ സഞ്ചികളിൽ വളർത്തി ശരിയായി വേരു പിടുപ്പിച്ച വള്ളികളാണ് നടാൻ ഉത്തമം. വേരുപിടിപ്പിച്ചതായതുകൊണ്ട് ഇവ വേഗം ചുവടു പിടിച്ചുകിട്ടും. മഴക്കാലത്ത് വള്ളി മുറിച്ചു നടും കുരുമുളക് പിടിപ്പിക്കാവുന്നതാണ്. നല്ല കായ്ഫലമുള്ള ചെടികളിൽ നിന്ന് വള്ളികൾ ശേഖരിക്കാൻ ശ്രദ്ധിക്കേണ്ടതാണ്.

താങ്ങുകാലുകൾ:

നേരെ മുകളിലേക്കു വളരുന്ന താങ്ങുകാലുകൾ കൃഷിക്ക് ഉപയോഗിക്കേണ്ടതാണ്. തനിവിളയായി കൃഷിചെയ്യുമ്പോൾ മുരിക്ക് തുടങ്ങിയ മരങ്ങൾ മാത്രം ഉപയോഗിക്കുന്നതാണ് ഉത്തമം. ഇടവിളയായി കൃഷി ചെയ്യുമ്പോൾ തെങ്ങ്, കമുക്, പ്ലാവ് മുതലായ മരങ്ങളിൽ വള്ളികൾ പടർത്താം.

തൈനടീൽ:

വള്ളിത്തലകൾ നടാനുള്ള കുഴികൾ മുൻകൂട്ടി തയ്യാറാക്കുന്നതാണ് നല്ലത്. താങ്ങുകാലുകളുടെ വടക്കു വശത്താണ് കൊടികൾ നടേണ്ടത്.

കുഴിയുടെ വലിപ്പം:

30 സെ.മീറ്റർ മുതൽ 50 സെ.മീറ്റർ വരെ സമചതുരത്തിലും ആഴത്തിലും കുഴികൾ തയ്യാറാക്കണം. കുഴികൾ മേൽമണ്ണും ഉണക്കി പൊടിച്ച് കാലിവളമോ കംപോസ്റ്റോ ചേർത്ത് നിറയ്ക്കണം. കുഴിയിൽ വെള്ളം കെട്ടി നില്ക്കരുത്. മഴ കിട്ടി തുടങ്ങുന്നതോടെ തൈകൾ നടാം.

കൃഷിപ്പണികൾ

വള്ളിതലകെട്ടൽ:

കുരുമുളകു തണ്ടുകൾ വളർന്നു നിലം വയ്ക്കുന്നതോടെ അവ കാലുകളോടു ചേർത്ത് കെട്ടികൊടുക്കണം. കവുങ്ങിൻ പാള കീറിയത്, വാഴനാര്, ഇഴകയർ എന്നിവ കെട്ടാൻ ഉപയോഗിക്കാം.

തൈകൾ പൊതിഞ്ഞു കെട്ടുക:

ഇളം കൊടിത്തണ്ടുകൾക്ക് വേനൽകാലത്ത് പൊള്ളൽ ഏൽക്കാതെ പൊതിഞ്ഞു കെട്ടികൊടുക്കണം. കവുങ്ങിൻ പട്ട ഇലവേഗം കൊഴിയാത്ത മരത്തിന്റെ ചെറു ചില്ലകൾ എന്നിവ ഉപയോഗിക്കാം.

പുതയിടൽ:

തടത്തിലെ മണ്ണ് വേനൽ കാലത്ത് വെയിലേറ്റ് ചൂടാകുന്നതു തടയാൻ വേണ്ടി തടങ്ങളിൽ കരിയിലയോ മറ്റോ കൊണ്ട് പുതയിടണം. ഇവ ഈർപ്പം നിലനിർത്താനും സഹായിക്കും.

ഇടയിളക്കൽ:

തോട്ടം മുഴുവനോ കുറഞ്ഞപക്ഷം കൊടികളുടെ ചുവട്ടിൽ ഒരു മിതൻ വ്യാപാർദ്ധത്തിലെങ്കിലുമോ ഇടയ്ക്കിടെ രണ്ടു തവണ കിളച്ചു കൊടുക്കലും കളകൾ പറിച്ചു മാറ്റുകയും ചെയ്യണം.

തണൽ നിയന്ത്രണം:

വർഷകാലത്ത് തോട്ടങ്ങളിൽ തണൽ തീരെ ഇല്ലായിരിക്കുന്നതാണുത്തമം. ഇക്കാരണത്താൽ തോട്ടങ്ങളിൽ തണൽ അനുയോജ്യമായി നിയന്ത്രിക്കേണ്ടതാണ്.

ഇടവിളകൾ:

തനിവിള കൃഷി ചെയ്യുന്ന തോട്ടങ്ങളിൽ ഇടവിളകൾ കൃഷി ചെയ്യുന്നത് ആദായം വർദ്ധിപ്പിക്കും. ഇഞ്ചി, മഞ്ഞൾ, ചേന, ചേമ്പ്, എന്നിവ കൃഷി ചെയ്യാൻ പറ്റിയ ഇടവിളകളാണ്. എന്നാൽ ഉത്പാദനം തുടങ്ങിയ തോട്ടങ്ങളിൽ വാഴ ഒരിടവിളയായി കൃഷി ചെയ്യുന്നത് ഉചിതമല്ല.

വളപ്രയോഗം:

പൂർണ്ണ വളർച്ചയെത്തി കായ്ച്ചുകൊണ്ടിരിക്കുന്ന ഒരു വള്ളിക്ക് പ്രതിവർഷം താഴെ പറയുന്ന മൂലകങ്ങൾ അടങ്ങിയ വളങ്ങൾ നല്കേണ്ടതാണ്.

നൈട്രജനകം	:	50ഗ്രാം
ഭാസ്വകം	:	50 മുതൽ 100 ഗ്രാം വരെ
ക്ഷാരകം	:	150 മുതൽ 200 ഗ്രാം വരെ

കൂടാതെ ഒരു കൊടിക്ക് 10 കി.ഗ്രാം ജൈവവളം ചേർത്ത് കൊടുക്കണം. കാലവർഷാരംഭത്തിൽ ചെടികൾക്കു ചുറ്റുമായി 10 മുതൽ 15 സെ.മീറ്റർ ആഴവും കൊടിയുടെ വലുപ്പത്തിനനുസരിച്ച് 50 മുതൽ 75 സെ.മീറ്റർ വരെ വ്യാസാർദ്ധമുള്ള തടങ്ങൾ എടുത്ത് അതിൽ ജൈവവളം ഇട്ട് അല്പം മണ്ണിടു മൂടുക. രാസവളങ്ങൾ ആണ്ടിൽ രണ്ടു തവണയായി കൊടുക്കാം. ഇതിൽ 1/3 ഭാഗം കാലവർഷാരംഭത്തിലും 2/3 ഭാഗം തുലാവർഷം ആരംഭിക്കുന്നതോട് അനുബന്ധിച്ചും.

കുമ്മായപ്രയോഗം:

രണ്ടു വർഷത്തിലൊരിക്കൽ കൊടിയൊന്നിന് 500 ഗ്രാം എന്ന തോതിൽ കുമ്മായം ചേർക്കുന്നത് നന്നായിരിക്കും. ഒന്നു രണ്ടു മഴ കിട്ടി കഴിഞ്ഞ് കുമ്മായം തടത്തിലിട്ട് മണ്ണിനോട് കൂട്ടിചേർക്കണം.

സസ്യസംരക്ഷണം

കീടങ്ങൾ:

പൊള്ളുവണ്ട്, തണ്ടുതുരപ്പൻപുഴു, ഇലപ്പേനുകൾ എന്നിവയാണ് സാധാരണ കണ്ടുവരുന്ന കീടങ്ങൾ. മോണോക്രോട്ടോഫോസ്, എക്കാലക്സ് തുടങ്ങിയ കീടനാശിനികൾ തളിച്ച് ഇവയെ നിയന്ത്രിക്കാം. നിമാ വിരകളെ നിയന്ത്രിക്കാൻഫോറേറ്റ്, കാർബോഫ്യൂറാൻ ഗ്രാന്യൂൾസ് എന്നി കീടനാശിനികൾ ഉപയോഗിക്കാം.

രോഗങ്ങൾ:

ഭൂതവാടം :

ഇതൊരു കുമിൾ രോഗമാണ്. കാലവർഷാരംഭത്തോടെ ഇതു കണ്ടു തുടങ്ങാം. ജൂലൈ മുതൽ സെപ്തംബർ വരെയുള്ള കാലത്ത് ഈ രോഗം കൂടുതലായി ഉണ്ടാകുന്നു. ഈ രോഗം ചെടിയുടെ തണ്ട്, ഇല, വേര് എന്നീ ഭാഗങ്ങളെ ആക്രമിക്കുന്നു. ആക്രമണത്തിന്റെ തോതനുസരിച്ച് ചെടി വാടികരിഞ്ഞുപോകുന്നു. രോഗപ്രതിരോധത്തിനായി മെയ്-ജൂൺ മാസത്തിൽ ഒരു ശതമാനം വീര്യമുള്ള ബോർഡോ മിശ്രിതം കൊടി മുഴുവൻ തളിക്കേണ്ടതാണ്. തുലാവർഷം നനയി പെയ്യുകയും നിന്നു നില്ക്കുകയും ചെയ്യുന്ന സെപ്തംബർ-ഒക്ടോബർ മാസങ്ങളിൽ മരുന്നു തളി ആവർത്തിക്കേണ്ടതാണ്. കൊടിയുടെ തണ്ടിന്റെ ചുവടുഭാഗത്ത് ഒരു മീറ്റർ ഉയരത്തിൽ പത്തു ശതമാനം വീര്യമുള്ള ബോർഡോ കുഴംപ്പ് തേയ്ക്കേണ്ടതാണ്.

പെള്ളുരോഗം :

കുരുമുളകുതിരികൾ പൊഴിയുന്നതിന്റെ പ്രധാനകാരണം ഈ രോഗമാണ്. മണിപിടിച്ചശേഷം തിരിയുടെ ഉടഭാഗത്ത് രോഗാക്രമണം ഉണ്ടായാൽ അതിനു താഴോട്ടുള്ള ഭാഗം മണികളോടൊപ്പം ഉണങ്ങിപ്പോകും. ഉള്ളം പ്രായത്തിൽ മുളകുമണികൾ ആക്രമിക്കപ്പെടാൻ അവയുടെ വളർച്ച നിന്നുപോകുകയും അവ ചുക്കി ചുളിഞ്ഞ് ഉണങ്ങിപോകുകയും ചെയ്യുന്നു.

മേൽപറഞ്ഞരീതിയിൽ ചീടയായുള്ള മരുന്നുതളികൊണ്ട് ഈ രോഗത്തെ നിയന്ത്രിക്കാം.

വിളവെടുപ്പ്:

തിരിയിട്ട് 180 മുതൽ 200 ദിവസത്തിനുള്ളിൽ മുളക് പറിച്ചെടുക്കാൻ പാകമാകും. കാലാവസ്ഥ വ്യത്യാസം അനുസരിച്ച് കേരളത്തിൽ നവംബർ മുതൽ ഫെബ്രുവരി മാർച്ച് വരെയാണ് വിളവെടുപ്പ്.

സംസ്കരണം:

ഉതിർത്തെടുത്ത മണികൾ വെയിലത്ത് 5 മുതൽ 7 ദിവസംവരെ ഉണക്കിയെടുക്കണം. ഉണക്കിയെടുത്ത് കുരുമുളകിൽ 10 മുതൽ 11 ശതമാനം ജലാംശമേ ഉണ്ടായിരിക്കുവൂ.

നല്ലപോലെ ഉണങ്ങിയ കുരുമുളക് മുറത്തിലോ മറ്റോ ഇട്ട് നന്നായി പാറിക്കൊഴിച്ച് മാലിന്യങ്ങൾ എല്ലാം നീക്കിയശേഷം വേണം ചാക്കിൽകെട്ടി അറയിൽ സൂക്ഷിക്കാൻ.

അവലംബം: കുരുമുളക് - കൃഷിവിജ്ഞാന മഞ്ജരി, പുസ്തകം - 13
കേരള കാർഷിക സർവ്വകലാശാല.

Appendix - IV

FEASIBILITY ANALYSIS OF GROUP APPROACH IN THE TRANSFER OF PEPPER PRODUCTION TECHNOLOGY

Interview Schedule

(Used immediately after the formation of groups)

Panchayath: Respondent No.

Sub Division: District:

I General Information

1. Name of the farmer :
2. Address :

3. Age :
4. Main occupation: Farming/Non-farming (specify)
5. Education: Illiterate/can read/can read and write/primary school/middle school/high school/collegiate
6. Farm size Area (in ha)

   Wet land :
   Dry land :
   Total :
7. Annual income Rs.

   a. From farming :
   b. Other sources :

   Total :
8. Main crop cultivated

   Crop :
   Area :

9. Area cultivated under pepper .....ha ..... No. of wines

10. Nature of pepper cultivation

    a. Pure crop :
    b. Mixed crop :
    c. Homestead :

11. Did you avail any subsidy (cash/input) from Govt. sources for pepper cultivation during 1989-90 season? If yes, give details — Yes/No

Source	Amount

12. Information source
(Do you make use of any of the following sources for technical information on pepper cultivation)

A. Mass media

	Most often (once a week	Often (once a fortnight)	Some-times (once a month)	Rarely (once a year)
1. Television				
2. Radio				
3. Newspaper				
4. Farm magazine				
5. Any other (specify)				

B. Inter personal

1. Agrl. Demonstrator
2. Agri. Officer/
   Spices Board Official
3. University Scientists
4. Input Agencies
5. Neighbours
6. Relatives
7. Any other
   (specify)

13. Extension participation
(Please indicate your frequency of participation in the following extension activities)

Extension activity	Whenever conducted	Frequency occasionally	Never
1. Campaigns			
2. Seminars			
3. Group meetings			
4. Demonstrations			
5. Any other (specify)			

II. Information about social aspects

1. Social participation

(Please indicate whether you are a member or office bearer in any of the following organisations. If so, how frquently you attend the meeting/activities of the organisation)

Sl. No.	Organisation	Nature of participation		Frequency of taking part on meeting/ activities		
		Member	Office bearer	Regu-larly	Some-time	Never
1.	Panchayat					
2.	Co-operative Society					
3.	Paddy group farming Padasekhara Committee					
4.	Farmers' Club					
5.	Agri. Advisory Committee of Krishi Bhavan					
6.	Sports club/Youth Club					
7.	Any other (specify)					

2. Please indicate your relation with other members of the group already identified (Express your liking or disliking of other members in the group in respect of one or more organisations in which you are a member

   Very much liking/liking/neutral/dislike/strongly dislike

3. Please indicate how you view other members of the group in terms of faith/confidence

   Full faith in others/Some faith in others/No faith in others

4. Please indicate how frequently you contact other members of the group on different matters

   Regular/Often/Occasional/Never

   a. Do you co-operate with members of the group? Yes/No

   b. If 'No', what are the reasons for the same?

5. a. Are you able to freely mix with other members of the group Yes/No

b. If No, what are the reasons for the same?

6. Please specify why you get in contact with other members?

1. For conveying information
2. For seeking information
3. For clarifying information
4. Other purposes (specify)

III. Information relating to pepper cultivation

1. Experience in pepper cultivation

   Less than one year/1-3 years/3-8 years/above 8 years

2. Variety of pepper grown (specify the variety)
3. Age of vines
4. Yielding area .....ha ..... No. of vines
5. Yield during 1989-90 season (last crop) from the pepper area
6. Your rating (impression) about the last crop

   Very good/good/average/poor/very poor

7. Please furnish the following information about your pepper cultivation - All details pertains to last season (1989-90)

A. Fresh planting

a. How much area/No. of vines planted during the season

b. Variety planted

c. Planting material used
Rooted cuttings/Unrooted fresh cuttings

d. Source of planting material

e. Rate per cutting (Rs./Ps.)

f. Standard used

g. Spacing

h. Time of planting

i. Management of young plants

1.	Shade	- given / not given
2.	Irrigation	- given / not given
3.	Mulching	- given / not given
4.	Organic manure	- applied / not applied
5.	Chemical fertilizers	- applied / not applied
6.	Plant protection measures	- taken / not taken
7.	Weeding	- done / not done

j. Area/space available for next season planting :

B. Management of yielding plants

a.	Intercropping in case of pure crop	- done / not done
b.	Main crop in case of homestead cultivation other crops	-
c.	Number of rounds of weeding given per year	-
d.	Irrigation during summer months	- regular/occasional/not at all
e.	Method of irrigation practiced	-
f.	Application of organic manure	- Yes/No
1.	If yes specify the item	- Cattle manure/Compost/green leaves
2.	Quantity used	
3.	Cost	

g.	Application of lime	:	Yes/No
	1. If yes quantity used	:	
	2. Frequency of use	:	
	3. Cost of lime	:	
h.	Application of chemical fertilizers	:	Yes/No
	a. If yes, specify the items used	:	
	b. Quantity used	:	
	c. No. of doses given	:	
	d. Time of application	:	
	e. Cost of the fertilizer	:	
i.	Plant proection measures		
	a. Do you regularly apply fungicides as a prophylatic measure against diseases	:	Yes/No
	b. If yes, name the fungicide	:	
	c. No. of rounds applied	:	
	d. Cost of the fungicide	:	
j.	Any disease observed during the season	:	Yes/No
	a. If yes, name the disease	:	
	b. What remedial measures taken	:	
	c. Cost of the fungicide	:	
k.	Do you spray any pesticide regularly	:	Yes/No
	a. If yes, specify the pesticide	:	
	b. Quantity used	:	
	c. Cost	:	
l.	Any pest attack observed during the season	:	Yes/No
	a. If yes, name the pest	:	
	b. What remedial measures taken	:	
	c. Cost of the pesticides used	:	

8. Specify the time of harvest :

9. Method of curing/drying practiced :

10. Is hot water treatment practiced before drying : Yes/No

11. Whether cleaning is done before sale : Yes/No

    Mention the type of cleaning :

12. Method of sale

    (a) Contract/own sale

    (b) Through agent/local merchant/ Co-operative society

    (c) Local sale/outstation sale

13. Time of sales

    (a) Immediately after the harvesting season — Wait for a better price for a reasonable time 3 months/6 months/one year or more

    (b) No. of times in which the pepper is sold

        In one lot / In several lots / As and when need for money arises

14. Did you avail any warehousing facility for pepper : Yes/No

    If yes, give details

15. Price obtained per kg during the season :

16. Your rating/impression about the price : Very good/good/ Average/poor/ very poor

17. Have you availed any credit during the season for pepper cultivation : Yes/No

    If yes, specify the source and amount :

18. Please mention the amount if any due from previous loans availed for pepper :

19. Knowledge test

1. Name one high yielding variety in pepper.

2. Name the shoot from which pepper cuttings are collected for propagation.

3. Planting the standard (Murukku) in narrow holes is good for establishment: Yes/No

4. Mention the recommended spacing for pepper in plain lands

5. Banana is recommended as an intercrop in pepper even after 3-4 years: Yes/No

6. Spraying must be done only after pest attack: Yes/No

7. What is the control measure for Quick wilt disease?

Appendix - V

FEASIBILITY ANALYSIS OF GROUP APPROACH IN THE TRANSFER OF PEPPER PRODUCTION TECHNOLOGY

Interview Schedule II
(Used after one crop season)

Panchayat: Respondent No:

I. General Information

1. Name of the farmer :
2. Address :
3. Did you avail any subsidy (cash/input) from Govt. source for pepper cultivation during the current season : Yes/No

   If 'yes' give source and amount :

4. Information source
   (Did you make use of any of the following sources for technical information on pepper cultivation)

Mass Media	Frequency			
	Most often (once a week)	Often (once a fort-night	Sometimes (Once a month)	Rarely (Once a year
1. Television				
2. Radio				
3. Newspaper				
4. Farm Magazines				
5. Any other (specify)				
B. Interpersonal				
1. Agrl. Assistant				
2. Agri/Spices Board Officials				
3. University Scientists				
4. Input agencies				
5. Neighbours				
6. Relatives				
7. Any other (Specify)				

5. Extension participation
(Please indicate your frequency of participation in the following extension activities)

Extension activity	Frequency		
	Whenever conducted	Occasionally	Never
1. Campaigns			
2. Seminars			
3. Group meetings			
4. Demonstrations			
5. Any other (specify)			

II. Information about social aspects

1. Social participation
(Please indicate whether you are a member/office bearer in any of the following organisation. If so, how frequently you attend the meeting/activities of the organisation)

Sl. No.	Organisation	Nature of participation		Frequency of taking part in the meeting/activities		
		Member	Office bearer	Regularly	Sometimes	Never
1.	Panchayat					
2.	Co-operative society					
3.	Paddy group farming					
4.	Farmers club					
5.	Agri. Advisory Committee of Krishi Bhavan					
6.	Sport club/Youth club					
7.	Pepper farmers group					
8.	Any other (specify)					

2. Please indicate your relation with other members of the group you are related to. (Express your liking or disliking of the members of the group in respect of the Pepper farmers group in which you are a member)

   Very much liking/liking/neutral/dislike/strongly dislike

3. Please specify why you like/dislike other members

   a.

   b.

   c.

4. Please indicate how you view other members of the group in terms of faith/confidence

   Full faith in others/Some faith in others/No faith in others

5. Please specify the reasons for the faith/no faith in others

   a.

   b.

   c.

6. Please indicate how frequently you contacted other members of the group on different matters concerned with pepper cultivation

   Regular / Often / Occasional / Never

7. Please specify why you contacted other members

   a. For conveying information

   b. For seeking information

   c. Other purpose (Specify)

8. Did you co-operate with other members of the Group?

   Yes / No

   If 'No', what were the reasons for the same?

   a.

   b.

   c.

9. What sort of co-operation you had with other members of the pepper farmers group?

   a. Sharing information planting material

   b. In procuring planting material

   c. In purchasing/application of manure/fertilizer

   d. In spraying against pest and disease

   e. In carrying out weeding

   f. In harvesting and processing

   g. In marketing of pepper

   h. Any other purpose (specify)

10. Were you able to freely mix with other members of the group? Yes/No

    If 'No', what were the reasons?

    a.

    b.

    c.

III. Information relating to pepper cultivation

1. Yielding area ..... ha .....No. of vines

2. Yield during current season from the pepper area/vines ..... kgs.

3. Your rating (impression) about the current crop compared to previous season (89-90) crop

   Very good / good / average / poor / very poor.

4. If the crop is poor, reasons for the same

   a. Adverse climatic conditions
   b. Unproductive vines
   c. Incidence of pests
   d. Severity of Quick wilt disease
   e. Poor management
   f. Any other (specify)

5. Please specify the following information about your pepper cultivation (All details pertains to the current season - 1990-91)

A. Fresh planting

a. How much area/no. of vines planted during the season

b. Planting material used: Rooted/unrooted cuttings

c. Source of planting material: Own/purchased from others

d. Management of your plants

1.	Shade	given / not given
2.	Irrigation	given / not given
3.	Weeding	given / not given
4.	Mulching	given / not given
5.	Organic manure	given / not given
6.	Chemical fertilizer	given / not given
7.	P.P. measures	given / not given

B. Management of yielding plants

1. No. of rounds of weeding done

2. Irrigation during summer months

   Regular / Occasional / Not at all

3. Application of organic manure: Yes/No

   a. If 'Yes', specify the item - Fym/compost/green leaves

   b. Quantity used

   c. Cost

4. Application of lime : Yes/No

   a. If 'Yes', Quantity used

   b. Cost

5. Application of chemical fertilizer: Yes/No

   a. If 'Yes', specify the item

   b. Quantity used

   c. Cost

6. Have you noticed any pest attack during the season: Yes/No

   If 'Yes' specify the pest

7. Application of pesticides: Yes/No

   a. If 'Yes' specify the item

   b. Quantity used

   c. Cost

8. Have you noticed any disease during the season: Yes/No

   If 'Yes', specify the item

9. Application of fungicides: Yes/No

   a. If 'Yes' specify the item

   b. Quantity used

   c. Cost

10. Method of curing practiced:

    Sun drying / Hot water treatment

11. Whether cleaning is done before sale: Yes/No

12. Method of sale

    a. Contract / own sale
    b. Through agent / local merchant / Co-op. Society
    c. Local sale / Out station sale

13. Time of sale

    a. Immediately after the harvesting season/wait for a better price for a reasonable time

       3 months / 6 months / one year or more

    b. No. of times in which the pepper is sold

       In one lot/In several lots/As and when need for money arises

14. Did you avail any warehousing facility for pepper: Yes/No

15. Price obtained per kg during the season

16. Your rating/impression about the price

    very good / good / average / poor / very poor

17. Have you availed any credit during the season for pepper cultivation: Yes/No

    If 'Yes' give details

18. Do you think that groups approach is beneficial for pepper cultivation: Yes/No

    If 'Yes' in which areas

    a. Pooling of individual resources and management of these resources for common benefits

    b. Procurement of quality planting materials

    c. Timely application of manures and fertilizers

    d. Timely control of pest and disease

    e. Reduce cost of cultivation by bulk purchase of inputs

    f. Sharing of common benefits

    g. Bulk sales

    h. Others (specify)

19. In your opinion what are the constraints of group approach in pepper cultivation

    a. Very small holding size/less number of vines owned by a grower

    b. Seasonal nature of operations

    c. Use of family labour for various operations

    d. Scarcity of labour during peak season

    e. Traditional method of cultivation followed by farmers (non-application of fertilizers, pesticides and fungicides)

f. Lack of knowledge/awareness about group approach in pepper cultivation

g. Absence of a government agency in organising the farmers and providing proper guidance

h. Group approach affects the individual initiative of pepper growers

i. Any other (specify)

20. Knowledge Test

1. Name one high yielding variety in pepper

2. Name the shoot from which pepper cuttings are collected for propagation

3. Planting the standards (Kurukku) in narrow holes is good for establishment: Yes/No

4. Mention the recommended spacing for pepper in plain lands

5. Banana is recommended as an intercrop in pepper even after 3-4 years: Yes/No

6. Spraying must be done only after pest attack: Yes/No

7. What is the control measure for Quick wilt disease?

FEASIBILITY ANALYSIS OF GROUP APPROACH IN THE TRANSFER OF PEPPER PRODUCTION TECHNOLOGY

By

JOHN, T. D.

ABSTRACT OF A THESIS

Submitted in partial fulfilment of the
requirement for the degree

Master of Science in Agriculture

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ABSTRACT

A study was undertaken to analyse the utility of group approach in the transfer of pepper production technology in Wayanad and Kozhikode districts of Kerala State by forming three types of groups, namely existing, focused and identified focused groups. Under each of the group type, three different sizes of groups (n_1 = between 10 and 14; n_2 = between 15 and 19; n_3 = between 20 and 24) were formed for the study. Individual pepper farmers (n = 50) were also selected to serve as control for the study. The group performance in terms of adoption of recommended pepper cultivation practices was studied in relation to the group processes. The data were collected in two phases, the first phase immediately after the formation of groups and the second phase after one crop season.

The study revealed that there was significant difference between the types of groups in the extent of adoption when studied immediately after the formation of groups. However, when studied after one season, no significant difference in adoption was noted between the types of groups. There was no significant difference between the size groups in the extent of adoption studied immediately after the formation of groups and also after one season.

There was substantial increase in the group related processes such as social participation, interpersonal liking, interpersonal trust, interpersonal contact, co-operation and farmer to farmer interaction, when measured after the functioning of the group for one season. There was significant difference between the mean scores on knowledge on pepper cultivation in the case of all the group types when studied immediately after the formation of groups and after one season.

Absence of a government agency in organising the farmers and providing proper guidance was expressed as the most important constraint of group approach in pepper cultivation followed by lack of knowledge and awareness about group approach in pepper cultivation. Severity of quick wilt disease, very small holding size and absence of beneficial programmes were rated as the other important constraints of group approach in pepper cultivation.