PARTICIPATION OF FARM FAMILY WOMEN IN MARGINAL HOMESTEAD FARMING SYSTEMS IN THE THRISSUR DISTRICT

By

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THESIS

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DECLARATION

I hereby declare that this thesis entitled "**Participation of Farm family women in Marginal Homestead farming systems in the Thrissur district**" is a bonafide record of research work done by me during the course of research and that this has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar tittle of any University or society.

Vellanikkara
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SURESHKUMAR,R.

Dedicated to
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INTRODUCTION

Women play a crucial role in all the societies. They have a significant role in the agricultural life in India as they contribute one third of the labour force required for farming and allied operations. Their involvement in agricultural operations is besides their usual obligation of discharging domestic work. But most of the contributions made by women to the farm sector go unaccounted as they are not directly paid. Their work is equally essential for the smooth functioning of the economy, whether it is at the community, firm/farm or at the household level. The FAO (1985) has drawn attention to the productive nature of the domestic work done by women and demanded that proper valuation should be made on such work.

The following observation epitomises the importance of women in farming: "Women grow half of the world's food but own hardly any land, find it difficult to get any loans and are overlooked by agricultural advisors and projects, women are one third of the world's official labour force but are concentrated in the lowest paid occupation and are more vulnerable to unemployment than women" (FAO, 1985).

Women play an important role in decision making in farming sector also. Since the housewife bears the entire burden of managing the household affairs, her discontentment with the meagre amount at her disposal, motivates her to influence the male members of the family to adopt modern technology which would facilitate increase in their farm income. Another important role that women play in agriculture is the decision to accept or reject farm innovations.

Agriculture is the base of Indian economy on which the fortunes of over 70 million families directly or indirectly rest. Agriculture is a family occupation. The women in these families are also partners in crop and food production as managers, decision makers and skilled farm workers.

Agriculture in Kerala is unique with the homestead system of cultivation in which a number of crops are grown with livestock, poultry/fish production, mainly for the purpose of satisfying the farmer's basic needs. Women constituting more than 50 per cent of the human resource of the state form part of the main stream of agricultural production. In farming they perform a number of operations like sowing/dibbling, transplanting seedlings, weeding, harvesting, manures and fertilizer application, storage of the produce, cleaning of the produce. In addition, supervision of the hired labour and almost all the animal related tasks are performed by women.

As per the report of the Department of Agriculture for establishing technology transfer centres for farm women in Kerala, about 35 per cent of the per capita income of these families is from agriculture. The high population density had lead to a small farm size. There are about 2.8 million families with farms covering an area of 1.6 million hectares. However more than 18 per cent of these families operate less than 0.4 ha. Many of these very small farms are garden plots and house sites whose owners hold other jobs and cultivate only part time. Thus family farming in the marginal homestead is an unique feature particularly in the central zone of Kerala state. Thrissur district holds the key to agricultural progress in the central zone of the state.

The homestead agriculture of Thrissur district often combines with crop farming and livestock farming ensuring a synergistic interaction between the components. An analysis of the extent of involvement of farm family women in decision making and in the various farm operations in the marginal homestead farming systems of Thrissur district would throw some useful light on the subject. With this in view, a research study was initiated with the following specific objectives:

1. To identify the nature and type of homestead farming systems prevailing in the area.
2. To understand the nature and extent of participation of farm family women in the agricultural operations and in decision making in the identified marginal homestead farming systems.
3. To identify the relationship between personal, socio-cultural and techno-economic factors and the nature and extent of participation of farm family women in farm operations and in decision making in the different marginal homestead farming systems.

1.1 The scope of the study

Farm women form the backbone of Indian agriculture. Most of the contributions made by the women to the farm sector go unaccounted as they were not in the forefront. They always remained as invisible workers inspite of their pivotal role and remain silently behind all efforts of men. According to Swaminathan (1985) "Some historians believe that it was women who first domesticated crop plants and thereby initiated the art and science of farming ..... Women have played and continue to play a key role in the conversion of the basic life support systems such as

land, water flora and fauna ..... without the total intellectual and physical participation of women, it will not be possible to popularise alternative of land management to shifting cultivation, arrest gene and soil erosion and promote the care of the soil and the health of economic plants and farm animals".

Inspite of the key role of women in crop husbandry, animal husbandry and post harvest technology, people in charge of formulating package of technologies, services and public policies of rural areas tended to neglect the productive role of women. This is true in the case of Kerala, it is reported that in about 60 per cent of the farm holdings, men folk have sought more remunerative sources of employment leaving agriculture to the second place and compelling the women folk to bear the entire burden of managing the farms; here about 37 per cent of the agricultural labour force are women. No empirical investigations are made to know the nature and extent of participation of farm family women in the marginal homestead farming systems of Kerala State. Hence it is hoped that this study would help in formulating a strategy to ensure effective and meaningful participation of farm family women in homestead farming systems in general and marginal homesteads in particular. Since the study is the first of its kind, the techniques developed for quantifying the variables in the study would be useful contribution to the body of research in Agricultural Extension. The findings of the study, it is anticipated, would have far reaching policy imperatives too.

1.2 Limitations of the study

A study on the nature and extent of participation of farm family women has its own difficulties. As a student research project, the study had the limitations of resources such as time and finance. As the study is an exploratory one, the study

areas were limited. Moreover, because of the limition of the sample size, the generalizations made in this study need to be reinforced by other comprehensive studies of this type. However all efforts have been taken to make the study as objective as possible.

1.3 Presentation of the report

The presentation of the remaining chapters of this report and the content of each chapter are as follows:

In chapter II, which follows this chapter, theoretical orientation, definition of the concepts and derivation of the hypotheses are furnished.

Chapter III, deals with the methodology in which details regarding sampling, empirical measures used, data collection, statistical tools used etc. are given.

In chapter IV, the results of the study are presented in relation to the objectives.

Chapter V is concerned with the interpretation of the findings and their discussion.

Chapter VI, gives a summary of the entire study emphasising salient findings.

Theoretical Orientation

CHAPTER-II

THEORETICAL ORIENTATION

The chapter is aimed at developing a theoretical framework based on the review of the past research studies related to the participation of farm family women. Much studies were not available regarding the participation of farm family women. But a review of all the past efforts would help to identify the variable that are relevant to the area of present research and to presume the probable relationships among them. Hence, an attempt is made here to present the available literature, directly or indirectly related to the topic, and the same is given under the following heads.

2.1 Concept of 'Participation'

Participation is the voluntary involvement of people in any enterprise. According the Bhaduri and Rahman (1982) participation is a social experience shared by individuals and groups who live in definite economic and social relations to each other in a society.

According to Ookley (1987), participation can describe attempts to encourage rural people to collaborate with programmes which have already been devised, it can cover activities of the community development type in which community involvement is something as a means of ensuring the survival of a project, it can be applied as initiatives to facilitate the formation of people's organizations at local level as a means by which poor people will gain a voice in decision making and it may be seen as in essence a process by which the empowerment (both economical and political) of hitherto powerless people is achieved. Participation is however generally understood as a process and not as some kind of static end product of development.

In the opinion of Mishra (1994) the term participation has three connotations. Participation means co-operating, taking part in something, the mere presence, even the silent presence of an individual or representative of an organization at different levels. According to him, participation can be direct or indirect, passive/active and it is one of the important techniques to achieve the desired goal.

In general, participation is regarded as a value in itself and a means by which the society can tap and maximise the use of human and material resources for the benefit of the majority of its citizens.

2.2 Concept of decision making

The process of choice of decision making involves selection of goals to be attained and also alternative means to be evaluated for their efficacy in attainment of selected goals. This process of choice has been studied considerably by many research workers in the field of Sociology, Psychology, Social Psychology and Economics.

According to Bates (1954), decision making process involves a decision maker (actor), an environment (situation) in which the decision makers must operate, a set of actions available (means) and a set of goals to be accomplished.

According to Deacon and Firebaugh (1981), decision making is a process of evaluation in making choices or resolving alternatives. All decision making involves a subjective aspect (goals) and an objective or resource aspect. Decision making is the process through which the subjective and objective evaluation takes place and the decision is a form of value.

Nandapurkar (1982) defined decision making as the degree to which an individual justifies by selection of most efficient means from among the available alternatives on the basis of scientific criteria for achieving maximum economic profit.

2.3 Concept of Homestead farming system

Homestead farming system is a production system which falls under the broad umbrella of agroforestry farming systems. Homestead refers to the home and

the land adjoining it, owned and occupied by farmer/farm family. The space is utilised for the cultivation of trees, vegetables, fodder etc. (Hanman, 1986) and supports livestock/birds/fish components, depending on the situation. This land use system serves the marginalised rural masses by sustainable food production, providing bioenergy, timber and other raw materials, protection and service of the resource base and ultimately improving the human carrying capacity.

Numerous terms have been used by various authors to denote the traditional land use practices around homesteads, viz., mixed garden horticulture, house compound land, mixed garden, house garden, home garden, compound farm, kitchen garden, household garden, forest garden, homestead farming system and so on. Mixed farming is a characteristic feature of the homestead agriculture, wherein livestock is reared as a subsidiary enterprise to crop husbandry. Milch cow, buffalo, goat, poultry etc. are the common livestock components of the homesteads. The choice of the livestock and crop components depends mainly on the home and farm requirements. The cropping strategy is designed to meet the feed and fodder requirements of the livestock as well. Salam and Sreekumar (1990) highlighted the significance of crop-livestock integration in homestead agriculture to sustain productivity under coconut based mixed farming system. They observed that homestead agricultural systems of South Kerala are economically efficient, ecologically sound and biologically sustainable. Based on the biophysical and ecophysical considerations, they classified the homesteads into 5 groups: Homesteads involving (1) uplands with crop components (2) uplands with crop and livestock components (3) uplands and adjoining lowlands with crop components (4) uplands and adjoining lowlands with crop and livestock components (5) uplands and adjoining backwaters with crops, livestock and agro-based industries.

Thus homestead farming system is a production system practised in Kerala across religions, castes and ethnic groups and matriarchal and patriarchal settings.

2.4 Nature and extent of participation of farm family women in agricultural operations

Berlam *et al.* (1980) reported that women participated in various manual agricultural activities especially where farms were devoted to mixed farming. Their low level of participation can be related to their lack of available time and the splitting up of their activities.

Lund (1981) observed that women's participation in development was limited because of problems of discrimination at all levels. Some of the problems facing women were related to traditional socio-cultural expectations of women's work, while others were direct results of neglect and ignorance on behalf of planners and politicians in connection with development work.

According to Saviramuthu (1982), the farm women participated and supervised to the extent of 75 per cent in activities related to seeds and sowing followed by other cultural practices (44.1%), on irrigation (23.3%), on plant protection (17.5%) and manuring (16.67%) in that ordered sequence.

Govind (1984) reported that characteristics like the extent of land and social participation of farm women gave significantly negative association with the extent of participation in farm activities.

Patnaik and Debi (1986) found that participation of female labour was

higher in the energy field i.e., farm, non farm and household than the males and their contribution towards agricultural output and family income was very significant particularly in small size holdings.

Bhat *et al.* (1987) opined that female labour played a significant role in field and subsidiary operations for both progressive and non-progressive farms in terms of working hours.

According to Spiro (1987), farming occupied 25 per cent of all women's time and most women took part in planting, weeding, harvesting. Marketing occupied only a small proportion of women's time (8-12%).

Mishra and Awasthi (1988) found that the female labour participation in paddy cultivation was higher than that of male labour in all farm size groups.

Soliman and Abd-El-Monem (1988) revealed that male labour made major contribution when calculated in terms of labour hours and women's role varied according to the nature of livestock on the farm and overall contribution of children was found to be minor.

Sharma (1989) concluded that female work participation was a complex phenomenon influenced by a variety of factors like family cycle, structural changes in the economy, cultural biases in the society and the economic status of the household concerned.

Arora (1990) opined that the size of the holding, i.e., large, small, medium, marginal and landless labour, exercised a commanding influence on the work participation of rural women.

Pandey and Pareek (1990) reported that women's participation was maximum for sowing and transplanting and least for marketing, whereas maximum women's supervision was for marketing and minimum for sowing and transplanting.

According to Thenmozhi (1990), 58.33 per cent of the farm women had medium level participation in farm activities followed by 22.5 per cent low and 19.17 per cent high. Education, farming experience, farm size, social participation and mass media exposure showed positive and significant association with the extent of participation in farm activities.

Nesmith (1991) in three case study villages of West Bengal found that although farm forestry was taken up by some female members of all the income groups, the lowest level of participation was among the poor household.

According to Shakhatieh (1991), the participation of single woman was affected significantly by their religion, age, residence, education, parent's education and family size. Married women's labour force participation was influenced by their age, religion, marital status, residence, education, family size and family available income.

Bhople and Patki (1992) stated that women were involved in all types of farm activities, but their maximum contribution was in pre-sowing, sowing, manuring, harvesting, grain storage and marketing operations.

Gasson (1992) suggested that farm wives may contribute 5 per cent of the manual hours worked by the regular labour force and 9-10 per cent of the total

regular labour input on main holdings. Further as hired family labour was not available and farmers sought additional employment, the wife's labour contribution was likely to become more significant.

Varma (1992) showed that women's contribution to wheat and rice cultivation operations was significantly higher than that carried out by men in terms of mandays of work done.

The above reviews pointed out to the greater participation of farm women in various activities. So in the present study, an attempt was made to assess the nature and extent of participation of farm family women in agricultural operations.

2.5 Nature and extent of participation of farm family women in decision making

Bhagat (1980) stated that employed rural women played a significant role in the decision making process especially on money and management of the family.

Hiranad and Kumar (1980) concluded that most important areas in which women were found to influence the decisions were purchase and sale of land, borrowing, purchase and sale of animals.

According to Puri (1981), all the tasks related with farm animals were predominently carried out by wives and they took decisions with regard to bringing fodder from the field, chaff cutting, preparing feed for cattle, bathing and cleaning cattle, cleaning the cattle shed, making cowdung cakes, compost making, milking and making curd and ghee.

Dubey *et al.* (1982) revealed that majority of farm women participated

more in decision making on aspects such as the number of milch animals to be kept, quantity and type of green fodder to be fed to milch animals.

Hegade (1982) stated that women's participation in economic decision making was a vital means by which their economic dependency and social inequality could be removed. Their participation in decision making resulted in increasing the employment opportunity for women, increasing the produce and income level of community, reducing the exploitative elements in the economic system, co-operativizing the production, marketing and distribution.

Rani and Bhave (1982) opined that majority of farm women were participating passively in different areas of decision making with regard to production oriented expenditure. A fair majority of respondents played a dominant role in the decisions regarding the amount to be spent on labour charges. They further reported that in the case of desired type of participation, majority expressed their willingness to participate actively in taking decisions regarding the purchase of land, amount to be spent on land, purchase of seed, amount to be spent on seeds, purchase of fertilizer and purchase of farm implements.

Sandhu and Renuka (1982) reported that farm women played an important role in taking decisions related to farm such as the procurement of farm credit, the purchase and sale of cattle and the crops to be sown.

According to Singh and Chander (1983), the women played a key role in performing various tasks related to cattle management. It was noticed that women implemented various decisions regarding development of farm and exercised greater influence on farm policies and practices. Women make decisions on procuring loans

and credits. They further reported that in general, women's participation at procurement, utilization and repayment stages was at a very high level.

Venkatachalam (1983) observed that all over the country cattle were being looked after by women in rural areas. As the housewife and mother, the lady of the home was concerned with utilization of milk and milk products in the house, were backbones of dairy industry and regarded as entrepreneurs of rural dairying.

Singh and Rani (1983) found that the participation of females in dairying ranked third after domestic and labour in case of landless labourers, whereas it ranked second after domestic work for marginal and small farmer categories.

Rexlin (1984) reported that age, education, occupation and farming experience of farm women had shown positive and significant association with their participation in decision making whereas extension agency contact failed to show association with their participation in decision making.

Seema (1986) found that farm women perceived those areas linked with management of household and family as important and those linked with farming and farm management as less important. The areas which had long term influence on the farm and home and those related with home economy were also likely to be perceived as important.

Ethlers (1987) reported that negative attitude and behaviour of neighbouring farmers, consequences of women's lack of preparation for certain farm responsibilities were some of the problems faced by farm women who were the primary decision makers in a family based agriculture operational system.

From the review of the above studies, it was found that farm women were involved in various decision making processes related to agriculture and other allied activities. So in the present study also, an attempt was made to assess the nature and extent of participation of farm family women in decision making process.

2.6 Influence of personal, socio-cultural and techno-economic factors on participation of farm family women

Age

Singh and Sinha (1970) observed that age had significantly influenced the decision making in artificial fertilization and vegetable cultivation, which resulted in emergence of different patterns of decision making process.

Singh and Sharma (1970) reported that women belonging to middle class having no formal education, belonging to lower caste and having frequent urban contacts participated in farm operations more than others.

According to Sundararajan (1972), respondents of young age were found to have more joint consultation on all farm activities.

Sawer (1973) stated that equalitarian decision making was more likely to prevail among young couple than among the older couple.

Badiger (1979) established that the independent variables associated with the degree of involvement and decision making were age and marital status.

Singh and Chander (1983) reported that age was found to exercise non-significant effect on women's participation in decision making.

In most of the studies mentioned above, age is found to have positive relationship with participation. Hence in the present study also it was postulated that age will influence the participation of farm family women in agricultural operations as well as decision making.

Education

Dipali (1979) found that illiterate group were in high participation score range in contrast to other group. She also observed that low family education profile group of respondents were in high participation score range.

According to Dubey *et al.* (1982), the participation of rural women in decision making regarding animal husbandry practices remained mostly the same irrespetive of their educational level and herd size.

Singh and Chander (1983) reported that education was found to exercise nonsignificant effect on women's participation.

Seema (1986) observed that family educational status had no significant relation with role performance of women in decision making process.

Dak *et al.* (1987) stated a significant influence of higher family education on all agricultural activities except tending cattle which was performed both by more educated and less educated alike.

Ingle and Dharmadhikarj (1987) found that female labour may be in rural areas or private farms or on government farms as a whole were illiterate.

Kaur and Sharma (1988) observed that 83 per cent of the women workers were illiterate. The number decreased to 11.6 per cent as literacy increased to matriculation level and above.

According to Kanwar and Koranne (1989), 45.35 per cent of working females were uneducated and 34.64 per cent took education only upto primary school level.

Singh and Bhattacharya (1990) opined that the picture of farm women was that of submissive, illiterate, ignorant females who had been trapped in the webs of tradition and customs.

In the light of the above findings, education was considered as one of the independent variables affecting participation of farm family women.

Farm size

Dipali (1979) indicated that the participation of rural women in agricultural operations depended upon the size of the holding the family possessed. Majority of respondents (55.3%) were in small land holding group with high participation score range than the respondents of large land holding group (44.69%) with low participation score range.

Dubey *et al.* (1982) concluded that participation of rural women in decision making regarding animal husbandry practices remained almost the same irrespective of land holding and herd size.

Sajogyo (1983) observed that in the field of agriculture the better off households controlled greater areas of land, it was these households that obtained the greater income. The contribution made by agriculture especially rice cultivation to the income of the poorest household was extremely small, there was a tendancy of greater involvement of women in non-agricultural employment.

Aswathi (1983) reported that in large size farms, the task performed by women and their share in decision making regarding them varied from place to place and country to country.

Agarwal (1985) postulated that female participation in economic activities would decline as the farm size increased.

Jairath (1986) discussed productivity in terms of the following indices like cropping intensity, cropping pattern, total production and physical yields of major crops. He concluded that (i) the district dominated by small holdings showed the poorest growth in productivity (ii) the district dominated by medium holdings showed highest growth in productivity (iii) the district dominated by large holdings showed medium productivity growth.

Seema (1986) in her study concluded that majority of Nadar community women were either small or marginal farmers and size of holding had no significant relation with any of the respondent variables.

According to Dak *et al.* (1987), there were significant effects of land holding on women's contribution in all the agricultural activities except storage of produce, the task which is performed by large as well as small farmers alike. They also concluded that women with differential land status differ also in respect of their

participation in both male as well as female dominated activities.

Mishra and Awasthi (1988) concluded from a sample study of 90 farm families who had adopted high yielding varieties of paddy, the rate of female participation was higher than that of male labour in all farm size group.

Soliman and Abd-El-Monem (1988) examined labour use in terms of type of labour employed and the requirements per activity. They suggested that the larger the farm, the smaller the labour level used per unit. Accordingly, male labour made major contribition when calculated in terms of labour hours and women's role varied according to the nature of livestock on the farm and overall contribution of children was found to be minimal.

Arora (1990) opined that the size of the holding i.e., large, small, medium, marginal and landless labour exercised a commanding influence on the work participation of rural women.

From these studies, it was seen that the size of the holding and participation of farm family women were related in many cases. But in rare cases it was found to have influences in negative direction. However, for this study, it is hypothesised that the size of the holding will have relation with the participation of farm family women.

Family size

Dipali (1979) revealed that small families were in high participation score in comparison to big families.

Halim and Mc Carthy (1983) found that the average family size of the women labourers in Bengladesh was 5.06 which was below the national average, 52 per cent of the families had 5 to 7 members and 39 per cent had 1-4 members. The rest of the family had 8-10 members.

Ingle and Dharmadhikarj (1987) reported that 90 per cent of agricultural women labourers had family members upto 5 only, out of which 40 per cent with 1-3 family members and 50 per cent with 4-5 members.

Based on the above findings, family size is expected to have an influence on participation of farm family women and hence related as an independant variable for the study.

Farming experience

Sundararajan (1972) observed that joint decision and consultation was more in groups having more than 15 years of farming experience in selection of strains. Respondents with 10-35 years of experience had more joint consultation on matters such as application of manures, plant protection and disposal of kapas.

Sawer (1973) pointed out that opportunities for women to participate in farm management was influenced by their limited knowledge and farming experience.

From the review of the above studies, farming experience was found to have positive relationship with participation. Hence in the present study also it is hypothesised that farming experience will influence the participation of farm family women.

Extension participation

Mahadevaswamy (1978) inferred that adoption behaviour of marginal, small and big farmers was associated with extension participation.

Badiger (1979) stated that there was no significant association between farm women's participation in decision making and extension participation.

Gowda (1986) observed that extension participation was significantly associated with economic performance of contact farmers and fellow farmers.

Babu (1987) reported a significant association between extension participation and economic performance of grape growers.

In the above mentioned studies, it was seen that extension participation of women and their participation in various activities are related. Exposure to these information source helps to update the knowledge of the farm family women and hence for the present study it is hypothesised that extension participation and participation of farm family women will be positively related and hence selected for the study.

Mass media participation

Saradamoni (1983) opined that women in land owning house holds were aware of the radio programmes for farmers and listened to them. But they would follow the suggestions only if they felt they were beneficial to them.

Renukaradhya (1983) found a significant relationship between media participation of trained farmers with their level of economic performance.

Lalitha (1985) revealed that there was no significant difference in knowledge level of high and low mass media participation group.

Bhagat and Mathur (1989) in their study on 'Mass media and farm women' indicated that about 25 per cent of women had low mass media exposure whereas 26 per cent had high mass media exposure.

In view of the above revelations, it was decided to include this variable as an independent variable in the study in order to verify to influence on participation of farm family women.

Social participation

Acharya and Bhowmik (1978) and Kantharaj (1980) reported that social participation had significant association with knowledge of agricultural practices.

Singh (1981) reported that the level of adoption had no significant relationship with social participation except in the case of small farmers, where the above variable was positively and significantly related.

In the present study, a positive relation between social participation and participation of farm family women in agricultural operations and decision making were expected.

Extension contact

Sawer (1973) reported that wife's extension contact was not significantly related to involvement in either general decision or decisions leading to adoption.

Badiger (1979) found that low extension category respondents participated in significant proportion in decision making than that of high extension contact group.

Dipali (1979) stated that the rural women who had contact with extension agency were found to have participated less in agricultural operations in comparison with these non-contacted group.

Rexlin (1984) opined that extension agency contact failed to show association with their participation in decision making.

Seema (1986) reported that contact with extension agency had positive and significant relationship with role performance (single) in decision making. But there was no significant relationship of role perception, role performance (joint) and extent of participation in implementing the decision with extension agency contact.

Thimmaraju (1989) in his study reported that majority of farmers having high extension agency contact had high economic performance.

From the review of the studies mentioned above, extension contact was found to have positive influence on the participation of farm family women. Hence in the present study also, it was hypothesised that extension contact will positively relate with the participation of farm family women.

Knowledge about scientific crop production

Uma (1980) found that knowledge level of trained Mahila Mandal members was significantly high as a result of training with respect to nutrition and home gardening in Dharwad district.

Devi and Reddy (1984) reported that knowledge in management and role expectation and role performance of rural women in farm activities had no relation.

According to Suchithra (1987), majority of the farm women had average knowledge followed by high and low knowledge in tobacco farm operations. She also observed that medium and small farm women had average knowledge followed by high and low knowledge whereas large farm women had high knowledge followed by low and average knowledge in tobacco farm operations.

Mulay (1988) in her investigations with two groups of women (experimental and control) found that they did not differ in load work, level of literacy, extent of mass media exposure, political and voting behaviour. However, the knowledge regarding the farm practices was higher in the case of experimental group.

Govind and Subramanyam (1989) revealed that women's performance in knowledge test was poor since the respondents with high level of knowledge were not predominant.

Sagar (1989) reported that majority of the respondents had medium level of knowledge about recommended practices of paddy cultivation.

In the present study, a positive relationship between knowledge of crops and participation of farm family women were expected.

Knowledge about dairy/poultry management

Hiranad and Kumar (1980) showed that the areas in which women were found to influence the decisions were the purchase and sale of the land, borrowing, purchase and sale of animals.

Puri (1981) indicated that knowledge of farm women were predominently high in dairy activities particularly bringing fodder from the field, chaff cutting, preparing feed for cattle, bathing and cleaning the cattle, clearning the cattle shed, making cowdung cakes, compost making, milking and making curd and ghee.

Govind (1984) found that the knowledge of farm women was high with respect to livestock related activities.

From the review of the studies mentioned above, it was found that knwoledge about dairy/poultry management had positive relationship with the participation of farm family women. Hence in the present study also it was postulated that knowledge about dairy/poultry management will influence the participation of farm family women.

Attitude towards farming

Katz and Scotland (1959) stated attitude as a tendancy or disposition to evaluate an object or the symbol of that object in a certain way.

Sharma (1972) defined attitude as a personal disposition which impels an individual to react to some object, or situations.

Singh (1978) showed that high scores on attitude towards farming and continuous decision making were associated with progressive farm behaviour.

According to Seema (1986), attitude towards farming had negative significant relationship with joint role performance and extent of participation in

implementing the decisions. Role perception and role performance were not significantly related with attitude towards farming.

Reddy (1987) opined that attitude towards watershed management was significantly associated with the productivity of ragi crop and he also observed that attitude was not having any significant relationship with productivity of groundnut in the case of small and marginal farmers.

Based on the theoretical perspective and logical reasoning, it was hypothesised that attitude towards farming will be positively related with the participation of farm family women.

Level of aspiration

Lewin (1951) defined level of aspiration as the degree of difficulty of the goal towards which a person is striving.

Aspiration is the degree to which the individual sets his goals realistically in relation to his physical and mental attributes and in accordance with his environment.

Studies which establish the relationship between level of aspiration and participation of farm family women were not available. However, based on logical reasoning it was hypothesised that the level of aspiration will be positively related with the participation of farm family women.

Economic motivation

Though studies on economic motivation vis-a-vis participation of farm

family women were not available for review, studies by Renukaradhya (1983) and Sharma (1989) indicated positive relationship between these two variables in the case of farmers in general. In view of the above, it was postulated that economic motivation will influence the participation of farm family women.

Innovation proneness

Much studies were not available which established the relationship between the variables innovation proneness and participation of farm family women. But studies by Moulik (1965), Bhilegaonkar (1976) and Singh (1981) indicated a positive relationship between these two variables in the case of farmers in general. Hence based on the theoretical perspective and logical reasoning, it was postulated that innovation proneness will be positively related with the participation of farm family women.

Cropping intensity

Prasad (1978) observed significant relation between cropping intensity and adoption of improved practices by rice growers.

Shukla (1980) reported cropping intensity as one of the most important variables which influence the adoption behaviour of farmers.

Bhat *et al.* (1987) opined that the intensity of cropping was higher for progressive farms than non-progressive farms inspite of the fact that irrigated per-centage of operated area was higher in non-progressive farms. The female labour participation was higher for non-progressive than progressive farms, but the revenue applied to the female labour force too.

Based on these findings, cropping intensity also was decided to be included as one of the independent variables for the present study.

Achievement motivation

Mc Clelland (1961) stated that achievement motivation was the desire to do well not so much for the sake of social recognition or prestige, but to attain an inner feeling of personal accomplishment.

Grunig (1970) while studying communication and economic decision making process of columbian peasants indicated that problem solving, economic rationality as a decision criterion, adoption and achievement motivation were high.

According to Devi and Reddy (1984) the achievement motivation had no relation with role expectation and role performance of rural women in farm activities.

Seema (1986) opined that achievement motivation had no significant relation with role perception, role performance and extent of participation of women in implementing the decisions.

Based on these studies and logical perspective, it is hypothesised that achievement motivation and participation of farm family women were positively related.

Self-confidence

Prasad (1983), Reddy (1987), Shivakumarappa (1987) and Sumathi (1987) reported that self-confidence had positive and significant relationship with

feasibility and utilization of agricultural technologies.

Much studies were not available which establish the relationship between self confidence and the participation of farm family women. But based on the theoretical perspective and logical reasoning, it is hypothesised that self confidence and participation of farm family women were positively related.

Risk preference

Kamarudeen (1981) observed significant relationship between risk preference and attitude of farmers towards demonstrated cultivation practices.

Naik (1981) and Cherian (1984) also reported significant association between risk preference and attitude of farmers.

These results pointed out the possibility of definite relationship of risk preference with participation. Therefore in this study, it was assumed to have influence on the participation of farm family women.

Information source utilization

According to Kaur (1982) majority of women found the lessons useful and liked the content 'Fruit and vegetable preservation (60.4%), 59 per cent liked 'Food science' and 56 per cent liked 'Home management' printed lessons.

Saradamoni (1983) opined that women in land owning households were aware of the radio programmes for farmers and listened to them. But they would follow the suggestions only if they felt they were beneficial to them.

Much studies showing the relationship between information source utilization and participation of farm family women were not available. However, based on logical reasoning it was hypothesised that the information source utilization will be positively related with the participation of farm family women.

2.7 Conceptual frame work of the study

The main objective of conceptual frame work being developed here is to provide a perspective reference for systematically analysing the process of participation of farm family women influenced by a multiplicity of personal, socio-cultural and techno-economic factors and their consequent implication. The frame work is expected to facilitate theoretical and empirical analysis of participation of farm family women (Fig.1).

It could be derived from the past studies that participation is a multivariate phenomenon explained by a wide spectrum of personal, socio-cultural and techno-economic factors. These factors are intricately associated with each other that they should not be viewed as seperate entities for the study. Hence a wholistic view of all these contributing factors, only would give a clear picture of the process of participation.

2.8 Hypotheses for the study

Based on the review of literature and conceptual framework, the following null hypotheses were derived for the study.

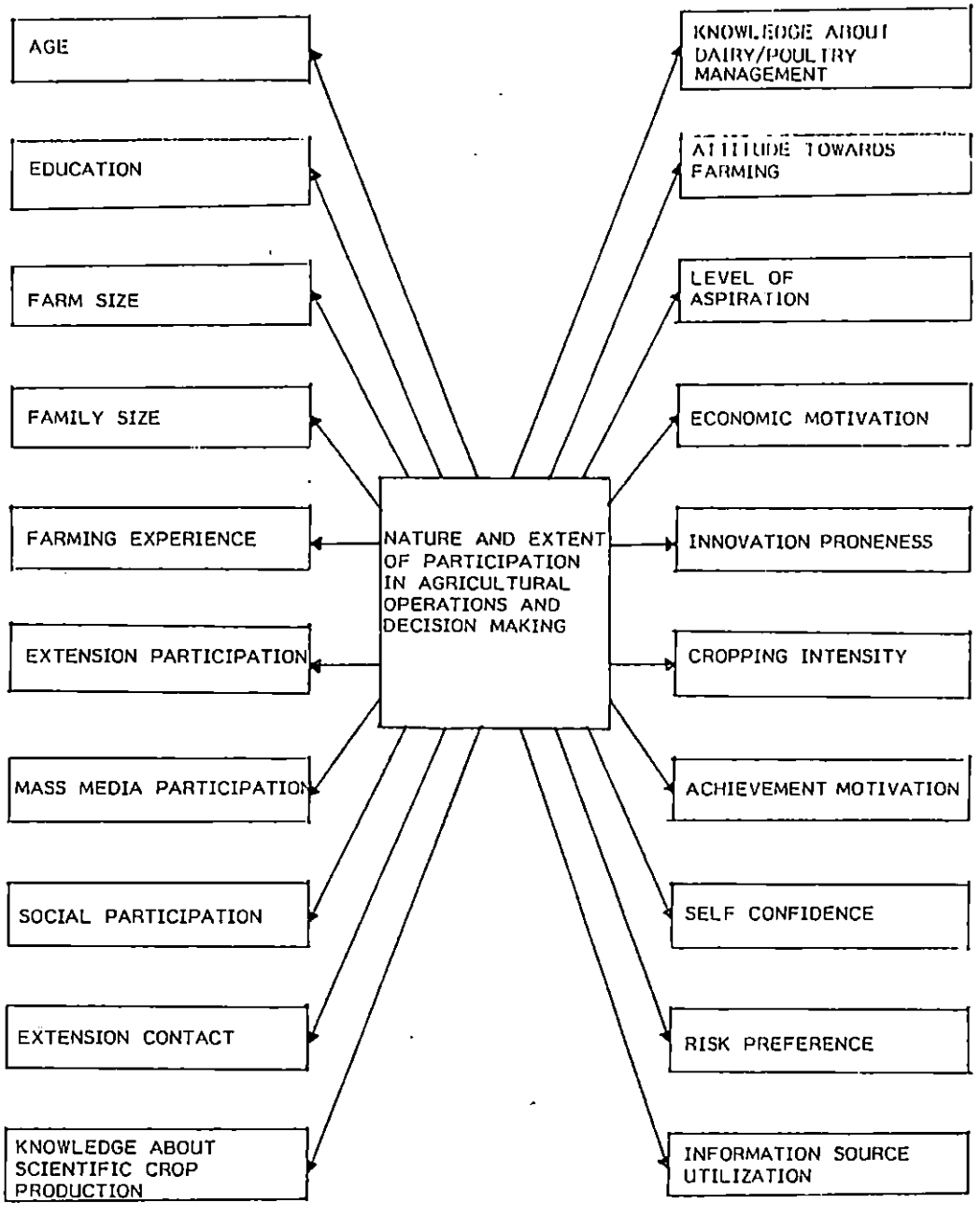


Fig.1. Theoretical Model of the study

(1) There would be no significant relationship between the personal, socio-cultural and techno-economic characteristics of farm family women and their participation in agricultural operations.

(2) There would be no significant relationship between the personal, socio-cultural and techno-economic characteristics of farm family women and their participation in decision making.

Methodology

CHAPTER-III

METHODOLOGY

The methodology employed for the study is furnished in this chapter under the following main heads.

3.1 Research design

3.2 Locale of the study

3.3 Selection of the sample

3.4 Quantification of the nature and type of homesteads prevailing in the area

3.5 Operationalisation and measurement of variables

3.6 Methods used for data collection

3.7 Statistical tools used for the study

3.1 Research design

Research designs are developed to enable the researchers to answer research questions as validly, objectively, accurately and economically as possible. This study, with the main objective of measuring the participation of farm family women was conducted, adopting an ex-post-facto research design. Ex-post-facto research is a systematic empirical enquiry in which the scientist does not have direct control over the independent variables because their manifestation have already occurred or because they are inherently not manipulable (Kerlinger, 1964).

Inferences about relations among variables are made without direct intervention, from concomitant variation of independent and dependent variables. In this

research study, since the manifestation of the independent variables had already occurred and there was no scope for manipulation of any variable, ex-post-facto research design was resorted to.

3.2 Locale of the study

The study was conducted in Thrissur district of Kerala. The homesteads of this area comprise of crop faming and livestock farming ensuring a synergistic interaction between the components. There were 3 sub-divisions and 17 blocks in Thrissur district. From each of these three sub-divisions, one block was selected randomly. And from each of these three blocks, one Panchayat was also selected at random. The study was confined to these three Panchayats namely Melur (Irinjalak-kuda sub-division), Pananchery (Thrissur sub-division) and Thekkumkara (Vadak-kancherry sub-division). The map showing the locale of the study area is presented in Fig.2.

3.3 Selection of the sample

The list of the marginal homestead farms was collected from each panchayat. From this, 50 homesteads were selected randomly from each Panchayat. The female head of the family was selected as the respondent from each homestead. Thus altogether there were 150 women respondents for the study.

3.4 Quantification of the nature and type of homesteads prevailing in the area

The homestead farming systems play an important role in the household economy of peasant families and at the same time have social, cultural and aesthetic

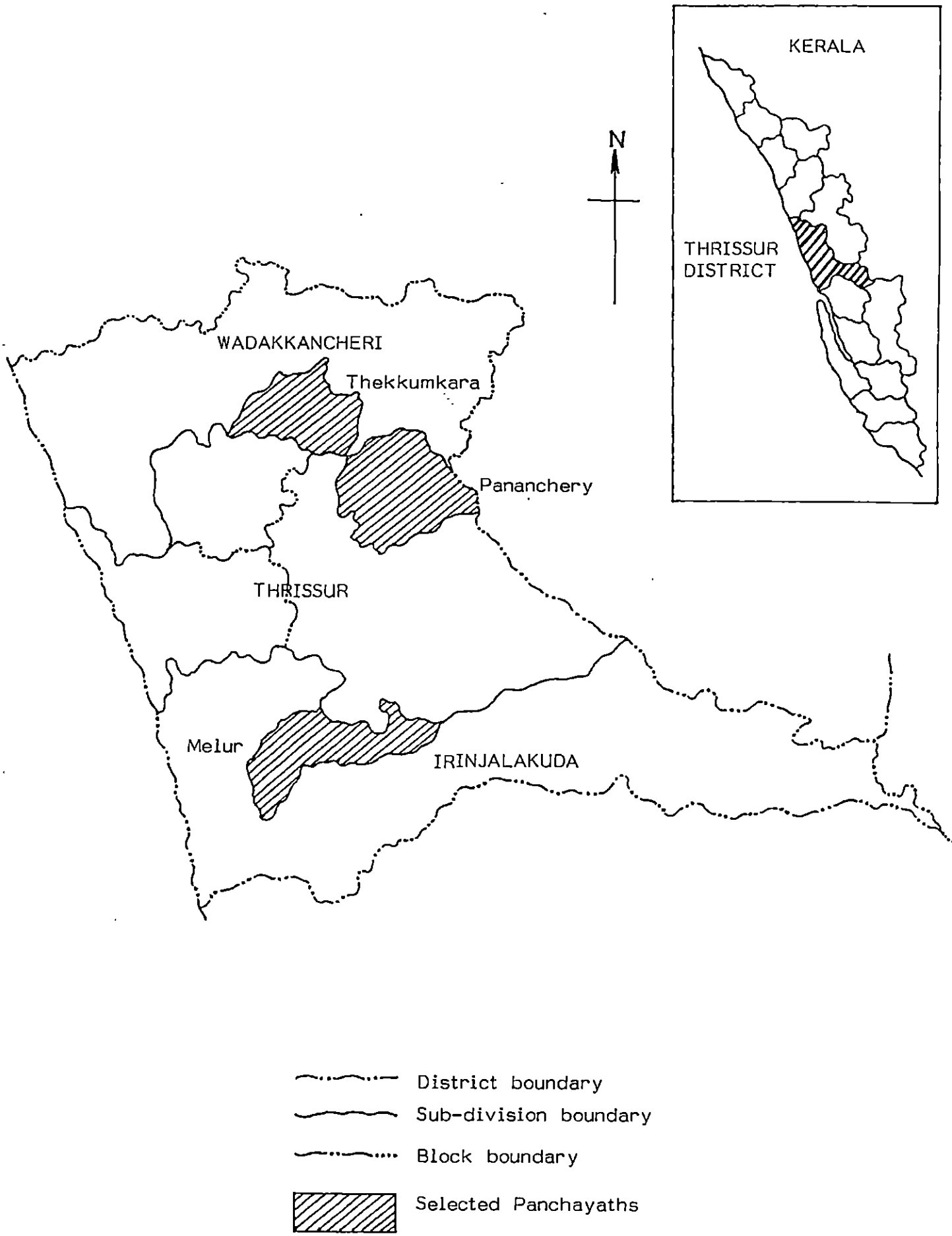


Fig.2. Map of Kerala showing the district and panchayaths selected

functions. It has been one of the survival strategies of the Kerala farmer for centuries. The homestead farming systems of Kerala can be perceived as the outcome of ecological as well as socio-economic factors.

The homestead agriculture of Thrissur district often combines with crop farming and livestock farming ensuring a synergistic interaction between the components. An extensive survey was conducted to collect the data from the representative homesteads of Thrissur district by purposive sampling. A marginal homestead may be defined as the home and and the land adjoining it, owned and occupied by the farmer/farm family and the land area must be less than one hectare.

The structural arrangement, canopy configuration and component interactions ensure a high degree of resource-use efficiency both temporally and spatially. The crops like coconut, arecanut, mango, breadfruit, tamarind, jack occupy the topmost layer of the canopy. Pepper provides the second layer while the third layer is occupied by banana, cocoa, guava, nutmeg, clove leaving the ground layer for the crops like pineapple, ginger, turmeric, colocassia, amorphophallus and vegetables raised in the kitchen garden.

A pilot study was conducted in non sample area of the district. Thirty respondents were selected for the pilot study. The list of different crops including the trees grown in these thirty homesteads were collected using an interview schedule prepared for the study. They were tallied and those crops which got maximum scores were taken for the study to avoid complexity. Similarly information on other enterprises like dairying and poultry were also collected from each respondents.

Table 1. Distribution of different crops and other enterprises in the homesteads of Thrissur district

n = 30

Sl.No.		Frequency	Percentage
CROPS			
1	Coconut	27	90.00
2	Vegetables	20	65.00
3	Banana	21	68.33
4	Arecanut	14	48.33
5	Nutmeg	7	23.33
6	Clove	5	18.33
7	Yams	17	56.66
8	Pepper	6	20.00
9	Ginger	8	28.33
10	Tapioca	11	35.00
11	Pineapple	8	26.66
TREES			
1	Jack	23	78.33
2	Mango	20	65.00
3	Tamarind	14	45.00
4	Neem	9	31.66
5	Guvava	13	43.33
6	Champaka	8	25.00
7	Bread fruit tree	9	30.00
OTHER ENTERPRISES			
1	Dairying	21	71.66
2	Poultry	18	60.00
3	Goat	8	28.33
4	Piggery	4	13.33

It was understood that coconut is the most important crop occupying 90 per cent of the homesteads as evidenced from Table 1.

Next important crop is found to be Banana occupying 68.33 per cent of the homesteads of non-sampling area. Also the cultivation of vegetables is very common which accounted for 65 per cent of the homesteads.

Yams consisting of Dioscorea and lesser yams occupy the next place with 56.66 per cent. Among the other important perennial crops, Arecanut palm is the most common one which is grown in the homesteads with assured irrigation facilities.

Tapioca is the next important food crop found cultivated in 35 per cent of the homesteads. Spices like nutmeg, clove, ginger and pepper did not occupy a commendable position in these homesteads as they were found only in less than 30 per cent of these areas.

Homesteads of Thrissur district also consist of a number of trees like jack, mango, tamarind, neem, guava, chempaka, bread fruit tree etc. Of these, jack comes in the first position occupying 78.33 per cent of homesteads, mango 65 per cent, tamarind 45 per cent, neem 31.66 per cent, guava 43.33 per cent, champaka 25 per cent and bread fruit tree 30 per cent.

Most farm families have a variety of other enterprises like Dairying, Poultry, Goat, Piggery etc. Of this Dairying occupies 71.66 per cent of the homesteads, Poultry 60 per cent, Goat rearing 28.33 per cent and Piggery 13.33 per cent.

Based on the results of the pilot study, the final interview schedule was

prepared and informations were collected from the 150 respondents.

3.5 Operationalisation and Measurement of the variables

3.5.1 Operationalisation and measurement of the dependent variables

3.5.1.1 Nature and extent of participation of farm family women in agricultural operations

The term farm family woman is operationalised as the female head or the housewife whose main activity is the household duty and who during her leisure time is engaged in the agricultural activities in one way or the other.

This variable was quantified using the method followed by Badiger (1979). To know the nature of participation of farm family women in agricultural operations, an item pool of various operations involved in the case of important crops were listed out with the help of the Package of Practices and crop specialists of Kerala Agricultural University. The initially prepared operations for each of the crops viz. coconut, banana, vegetables and yams and enterprises like dairy/poultry were administered to 30 randomly selected non-sample respondents prior to the preparation of the final schedule.

From the responses obtained from these 30 respondents from the non-sample area, the most important ten operations of each crop viz. coconut, banana, vegetables, yams and also of the enterprises like dairy/poultry, where the involvement of farm family women are found to be more were selected. The nature of participation with respect to these operations for different crops was measured quantitatively on a four point scale with scores of 0, 1, 2 and 3 respectively for no participation, supervisory only, jointly carrying out and participation solely. To know the extent of participation of farm family women, the same operations included above

were selected. They were measured quantitatively on a 3 point scale with the scoring of 2, 1 and 0 for participation to a greater extent, to some extent and no participation respectively.

The aggregate participation score for each respondent was obtained by adding the respective score for each item viz. crops and dairy/poultry. The maximum score that one could get was 30, in the case of nature of participation in agricultural operations and 20 in the case of extent of participation in agircultural operations.

The mean participation score was considered as a measure for classifying into low and high categories of participation.

Category	Mean participation score	Frequency	Percentage
Low	< 95.760	79	52.67
High	≥ 95.760	71	47.33

3.5.1.2 Nature and extent of participation of farm family women in decision making

This variable was quantified using the method followed by Badiger (1979) as follows: To know the nature of participation of farm family women in decision making, an item pool of various decision making areas involved in the case of important crops was listed out with the help of subject-matter specialists. The initially prepared decision making areas for each of the crop viz. coconut, banana, vegetables, yams and the enterprises dairy/poultry were administered to 30 randomly selected non-sample respondents prior to the preparation of the final schedule.

From the responses obtained from these 30 respondents of the non-sample area, ten most important decision making areas of each crop viz. coconut, banana, vegetables, yams and also of the enterprise dairy/poultry, where maximum involvement of farm family women was observed were selected. The nature of participation with respect to these decision making areas of different crops was measured quantitatively on a four point scale with scores of 0, 1, 2 and 3 for not at all, presence only, jointly carrying out, carrying out solely, respectively. To know the extent of participation in decision making of these crops, a three point scale with scores of 2, 1 and 0 for Always, Sometimes and Never, respectively was used. The aggregate participation score for each respondent was obtained by adding the respective score for each items viz. crops and dairy/poultry. The maximum score that one could get was 30 in the case of nature of participation in decision making and 20 in the case of extent of participation in decision making.

The mean participation score was worked out as a measure for classifying the respondents into low and high categories of participation.

Category	Mean participation score	Freqnecy	Percentage
Low	< 96.293	83	55.33
High	≥ 96.293	67	44.67

3.5.2 Operationalisation and measurement of independent variables

1. Age

This was operationally defined as the number of years the farm family woman has actually completed at the time of the interview.

This was measured by directly asking the respondent the number of years she has completed at the time of investigation.

2. Education

This was operationally defined as the extent of formal education acquired by a farm women.

Trivedi (1963) developed a scale to measure the educational status of the respondent as follows: and is used here.

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

Kanagasabai (1975) clasified respondents with scores based on their academic qualification.

3. Farm size

This was operationally defined as the area in ha possessed by the family of the farm family women. The area under dryland and wet land were measured separately.

After computing the total score for each of the respondents, they were grouped into two as low and high based on the mean value obtained.

4. Family size

This was operationally defined as the number of members in the family living together on the farm.

After computing the total score of the respondents, they are grouped into two, as low and high based on the mean value obtained.

5. Farming experience

This variable was defined as the number of years since the farm family woman has been involved in farming.

The procedure used by Rajendran (1978) was used. The question put was "For how many years have you been engaged in farming?" The respondents were then categorised into two, low and high based on the mean value obtained.

6. Extension participation

This refers to the extent of participation of farm family woman in different extension activities conducted during the past one year.

The respondent's participation in each of the above extension activities for the past one year was the method used.

Sl.No.	Category of response	Score
1	Attended whenever conducted	2
2	Attended occasionally	1
3	Never attended	0

The total score was arrived at by summing up the scores obtained by the respondent. The respondents were then categorised as low and high based on the mean value obtained.

7. Mass media participation

Mass media participation was operationalized as the extent to which a farm family woman was exposed to different mass communication media such as Radio, Newspaper, Television etc.

The procedure used by Nair (1969) was used. The scoring procedure was as follows:

Sl.No.	Frequency	Score
1	Most often	3
2	Often	2
3	Sometimes	1
4	Rarely	0

The scores were added up for arriving at the total mass media score for each respondent. They were then categorised as low and high based on the mean value obtained.

8. Social participation

Social participation was operationally defined as the degree of involvement of the farm family woman in formal social organizations.

The scale used by Subramoniam (1986) was followed with necessary modifications to suit the present study. Social participation was measured in terms of the membership of the individual in the organisations as well as her frequency of participation in these activities. The scoring pattern was as follows:

A score of 2 for the official position and a score of 1 for mere membership were given in the case of each organisation. Scores of 2, 1 and 0 were given for attending the activities of each organisation 'whenever conducted', 'occasionally' and 'never'. To obtain the final score of the respondent, the scores given as the member or office bearer were multiplied with scores given for attendance in the activities and added up for all the organisations. The respondents were then classified into low or high groups based on the mean score obtained.

9. Extension contact

Extension contact was defined as the frequency with which a farm woman comes into contact with the extension agency in a specified period of time for getting information and advice on agricultural aspects.

The extension contact score was obtained by assigning scores of 8, 4, 2, 1 and 0, respectively for the responses viz., once a week, once a fortnight, once a month, once a year and never (Bonny, 1991) for her contact with different extension personnel. The scores were added up for arriving at total extension score. The respondents were then classified as low or high based on the mean score obtained.

10. Knowledge about scientific crop production

Knowledge about scientific crop production was operationalized as the information possessed by a farm woman regarding scientific crop production. In the present study, a standardised knowledge test was developed for measuring the knowledge of the respondents about the various aspects of scientific crop production by following the procedures adopted by Sadamate (1978), Viju (1988), Sulaiman (1989) and Bonny (1991). Thus four knowledge tests of the important crops viz. coconut, banana, vegetables and yams were prepared.

For this, an item pool of the questions was prepared by discussing with subject-matter specialists of Kerala Agricultural University and using the Package of Practices Recommendations of Kerala Agricultural University. Thirty questions each which covered all the areas mentioned above were selected to carry out item analysis for developing standard knowledge test for the different crops.

The initially prepared 30 items for the respondents were administered to thirty randomly selected non-sample respondents prior to the preparation of the final schedule and their responses were used for item analysis (Appendix II).

Scores of one and zero were given to the correct and incorrect responses, respectively. Thus there was a probability of the respondents scoring a maximum of 30 points for all the correct answers for each crop and zero for all wrong answers.

The scores obtained by the thirty respondents were arranged in the descending order of the total scores, from the highest to the lowest and the respondents were divided into three equal groups arranged in descending order of the total

scores obtained by them. The three groups were G1, G2 and G3 with ten respondents in each group. For item analysis, the middle group (G2) was eliminated retaining only the terminal ones with high and low scores (G1 and G3). The data pertaining to correct responses for all the items in respect of these two groups (G1 and G3) were tabulated and the difficulty and discrimination indices were calculated for the above categories. In the present study the items with $E^{1/3}$ values ranging from 0.30 to 0.90 were considered for final selection. Thus 10 items each were selected for the final format of the knowledge tests of coconut, banana, vegetables and yams, respectively (Appendix-I).

Reliability

Guilford (1954) defined reliability as the proportion of variance in the obtained test score. Hence a scale can be considered as reliable only when it consistently produces the same or similar results when applied to the same sample.

The test-retest method was used to test the reliability of the knowledge test as follows. All the 10 items of knowledge test on crops were administered twice to thirty non-sample respondents at 20 days interval. The coefficient of correlation between the two tests of scores was 0.76 which was significant at 0.01 level indicating the reliability of the test as high.

Validity

Seltiz *et al.* (1977) defined validity of a measuring instrument as the extent to which differences in scores as it reflects true differences among individuals as the characteristics that we seek to measure rather than random or constant errors. The knowledge tests developed in the study were tested for their content validity.

Content validity is a kind of validity by assumption as described by Guilford (1954). Care was taken to include the items covering the entire universe of relevant aspects of knowledge with regard to different crops. Items were collected through various sources such as the scientists of Kerala Agricultural University and officials of the State Department of Agriculture. Hence it was assumed that the tests could measure the knowledge of the respondents with validity.

Method of scoring

The respondents were asked to indicate their responses to the items in the relevant knowledge tests and the correct answer was weighed with one score and incorrect answers with 0. The total knowledge score for each respondent was calculated by summing up the scores given for each item. The respondents were then categorised as low or high on the basis of the mean value obtained.

11. Knowledge about dairy/poultry management

Knowledge about dairy/poultry management was operationalised as the information possessed by a farm woman regarding animal and poultry management.

The same procedure used for the above knowledge tests of crops was used here also. Here items with $E^{1/3}$ values ranging from 0.30 to 0.90 were considered for final selection thus 10 items are selected for the final format of the knowledge test about dairy/poultry management.

Reliability

The 30 items of knowledge test about dairy/poultry management were

administered twice to 30 non-sample respondents at 20 days interval [Appendix I(e)]. Here the coefficient of correlation between two tests of scores was 0.82 which was significant at 0.01 level indicating the reliability of the test as high.

Validity

Here also items were collected through various sources such as scientists of Kerala Agricultural University and officials of the State Department of Agriculture. Hence it was also assumed that the tests could measure the knowledge of the respondents with validity.

Method of scoring

The correct responses were given a score of one and incorrect responses a score of zero. They were then summed up to get the total score for each respondent. They were then categorised as low or high on the basis of the mean value obtained.

12. Attitude towards farming

Attitude towards farming was operationally defined as the positive or negative feeling of a farm woman associated with farming.

The scale developed by Seema (1986) was used in this study to measure the attitude of farm family women towards agricultural operations.

The responses were collected on a three point continuum as agree, undecided and disagree. In the case of positive statements a score of three was given for agree, score of two for undecided and score of one for disagree. For negative statements, the scoring procedure was reversed.

The total score of the respondent was the summation of the numerical weights assigned to the responses of the different items. Then the respondents were grouped as low and high based on the mean value obtained.

13. Level of aspiration

Level of aspiration was operationally defined as the possible goal a farm family woman sets herself in her performance.

Cantril and Free (1962) developed a self anchoring striving scale for measuring the general level of aspiration.

Chathopadhyaya (1963) used a semi structured projective technique to measure the level of aspiration of farmers.

For the present study, the scale developed by Seema (1986) was used which consisted of eight questions with different alternate choices. A score of one was given if the responses were related to agriculture. In the case of fifth question, a score of one was given if a response pattern showing higher level of aspiration from the two alternate choices were selected. The total score of the respondent was the summation of the numerical weights assigned to the different responses. They were then classified into low and high based on the mean value obtained.

14. Economic motivation

Economic motivation was operationalised as the drive for occupational excellence in terms of profit making and the relative value placed on economic ends by a farm family woman.

The procedure followed by Moulik (1965) was used for measuring economic motivation. The scale consisted of three sets of statements, each set having three short statements with weights of 3, 2 and 1 indicating different intensities of motivation from high to low. The forced choice method was followed to overcome familiar problems of personal biases and lack of objectivity of self-evaluation. This method forced the respondent to choose from a group of three short statements describing a particular personality characteristic, the one which most accurately described respondent herself and also one which least accurately portrayed herself. After obtaining the most least choice for each of the three sets of statements (appended), scoring was done by summing up ratios of weights of 'most like' statements to weights of 'least like' statements. They were then classified as low or high depending on the mean value obtained.

15. Innovation proneness

Innovation proneness indicates the behaviour pattern of farm family women who has the interest in and desire to seek changes in farming techniques and to introduce such changes into their operations when these are practicable and feasible.

Moulik's (1965) self rating innovation proneness scale was used in this study to measure the innovation proneness. The scale consisted of three sets of statements, each set of statements with weights of 3, 2 and 1 indicating high, medium and low degrees of innovation proneness.

After obtaining the respondents 'most-least' choice for each of the three

sets of statements, the scoring was done by summing up the ratios of the weight of the'most-like' statements to the weight of 'least-like' statements. As there were three sets of statements for the innovation proneness scale, the sum of the ratios for the three sets was the respondent's self-rating score for innovation proneness. They were then classified as low or high on the basis of the mean value obtained.

16. Cropping intensity

Cropping intensity was operationally defined as the number of crops raised in a unit area by the farm family woman in an year which was expressed in percentage.

The procedure followed by Prasad (1978) and Balan (1987) was used for the measurement of cropping intensity. The farm family woman was asked to indicate single cropped, double cropped and tripple cropped land cultivated by her, and was asked to provide the data for both garden and wetlands. Total cropped area per year was obtained by summation of a single cropped area, twice the double cropped area and thrice the tripple cropped area. The cropping intensity was than calculated as,

$$\text{Cropping intensity} = \frac{\text{Gross cropped area}}{\text{Net cropped area}} \times 100$$

The respondents were then classified into low or high based on the mean value obtained.

17. Achievement motivation

Achievement motivation was operationally defined as the spontaneously

expressed desire of farm family woman to do something well for its own sake rather than to gain power, recognition or profit.

Achievement motivation scale developed by Singh (1974) was used for measuring this variable. It is a six item scale with five alternative responses to each item. The respondent was asked to select one of the alternatives for each item. The scoring was done using the method of summated rating. The respondents were then categorised into low or high based on the mean value obtained.

18. Self confidence

Self confidence refers to the feeling of an individual farm family woman about her ability and initiative to achieve her goal.

This variable was measured using a scale developed by Basavanna (1971) and modified by Prasad (1983). The scale consisted of 10 statements. These statements were to be answered by a farm family woman as either Agree/Disagree. The 'Agree' response is given a score of 'Zero' and 'Disagree' response a score of 'one', for each of the items except negative statements three, six and ten (Appendix III) in which case, the scoring was reversed.

The summation of the scores obtained by an individual indicated his/her level of self confidence. The higher the score, the higher was the level of self-confidence. The score ranged from 'zero' to 10. The respondents were then classified into low or high on the basis of the mean value obtained.

19. Risk preference

Risk preference was operationalised as the degree to which a farm family

woman is oriented towards risk and uncertainity and portrayed the courage to face the problems occurring.

To measure this variable, risk preference scale developed by Supe (1969) was adopted in this study. This scale consisted of six statements of which two were negative and the rest positive. The responses were collected on a five point continuum as shown below:

Responses in the continuum	Scores
Strongly disagree	1
Disagree	3
Undecided	4
Agree	5
Strongly agree	7

For the negative statements, the scoring pattern was reversed. The total score obtained by summing up the score for each statement yielded risk preference score. They were then classified into low or high based on the mean value obtained.

20. Information source utilization

Information source utilisation was operationally defined in terms of the frequency of obtaining information from different sources. The different sources of obtaining information about agricultural technology were listed and were grouped into three categories viz. mass media sources, personal cosmopolite sources and personal localite sources.

The procedure followed by Nair (1969) was adopted in the present study to develop an index of use of information sources. Each respondent was asked to indicate as to how often he got information regarding improved agricultural practices from each of the listed sources. The scoring pattern was as follows:

Frequency of utilisation	Scores
a. Never	0
b. At times needed	1
c. Whenever needed	2

The scores were summed up across each item to form information source utilisation index. They were then classified into low or high based on the mean value obtained.

3.6 Method used for data collection

A pre-tested, structured interview schedule containing appropriate questions for obtaining the required data was prepared. The interview schedule was discussed with a group of experts and necessary modifications were made to avoid ambiguity and redundance in the questions. The data were collected through personal interview method by the researcher using the final interview schedule (Appendix III). The researcher developed adequate rapport with the respondents before the interview.

3.7 Statistical tools used for the study

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

Correlation analysis

Correlation coefficient is a measure of the association between two or more variables. Correlation coefficient was worked out to measure the degree of association between participation of farm family women and the different explanatory variables.

In order to test the significance of the observed correlation coefficient, the student's t test at (n-2) degrees of freedom was used.

To test the significance of correlation coefficient, the table for the values of correlation coefficient for different levels of significance was used (Pillai, 1957).

Categorisation

The means ($\overline{X}$) of participation index and the independent variables were calculated and these were used for categorisation of respondents into two strata (i) $\overline{X}$ and above $\overline{X}$, (ii) Below $\overline{X}$.

After grouping the respondents into two strata, the frequency of farm family women falling under each category and their percentages were worked out to know the distribution of farm family women under each category in relation to the nature and extent of participation.

Multiple Linear Regression Analysis (MLR)

Multiple Linear Regression analysis was done to find out the relative contribution of each of the significant personal and socio-cultural and techno-economic factors to the participation of farm family women. This gives the percentage of variation that a set of independent variables jointly explains in the dependent

variable. The high R^2 values and the significant R value suggest the desirability of regression analysis in predicting the dependent variable.

Step down regression analysis

This was done to know the relative effect of the independent variables in predicting the dependent variable and for elimination of unimportant variables.

Multivariate path coefficient analysis

Path analysis explains the cause and the effect relationship between dependent and independent variables. It was originally developed by Wright (1921) followed by Li (1955) and Singh and Choudhary (1979) to know the nature of influence with direct or indirect effect of the personal, socio-cultural and techno-economic characteristics on the dependent variable. Path coefficient can be defined as the ratio of the standard deviation of the effect due to a given cause to the total standard deviation of the effect.

The statistical analysis was done using the computer facility available at the Department of Agricultural Statistics, College of Horticulture, Vellanikkara.

Results

CHAPTER-IV

RESULTS

In accordance with the objectives set earlier, the results of the study are presented in this chapter under the following heads.

4.1 Distribution of the respondents based on the nature and type of homesteads prevailing in Thrissur district

4.2 Distribution of the respondents based on their personal, socio-cultural and techno-economic factors

4.3 Nature and extent of participation of the respondents in agricultural operations (NEPAO)

4.4 Nature and extent of participation of the respondents in decision making (NEPDM)

4.5 Influence of personal, socio-cultural and techno-economic factors on the Nature and Extent of participation of the respondents in Agricultural Operations

4.6 Influence of personal, socio-cultural and techno-economic factors on the Nature and Extent of participation of the respondents in Decision making

4.1 Distribution of the respondents based on the nature and type of homesteads prevailing in Thrissur district

Among the crops grown in the homesteads of Thrissur district, coconut is the most dominant and important one. The growth pattern and planting pattern of coconut palms facilitate successful growing of other crops in between or under them (Nelliat and Shambhat 1979). Intercropping and or other forms of crop combinations with coconut is a very common practice especially around the homesteads throughout the district.

Table 2. Distribution of respondents based on the nature and type of homesteads

Particulars of homesteads	Distribution of respondents	
	Frequency	Percentage
Coconut based homestead farming system		
(a) Coconut - Banana - Vegetables	57	38.00
(a) Coconut - Banana - Yams	40	26.67
(c) Coconut - Tapioca - Yams	21	14.00
(d) Coconut - Arecanut - Banana	14	9.33
(e) Coconut - Pepper - Tapioca	10	6.67
(f) Coconut - Arecanut - Pineapple	8	5.33
Total	150	100.00
Other enterprises		
(a) Dairying	77	51.33
(b) Poultry	50	33.33
(c) Dairying + Poultry	23	15.34
Total	150	100.00

A number of crop combinations were seen in the homesteads as evidenced from the Table 2. Of this coconut-banana-vegetables crop combinations accounted for 38 per cent of the homestead area as seen in Fig.3. A number of cultivars of banana and wide variety of vegetables were grown as intercrops in the interspaces of coconut.

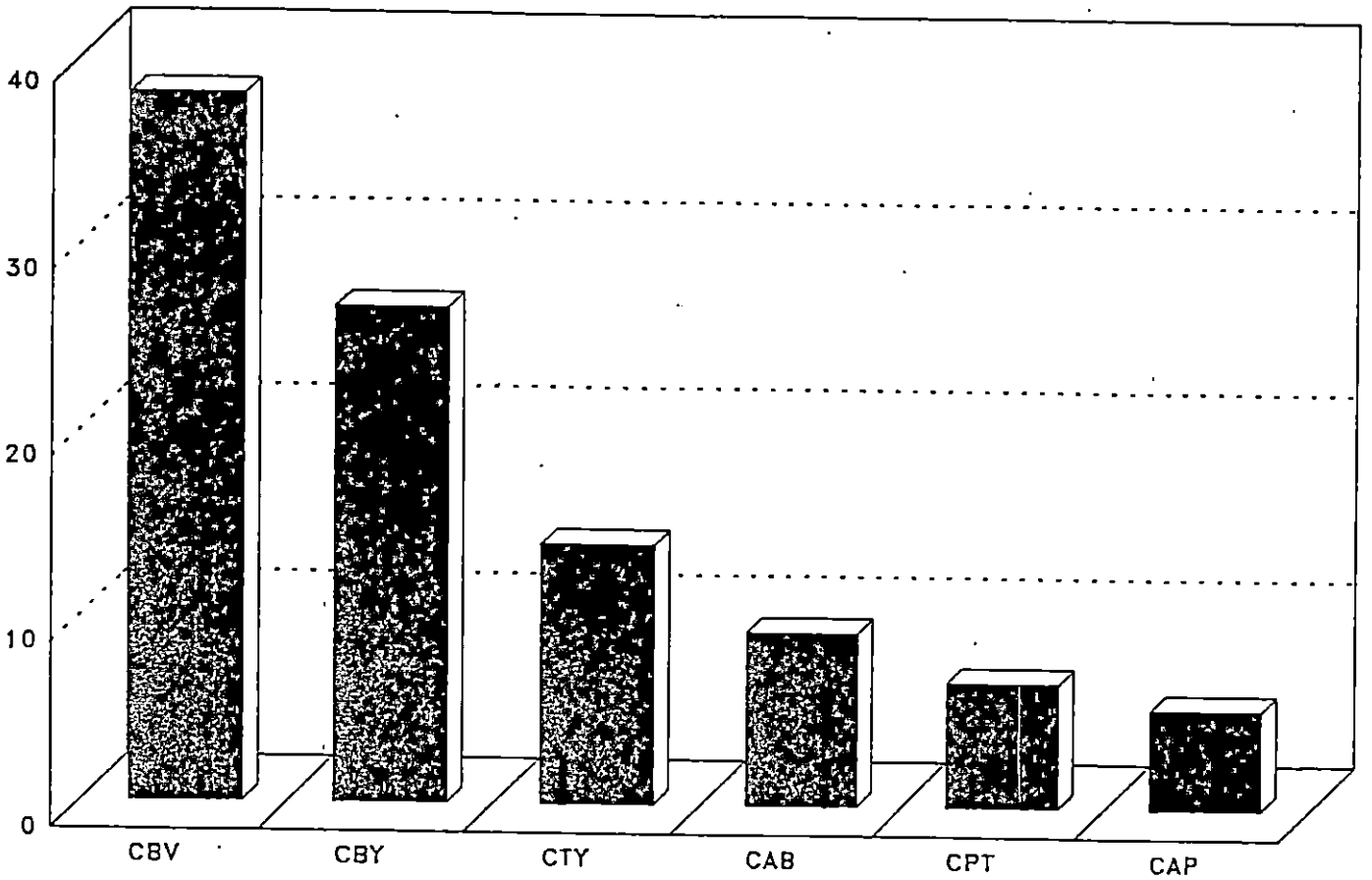
Coconut-banana-yams combination secured the second place with 26.67 per cent. Next came the coconut-tapioca-yams combination occupying 14 per cent of the homesteads. Tapioca, being a predominant food crop of the district, is grown in the interspaces of coconut garden.

Over nine per cent of the homesteads have the crop combination coconut-arecanut-banana. Arecanut was found to be grown in the homesteads with assured irrigation facilities.

Coconut-pepper-tapioca combination is found only in 6.67 per cent of these homesteads. Next is the coconut-arecanut-pineapple combination which accounted for only 5.33 per cent.

Most farm families have a variety of other enterprises like Dairying, Poultry or Dairying + Poultry. Among this, Dairying occupied a major position with 51.33 per cent of the families having this in the area and is clear from the Fig.4. Poultry occupies the second position, (33.33%). But some farm families have both dairying and poultry (15.34%).

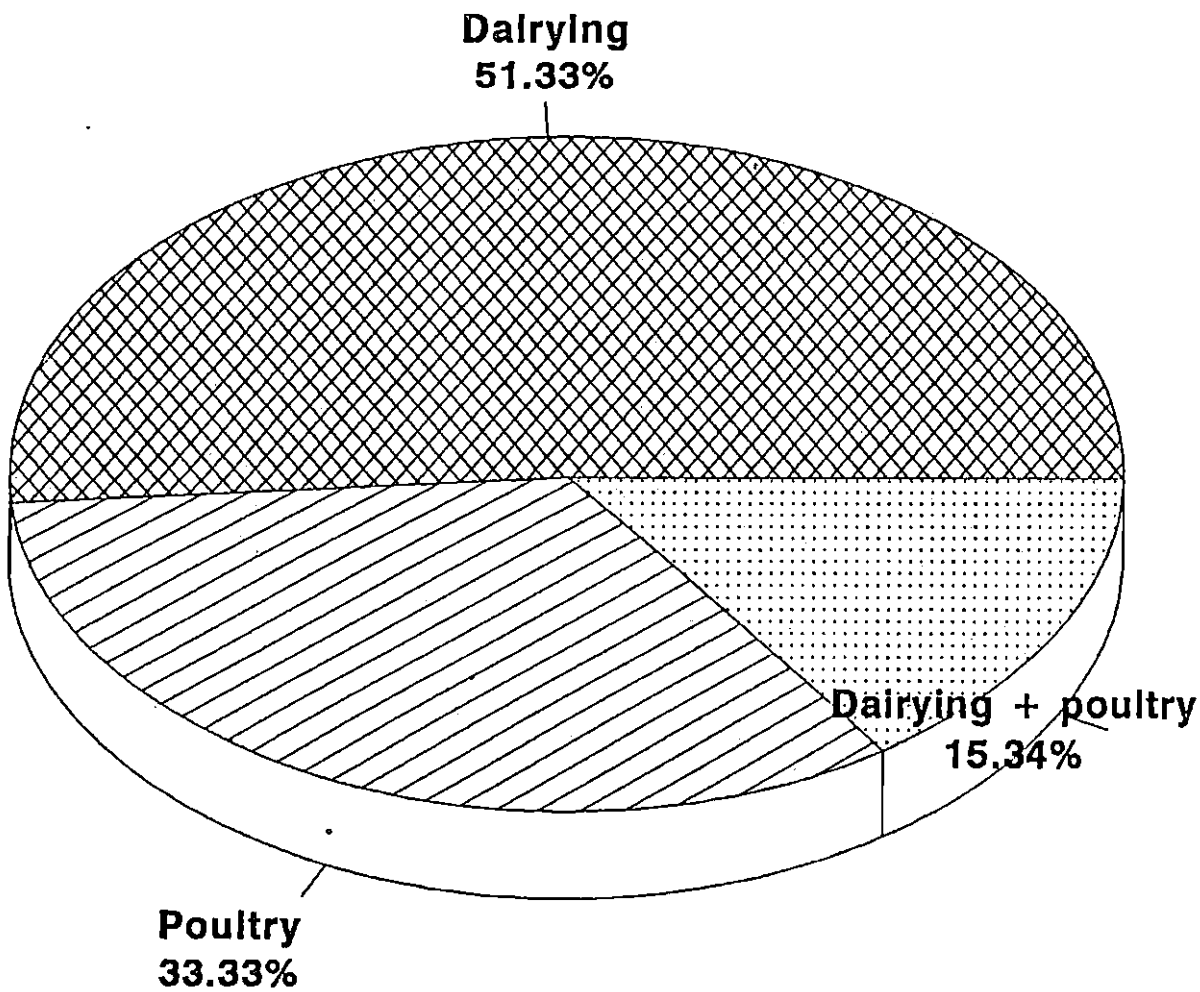
Fig.3. Distribution of respondents based on coconut based homestead farming systems



CBV - Coconut - Banana - Vegetable
CBY - Coconut - Banana - Yams
CTY - Coconut - Tapioca - Yams

CAB - Coconut - Arecanut - Banana
CPT - Coconut - Pepper - Tapioca
CAP - Coconut - Arecanut - Pineapple

Fig.4. Distribution of respondents based on other enterprises in the homestead farming systems



4.2. Distribution of respondents based on their personal, socio-cultural and techno-economic characteristics

A persual of the Table 3 revealed that majority of the respondents were in the low category in the case of the variables namely Age, Farm size, Family size, Farming experience, Extension participation, Social participation, Extension contact, Knowledge about scientific crop production, Attitude towards farming, Level of aspiration, Innovation proneness, Achievement motivation and Risk preference, while for the variables such as Education, Mass media participation, Knowledge about dairy/poultry management, Economic motivation, Cropping intensity, Self confidence and Information source utilization, the distribution of the respondents in the high category was fairly high.

Maximum number of respondents (60.00%) in high category was observed for the variable knowledge about dairy/poultry management followed by education (59.33%), cropping intensity (58.00%), mass media participation (54.67%), self confidence (54.00%), economic motivation (51.33%), information source utilization (51.33%). Regarding the rest of the variables, only less than 50 per cent of the respondents were in the high category. Among them, maximum number of respondents (82.67%) were found in the low category in the case of variable social participation followed by extension participation (72.67%), extension contact (60.00%), farm size (57.33%), family size (57.33%), farming experience (56.67%), age (55.33%), knowledge about scientific crop production (54.67%), attitude towards farming (54.67%), innovation proneness (54.00%), achievement motivation (52.67%), risk preference (52.67%) and level of aspiration (51.33%).

Table 3. Distribution of respondents based on their personal, socio-cultural and techno-economic factors

n = 150

Variable	Characteristic	Category	Range	Frequency	Percent
1	2	3	4	5	6
1	Age	Low	< 41.427	83	55.33
		High	41.427 and above	67	44.67
2	Education	Low	< 3.887	61	40.67
		High	3.887 and above	89	59.33
3	Farm size	Low	< 0.563	86	57.33
		High	0.563 and above	64	42.67
4	Family size	Low	< 5.367	86	57.33
		High	5.367 and above	64	42.67
5	Farming experience	Low	< 21.327	85	56.67
		High	21.327 and above	65	43.33
6	Extension participation	Low	< 2.373	109	72.67
		High	2.373 and above	41	27.33
7	Mass media participation	Low	< 9.153	68	45.33
		High	9.153 and above	82	54.67
8	Social participation	Low	< 2.027	124	82.67
		High	2.027 and above	26	17.33
9	Extension contact	Low	< 2.507	90	60.00
		High	2.507 and above	60	40.00

Contd.

Table 3. Continued

1	2	3	4	5	6
10	Knowledge about scientific crop production	Low High	< 34.140 34.140 and above	82 68	54.67 45.33
11	Knowledge about dairy/poultry management	Low High	< 9.487 9.487 and above	60 90	40.00 60.00
12	Attitude towards faming	Low High	< 28.093 28.093 and above	77 73	51.33 48.67
13	Level of aspiration	Low High	< 4.607 4.607 and above	77 73	51.33 48.67
14	Economic motivation	Low High	< 4.500 4.500 and	73 77	48.67 51.33
15	Innovation proneness	Low High	< 4.699 4.699 and above	81 69	54.00 46.00
16	Cropping intensity	Low High	< 213.913 213.913 and above	63 87	42.00 58.00
17	Achievement motivation	Low High	< 22.820 22.820 and above	79 71	52.67 47.33
18	Self confidence	Low High	< 7.900 7.900 and above	69 81	46.00 54.00
19	Risk preference	Low High	< 24.967 24.967 and above	79 71	52.67 47.33
20	Information source utilization	Low High	< 9.933 9.933 and above	73 77	48.67 51.33

4.3 Nature and extent of participation of farm family women in agricultural operations

The nature and extent of participation in various agricultural operations by the farm women are described crop wise in the following pages.

A. Coconut

A perusal of the Table 4 shows that only very few farm family women 'solely' participated in the agricultural operations of coconut. Their involvement was 'supervision only' in many of the operations like irrigation management (44.67%), plant protection measures (41.33%) and dehusking operations (48%). Less than thirty per cent were found to have participated 'jointly' in some operations. The remaining respondents did not participate in any of these operations.

With regard to the extent of participation, a majority of the respondents participated to 'some extent' in operations like manure and fertilizer application (54%), irrigation management (58%), dehusking (54.66%) and storage of the produce (57.33%). Only less than ten per cent of the respondents participated to a 'greater extent' in these activities.

B. Banana

It is evident from the Table 5 that only very few farm women 'solely' participated in the agricultural operations of banana. Majority of the farm women had 'not at all' participated in any of the operations, except in some operations like intercultural operations (51.34%) and harvesting (52%) where their involvement was 'supervision only'.

Table 4. Nature and extent of participation of farm family women in agricultural operations

A. COCONUT

n = 150

Sl. No.	Operations	Nature of participation								Extent of participation					
		Solely		Jointly		Supervision only		Not at all		Greater extent		Some extent		No participation	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Land preparation	0	0	31	20.67	44	29.33	75	50.00	14	9.33	46	30.67	90	60.00
2	Planting operation	7	4.67	28	18.66	48	32.00	67	44.67	0	0	34	22.67	116	77.33
3	Manure and fertilizer application	17	11.33	30	20.00	50	33.33	53	35.34	14	9.33	81	54.00	55	36.67
4	Irrigation	0	0	24	16.00	67	44.67	59	39.33	0	0	87	58.00	63	42.00
5	Intercultural operations	3	2.00	32	21.33	56	37.34	59	39.33	2	1.33	64	42.67	84	56.00
6	Plant protection measures	0	0	17	11.33	62	41.33	71	47.34	0	0	33	22.00	117	78.00
7	Harvesting	0	0	3	2.00	42	28.00	105	70.00	0	0	8	5.33	142	94.67
8	Dehusking	4	2.67	17	11.33	72	48.00	57	38.00	13	8.67	82	54.66	55	36.67
9	Storage of the produce	0	0	43	28.67	14	9.33	93	62.00	0	0	86	57.33	64	42.67
10	Marketing	0	0	6	4.00	27	18.00	117	78.00	0	0	22	14.67	128	85.33

Table 5. Nature and Extent of participation of farm family women in agricultural operations

B. BANANA

n = 150

Sl. No.	Operations	Nature of participation								Extent of participation					
		Solely		Jointly		Supervision only		Not at all		Greater extent		Some extent		No participation	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Land preparation	0	0	16	10.67	29	19.33	105	70.00	0	0	52	34.67	98	65.33
2	Selection and treatment of suckers	7	4.67	21	14.00	16	10.66	106	70.67	12	8.00	38	25.33	100	66.67
3	Planting	0	0	29	19.33	46	30.67	75	50.00	17	11.33	72	48.00	61	40.67
4	Organic manure application	18	12.00	61	40.67	44	29.33	27	18.00	14	9.33	86	57.34	50	33.33
5	Fertilizer application	0	0	24	16.00	36	24.00	90	60.00	11	7.34	38	25.33	101	67.33
6	Propping	4	2.67	23	15.33	53	35.33	70	46.67	13	8.67	68	45.33	69	46.00
7	Irrigation	19	12.67	38	25.33	62	41.33	31	20.67	37	24.67	89	59.33	24	16.00
8	Inter-cultural operations	0	0	26	17.33	77	51.34	47	31.33	22	14.67	88	58.66	40	20.67
9	Plant protection measures	0	0	9	6.00	27	18.00	114	76.00	0	0	37	24.67	113	75.33
10	Harvesting	14	9.33	28	18.67	78	52.00	30	20.00	21	14.00	49	32.67	80	53.33

Regarding the extent of participation, majority of the farm women participated to 'some extent' in operations like organic manure application (57.34%), irrigation (59.33%), intercultural operations (58.66%). Less than one-fifth of the respondents participated to a 'greater extent' in some of these operations.

C. Vegetables

As evident from Table 6, majority of the respondents 'solely' participated in the vegetable cultivation like sowing/planting (55.33%) and harvesting (54.66%). Nearly half of them participated as 'supervision only' in the activity plant protection measures (48.66%).

With regard to the extent of participation, more than half of the respondents participated to a 'greater extent' in the activity harvesting (58.66%). Similarly 'to some extent' the respondents participated in the activities like plant protection measures (58%) and marketing (57.34%).

D. Yams

The nature and extent of participation of farm family women in the cultivation of yams are furnished in Table 7. It is seen that majority of the respondents participated as 'supervision only' in the operations like fertilizer application (51.33%) and plant protection measures (62.66%). Only few 'solely' participated in the operation like storage of seed material (31.33%), selection of seeds/cut pieces (22%) and intercultural operations (21.33%). 'Joint' participation was also less except in the activities like selection of seed/cut pieces (41.33%) and manuring (44%).

Table 6. Nature and extent of participation of farm family women in agricultural operations

C. VEGETABLES

n = 150

Sl. No.	Operations	Nature of participation								Extent of particpation					
		Solely		Jointly		Supervision only		Not at all		Greater extent		Some extent		No participation	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Cleaning the field	69	46.00	27	18.00	38	25.33	16	10.67	68	45.33	42	28.00	40	26.67
2	Seed bed preparation	54	36.00	47	31.33	25	16.67	24	16.00	38	25.33	62	41.34	50	33.33
3	Sowing/ planting	83	55.33	29	19.33	20	13.34	18	12.00	62	41.33	58	38.67	30	20.00
4	Organic manure application	48	32.00	52	34.67	32	21.33	18	12.00	47	31.33	63	42.00	40	26.67
5	Fertiliser application	29	19.33	47	31.34	34	22.67	40	26.66	16	10.67	64	42.66	70	46.67
6	Weeding	62	41.33	28	18.67	40	26.67	20	13.33	52	34.67	57	38.00	41	27.33
7	Inter-cultural operations	28	18.67	64	42.66	25	16.67	33	22.00	14	9.33	67	44.67	69	46.00
8	Plant protection measures	14	9.33	38	25.34	73	48.66	25	16.67	4	2.67	87	58.00	59	39.33
9	Harvesting	82	54.66	40	26.67	18	12.00	10	6.67	88	58.66	42	28.00	20	13.34
10	Marketing	30	20.00	42	28.00	38	25.33	40	26.67	14	9.33	86	57.34	50	33.33

Table 7. Nature and extent of participation of farm family women in agricultural operations

D. YAMS

n = 150

Sl. No.	Operations	Nature of participation								Extent of participation					
		Solely		Jointly		Supervision only		Not at all		Greater extent		Some extent		No participation	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Land preparation	18	12.00	42	28.00	30	20.00	60	40.00	9	6.00	67	44.67	74	49.33
2	Selection of seed/cut pieces	33	22.00	62	41.33	30	20.00	25	16.67	68	45.33	52	34.67	30	20.00
3	Sowing/ planting	28	18.67	57	38.00	39	26.00	26	17.33	42	28.00	78	52.00	30	20.00
4	Manuring	0	0	66	44.00	50	33.33	34	22.67	27	18.00	69	46.00	54	36.00
5	Fertilizer application	0	0	43	28.67	77	51.33	30	20.00	8	5.33	72	48.00	70	46.67
6	Weeding	14	9.33	56	37.34	32	21.33	48	32.00	11	7.33	79	52.67	60	40.00
7	Inter-cultural operations	32	21.33	46	30.67	22	14.66	50	33.34	17	11.33	63	42.00	70	46.67
8	Plant protection measures	0	0	16	10.67	94	62.66	40	26.67	0	0	24	16.00	126	84.00
9	Harvesting	28	18.67	43	28.66	40	26.67	39	26.00	42	28.00	77	51.33	31	20.67
10	Storage of the seed material	47	31.33	42	28.00	31	20.67	30	20.00	71	47.33	44	29.34	35	23.33

Considering the extent of participation, majority participated to 'some extent' in operations like weeding (52.67%), harvesting (51.33%) and sowing/planting (52%). Nearly half of the respondents participated to a 'greater extent' in activities like selection of seed/cut pieces (45.33%) and storage of the seed material (47.33%).

E.Dairy/Poultry

The data on the nature and extent of participation of farm family women in dairy/poultry practices are presented in Table 8. The results presented revealed that majority of the respondents 'solely' participated in operations like maintenance of cattleshed (54.67%), feeding of birds (56%) and hatching of eggs/chicks (54.67%). Similarly, a majority 'jointly' participated in the operation, care of sick animals (54.67%). Nearly one fourth of the respondents 'supervised' the activities like care and management of milch animals (24%) and milking (21.33%).

Regarding the extent of participation, majority of the respondents participated to a 'greater extent' in the operations like care and management of milch animals (61.34%), maintenance of cattle shed (60%), feeding of animals (52%), preparation of milk and milk products (57.33%), care and management of poultry birds (60%), feeding of birds (52%), hatching of eggs/chicks (58.67%) and marketing of milk and eggs (50.67%). Their participation to 'some extent' was also noticeable in the operation namely care of sick animals (42.66%).

4.4 Nature and extent of participation of farm family women in decision making

Nature and extent of participation of farm family women in decision making (crop wise) are presented in the following tables.

Table 8. Nature and extent of participation of farm family women in other enterprises

E. DAIRY/POULTRY

n = 150

Sl. No.	Operations	Nature of participation								Extent of participation					
		Solely		Jointly		Supervision only		Not at all		Greater extent		Some extent		No participation	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Care and management of milch animals	66	44.00	44	29.33	36	24.00	10	6.67	92	61.34	44	29.33	14	9.33
2	Maintenance of cattle shed	82	54.67	27	18.00	32	21.33	9	6.00	90	60.00	32	21.33	28	18.67
3	Feeding of animals	62	41.33	58	38.67	24	16.00	6	4.00	78	52.00	42	28.00	30	20.00
4	Milking	58	38.67	44	29.33	32	21.33	16	10.67	72	48.00	51	34.00	27	18.00
5	Care of sick animals	18	12.00	82	54.67	10	6.67	30	20.00	46	30.67	64	42.66	40	26.67
6	Preparation of milk and milk products	65	43.33	15	10.00	30	20.00	40	26.67	86	57.33	48	32.00	16	10.67
7	Care and management of poultry birds	66	44.00	40	26.67	14	9.33	30	20.00	90	60.00	48	32.00	12	8.00
8	Feeding of birds	84	56.00	16	10.67	20	13.33	30	20.00	78	52.00	32	21.33	40	26.67
9	Hatching of eggs/chicks	82	54.67	27	18.00	32	21.33	9	6.00	88	58.67	32	21.33	30	20.00
10	Marketing of milk & eggs	71	47.33	49	32.67	20	13.33	10	6.67	76	50.67	42	28.00	32	21.33

A. Coconut

It is very interesting to note from Table 9, that only less than ten per cent of the respondents 'solely' participated in the decision making process. Nearly half of the respondents 'jointly' participated in the decision making areas like deciding the irrigation management (45.34%), intercultural operations (51.35%), decision storage of the produce (45.34%) and marketing of the produce (42.67%). Their 'presence' is found in some of the areas like deciding the type of weeding to be adopted (40%), the type of implements to be used (42.67%) etc.

With respect to the extent of participation, less than ten per cent of the respondents 'always' participated in activities like deciding the time of harvest (8%) and intercultural operation (4%). Majority of the respondents 'sometimes' participated in areas like deciding the irrigation management (50.67%), intercultural operations (54%), time of harvest (52%) and storage of the produce (52%).

B. Banana

The nature and extent of participation of farm family women in decision making areas of banana are presented in Table 10.

A bird's eye view of the Table 10 revealed that less than twenty per cent of the respondents 'solely' participated in the decision making areas. Majority of the respondents had 'jointly' participated in deciding the type of propping to be adopted (53.34%). They also participated by their 'presence only' in areas like deciding the type of weeding to be adopted (40%), intercultural operations (33.34%) and plant protection measures (33.34%).

Table 9. Nature and extent of participation of farm family women in decision making

A. COCONUT

n = 150

Sl. No.	Decision making areas	Nature of particpation								Extent of participation					
		Solely		Jointly		Presence only		Not at all		Always		Some-times		Never	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Selection of crop or variety	4	2.67	26	17.33	14	9.34	106	70.66	18	12.00	22	14.67	110	73.33
2	Deciding the type of weeding to be adopted	0	0	41	27.33	60	40.00	49	32.67	0	0	73	48.67	77	51.33
3	Deciding the manures/ fertilizers to be applied	0	0	42	28.00	49	32.67	59	39.33	0	0	37	24.67	113	75.33
4	Deciding the type of irrigation	2	1.33	68	45.34	30	20.00	50	33.33	14	9.33	76	50.67	60	40.00
5	Decision regarding inter-cultural operations	6	4.00	77	51.33	40	26.67	27	18.00	9	6.00	81	54.00	60	40.00
6	Decision with respect to the type of implements to be used	0	0	4	2.67	64	42.67	82	54.66	0	0	14	9.33	136	90.67
7	Deciding the plant protect-ion measures	0	0	24	16.00	47	31.33	79	52.67	0	0	41	27.33	109	72.67
8	Deciding the time of harvest	12	8.00	50	33.33	38	25.34	50	33.33	10	6.67	78	52.00	62	41.33
9	Decision regarding the storage of the produce	2	1.33	68	45.35	40	26.66	40	26.66	14	9.34	78	52.00	58	38.66
10	Decision with respect to marketing of the produce	0	0	64	42.67	36	24.00	50	33.33	0	0	71	47.33	79	52.67

Table 10. Nature and extent of participation of farm family women in decision making

B. BANANA

n = 150

Sl. No.	Decision making areas	Nature of participation								Extent of participation					
		Solely		Jointly		Presence only		Not at all		Always		Some-times		Never	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Selection of variety	14	9.34	50	33.33	40	26.67	46	30.66	10	6.66	85	56.67	55	36.67
2	Deciding the type of weeding to be adopted	16	10.66	40	26.67	60	40.00	34	22.67	7	4.67	77	51.33	66	44.00
3	Deciding the manure/ fertilizer application	0	0	37	24.67	46	30.66	67	44.67	0	0	85	56.67	65	43.34
4	Deciding the irrigation	14	9.33	50	33.34	40	26.67	46	30.66	15	10.00	70	46.67	65	43.33
5	Decision regarding inter-cultural operations	5	3.33	60	40.00	50	33.34	35	23.33	0	0	90	60.00	60	40.00
6	Decision with respect to the type of propping to be adopted	2	1.33	80	53.34	40	26.67	28	18.66	0	0	88	58.67	62	41.33
7	Decision regarding the plant protect-ion measures	0	0	24	16.00	50	33.33	76	50.67	0	0	62	41.33	88	58.67
8	Decision with respect to the time of harvest	7	4.67	43	28.66	44	29.33	56	37.34	13	8.67	70	46.66	67	44.67
9	Deciding the storage of the planting material	25	16.67	65	43.33	40	26.67	20	13.33	15	10.00	70	46.67	65	43.33
10	Decision regarding the marketing	0	0	70	46.68	40	26.66	40	26.66	0	0	80	53.34	70	46.66

With regard to the extent of participation, a majority of the respondents 'sometimes' participated in areas like selection of crop/variety (56.67%), deciding the type of weeding to be adopted (51.33%), manures/fertilizers application (56.67%), intercultural operations (60%), the type of propping to be adopted (58.67%) and marketing (53.34%).

C. Vegetables

The results presented in Table 11 pointed out that in the case of vegetables, only few respondents 'solely' participated in the decision making areas like deciding the crop or variety to be grown (28%), to intercultural operations (31.33%) and the time of harvest (28.66%). Nearly half of the respondents 'jointly' participated in areas like decision regarding the type of weeding to be adopted (46.66%), manure/fertilizer application (42.67%) and irrigation management (41.33%). Less than one fifth of the respondents participated by their mere 'presence only'.

Regarding the extent of participation, nearly half of the respondents participated 'sometimes' in areas like deciding the crop or variety to be grown (45.34%), the type of weeding to be adopted (52%) and marketing (50%). Nearly one third of the respondents 'always' participated in decision making areas.

D. Yams

From the results presented in Table 12, it is seen that only less than one fourth of the respondents 'solely' participated in decision making areas like selecting the seed/cut pieces (22.66%), the standards to be used for trailing (18.66%) and the

Table 11. Nature and extent of participation of farm family women in decision making

C. VEGETABLES

n = 150

Sl. No.	Decision making areas	Nature of participation								Extent of participation					
		Solely		Joinly		Presence only		Not at all		Always		Some-times		Never	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Deciding the crop/variety to be grown	42	28.00	58	38.67	30	20.00	20	13.33	52	34.66	68	45.34	30	20.00
2	Decision regarding the type of weeding to be adopted	40	26.67	70	46.67	20	13.33	20	13.33	20	13.33	78	52.00	52	34.67
3	Deciding the manure/ fertilizer application	28	18.66	64	42.67	28	18.67	30	20.00	40	26.67	60	40.00	50	33.33
4	Deciding the irrigation management	40	26.67	62	41.33	28	18.67	20	13.33	35	23.33	48	32.00	67	44.67
5	Decision with respect to inter-cultural operation	47	31.33	40	26.67	32	21.33	31	20.67	28	18.66	62	41.33	60	40.00
6	Deciding the type of implements to be used	14	9.33	40	26.67	36	24.00	60	40.00	10	6.67	60	40.00	80	53.33
7	Deciding the plant protect-ion measures	12	8.00	50	33.33	40	26.67	48	32.00	20	13.33	40	26.67	90	60.00
8	Deciding the time of harvest	43	28.66	27	18.00	40	26.67	40	26.67	18	12.00	62	41.34	70	46.66
9	Decision with respect to storage to the produce	40	26.67	32	21.33	28	18.67	50	33.33	25	16.66	45	30.00	80	53.34
10	Deciding the marketing	4	2.66	42	28.00	34	22.67	70	46.67	15	10.00	75	50.00	60	40.00

Table 12. Nature and extent of participation of farm family women in decision making

D. YAMS

n = 150

Sl. No.	Decision making areas	Nature of participation								Extent of participation					
		Solely		Jointly		Presence only		Not at all		Always		Some-times		Never	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Selecting the seed/cut pieces	34	22.66	26	17.34	50	33.33	40	26.67	37	24.66	64	42.67	49	32.67
2	Deciding the manure application	0	0	27	18.00	46	30.67	77	51.33	0	0	60	40.00	90	60.00
3	Deciding the standards to be used for trailing	28	18.66	46	30.67	40	26.67	36	24.00	25	16.67	65	43.33	60	40.00
4	Deciding the fertilizer application	4	2.67	26	17.33	40	26.67	80	53.33	15	10.00	85	56.67	50	33.33
5	Decision regarding irrigation	7	4.67	46	30.67	42	28.00	55	36.66	20	13.33	45	30.00	85	56.67
6	Decision with respect to inter-cultural operations	11	7.33	39	26.00	40	26.67	60	40.00	18	12.00	62	41.33	70	46.67
7	Deciding the plant protect-ion measures	0	0	24	16.00	50	33.33	76	50.67	0	0	44	29.33	106	70.67
8	Deciding the time of harvest	17	11.33	45	30.00	28	18.67	60	40.00	10	6.66	85	56.66	55	36.67
9	Decision with respect to storage of the produce	28	18.67	56	37.33	26	17.33	40	26.67	17	11.33	43	28.67	90	60.00
10	Deciding the marketing	0	0	40	26.67	44	29.33	66	44.00	0	0	65	43.33	85	56.67

storage of the produce (18.67%). The respondents 'jointly' participated in areas like deciding the standards to be used for trailing (30.67%), irrigation (30.67%), the time of harvest (30%) and the storage of the produce (37.33%). Similarly their 'presence' was found to be seen only in areas like selecting the seed/cut pieces (33.33%), deciding the manure application (30.67%) and plant protection measures (33.33%).

Regarding the extent of participation, less than one fourth of the respondents 'always' participated in decision making areas. Majority of the respondents 'sometimes' participated in areas like deciding the fertilizer application (56.67%) and the time of harvest (56.67%).

E. Dairy/poultry

From Table 13, it can be seen that nearly a majority of the respondents 'solely' participated in decision making areas like deciding the type of milk products to be made (56%), hatching of eggs (45.33%) and marketing of milk and eggs (48.67%).

They 'jointly' participated in decision making mainly in deciding the care of sick animals (50%). Nearly one fourth of the respondents participated by their 'presence only' especially in areas like decision regarding the care and management of cattle shed (24%), care of sick animals (23.33%) and the hatching of eggs (26.67%).

Considering the extent of participation, a majority of the respondents 'always' participated in the areas like deciding the time and frequency of milking (50%) and the type of milk products to be made (52%). Similarly, a majority of the

Table 13. Nature and extent of participation of farm family women in decision making

E. DAIRY/POULTRY

n = 150

Sl. No.	Decision making areas	Nature of participation								Extent of participation					
		Solely		Jointly		Presence only		Not at all		Always		Sometimes		Never	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	Decision regarding the variety/breed to be grown	42	28.00	40	26.67	28	18.66	40	26.67	35	23.33	75	50.00	40	26.67
2	Decision regarding the care and management of cattle shed	64	42.67	50	33.33	36	24.00	0	0	72	48.00	68	45.33	10	6.67
3	Deciding the type of feed to be used	40	26.67	48	32.00	32	21.33	30	20.00	45	30.00	56	37.33	49	32.67
4	Deciding the time and frequency of milking	60	40.00	40	26.67	20	13.33	30	20.00	75	50.00	40	26.67	35	23.33
5	Decision regarding the care of sick animals	40	26.67	75	50.00	35	23.33	0	0	40	26.67	90	60.00	20	13.33
6	Decision regarding the type of milk products to be used	84	56.00	25	16.67	20	13.33	21	14.00	78	52.00	42	28.00	30	20.00
7	Deciding the care and management of poultry birds	65	43.33	35	23.34	30	20.00	20	13.34	45	30.00	80	53.33	25	16.67
8	Deciding the stage at which vaccination has to be adopted	27	18.00	65	43.33	30	20.00	28	18.67	34	22.67	66	44.00	50	33.33
9	Decision regarding the hatching of eggs	68	45.33	22	14.67	40	26.67	20	11.33	67	44.67	25	16.66	58	38.67
10	Decision with respect to marketing of milk and egg	73	48.67	25	16.66	20	13.33	32	21.34	64	42.67	46	30.66	40	26.67

respondents participated 'sometimes' in areas like deciding the variety/breed to be grown (50%), the care of sick animals (60%) and care and management of cattleshed (53.33%).

4.5 Influence of personal socio-cultural and techno-economic characteristics on the nature and extent of participation of farm family women in agricultural operations

The relationship of personal, socio-cultural and techno-economic characteristics with the participation of farm family women was established in this study first by correlation analysis and the findings are presented in the Table 14.

4.5.1 Simple correlation analysis of participation of farm family women in agricultural operations with the personal socio-cultural and techno-economic factors

It was found from Table 14 that out of the 20 independent variables, extension participation, social participation, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, level of aspiration, economic motivation, innovation proneness, cropping intensity, achievement motivation, self-confidence and risk preference were positively and significantly related with the dependent variable "Nature and extent of participation in agricultural operations" at one per cent level of significance. But variables like education, farm size, family size and extension contact were found to have negative and significant relationship with the dependent variable. The other independent variables did not show any significant correlation with the dependent variable.

Table 14. Correlation between nature and extent of participation of farm family women in agricultural operations and selected personal, socio-cultural and techno-economic factors

n = 150

Sl.No.	Independent variables	Correlation coefficient (r)
1	Age	0.067 NS
2	Education	-0.441**
3	Farm size	-0.729**
4	Family size	-0.667**
5	Faming experience	0.052 NS
6	Extension participation	0.439**
7	Mass media participation	0.066 NS
8	Social participation	0.550**
9	Extension contact	-0.428**
10	Knowledge about scientific crop production	0.758**
11	Knowledge about dairy/poultry management	0.978**
12	Attitude towards farming	0.666**
13	Level of aspiration	0.539**
14	Economic motivation	0.600**
15	Innovation proneness	0.558**
16	Cropping intensity	0.471**
17	Achievement motivation	0.631**
18	Self confidence	0.826**
19	Risk preference	0.511**
20	Information source utilization	0.144 NS

**Significant at 1% level
NS - Not significant

4.5.2 Multiple Linear Regression Analysis of the Nature and extent of participation in agricultural operations and selected personal, socio-cultural and techno-economic factors of farm family women

In correlation analysis, the research worker deals with the relationship of a dependent variable with an independent variable. But in practice, several independent variables or causal factors affect the response (dependent variable). In the study of simultaneous variability of two or more causal factors on an effect (dependent variable) the researcher gets the relative contribution of each of the independent variables and a total predictability of the linear model to represent the relationship. The method of multiple linear regression was used for this purpose.

The findings of multiple linear regression analysis presented in Table 15, revealed that the F value (88.84) obtained was significant indicating that all the variables together contributed significantly to the variations in the nature and extent of participation of the respondent group. The coefficient of determination revealed that 84.3 per cent of the variation in the NEPAO was explained by these 20 variables.

Out of the 20 variables, only seven variables namely extension participation, mass media participation, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, achievement motivation and self confidence were found to be significant.

4.5.3 Step down regression analysis of Nature and extent of participation in agricultural operations of farm family women and the selected personal, socio-cultural and techno-economic factors

Though the multiple linear regression analysis gave the joint influence of all the selected independent variables on the participation of farm family women in

Table 15. Results of multiple linear regression analysis of nature and extent of participation in agricultural operations and selected personal and socio-cultural and techno economic factors of farm family women

(n = 150)

Variable No.	Characteristics	Regression coefficient	Standard partial regression coefficient	t value
1	Age	-0.03150	-0.01140	-0.147
2	Education	0.09407	0.00357	0.128
3	Farm size	-5.66020	-0.04322	-1.165
4	Family size	0.20750	0.01302	0.383
5	Farming experience	-0.01884	-0.00625	-0.080
6	Extension participation	1.03450	-0.06850	2.517**
7	Mass media participation	1.98490	0.20742	3.807**
8	Social participation	0.26503	0.01347	0.451
9	Extension contact	-0.18697	-0.00946	-0.355
10	Knowledge about scientific crop production	0.45904	0.10449	2.868**
11	Knowledge about dairy/ poultry management	2.79340	0.27177	5.727**
12	Attitude towards farming	0.63671	0.10786	3.219**
13	Level of aspiration	0.18738	0.01149	0.358
14	Economic motivation	0.28275	0.01213	0.335
15	Innovation poneness	0.51625	0.02606	0.738
16	Cropping intensity	0.01726	0.03232	1.130
17	Achievement motivation	0.58851	0.08075	2.683**
18	Self confidence	3.34980	0.22697	5.742**
19	Risk preference	0.21290	0.04054	1.426
20	Information source	-0.08795	-0.00859	-0.351

Intercept = -34.16
R^2 = 84.3
F = 88.84**
**Significant at 1% level of significance

Table 16. Results of step down regression analysis of the nature and extent of participation in agricultural operations and selected personal, socio-cultural and techno-economic factors of farm family women

(n = 150)

Variable No.	Characteristic	Regression coefficient	Standard partial regression coefficient	t value
6	Extension participation	1.0540	0.384	2.745**
7	Mass media participation	2.3980	0.422	5.679**
10	Knowledge about scientific crop production	0.5430	0.146	3.709**
11	Knowledge about dairy/ poultry management	2.9640	0.434	6.831**
12	Attitude towards farming	0.7230	0.173	4.161**
17	Achievement motivation	0.6010	0.209	2.869**
18	Self-confidence	3.5750	0.523	6.840**

Intercept = -37.60
R^2 = 0.828
F = 132.59**

**Significant at 1% level of significance

the marginal homestead farming systems, it is always better to have a simpler model in which, there are lesser number of predictors in explaining the relationship. So to get the joint influence of the best subset of a lesser number of predictors on participation of family women, step down regression analysis was done using these 20 independent variables.

As a final step, seven variables namely extension participation, mass media participation, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, achievement motivation and self confidence were obtained after exclusion of the variables with high probability values. The coefficient of determination (R^2) was found to be 0.828 which indicated that 82.8 per cent variation in NEPAO could be explained by these seven variables at a probability level of 0.01. Results of step down regression are presented in the Table 16.

4.5.4 Path analysis of the selected personal, socio-cultural and techno-economic factors of farm family women with the nature and extent of participation in agricultural operations

The simple correlation coefficients indicated the degree and nature of relationships of each of the personal, socio-cultural and techno-economic characteristics with NEPAO ignoring the possible influence of personal, socio-cultural and techno-economic characteristics while multiple regression analysis revealed the joint influence of all the selected personal, socio-cultural and techno-economic characteristics of NEPAO. It could be of interest to split the amount of relationship that a particular characteristic had with the NEPAO into

1) its direct influence on NEPAO and

Table 17. Results of path analysis of selected personal, socio-cultural and techno-economic factors and the nature and extent of participation in agricultural operations of farm family women

n = 150

Variable No.	Characters	Direct effect		Total indirect effect		Largest indirect effect	
		Effect	Rank	Effect	Rank	Effect	Through variable No.
6	Extension participation	0.0697	7	0.3710	7	0.1049	11
7	Mass media participation	0.2506	2	0.6035	2	0.2332	11
10	Knowledge about scientific crop production	0.1235	5	0.6540	1	0.1904	11
11	Knowledge about dairy/poultry management	0.2884	1	0.5780	4	0.2026	7
12	Attitude towards farming	0.1224	4	0.5440	6	0.1640	11
17	Achievement motivation	0.0825	6	0.5481	5	0.1612	11
18	Self-confidence	0.2423	3	0.5841	3	0.1962	11

Residual effect = 0.1720

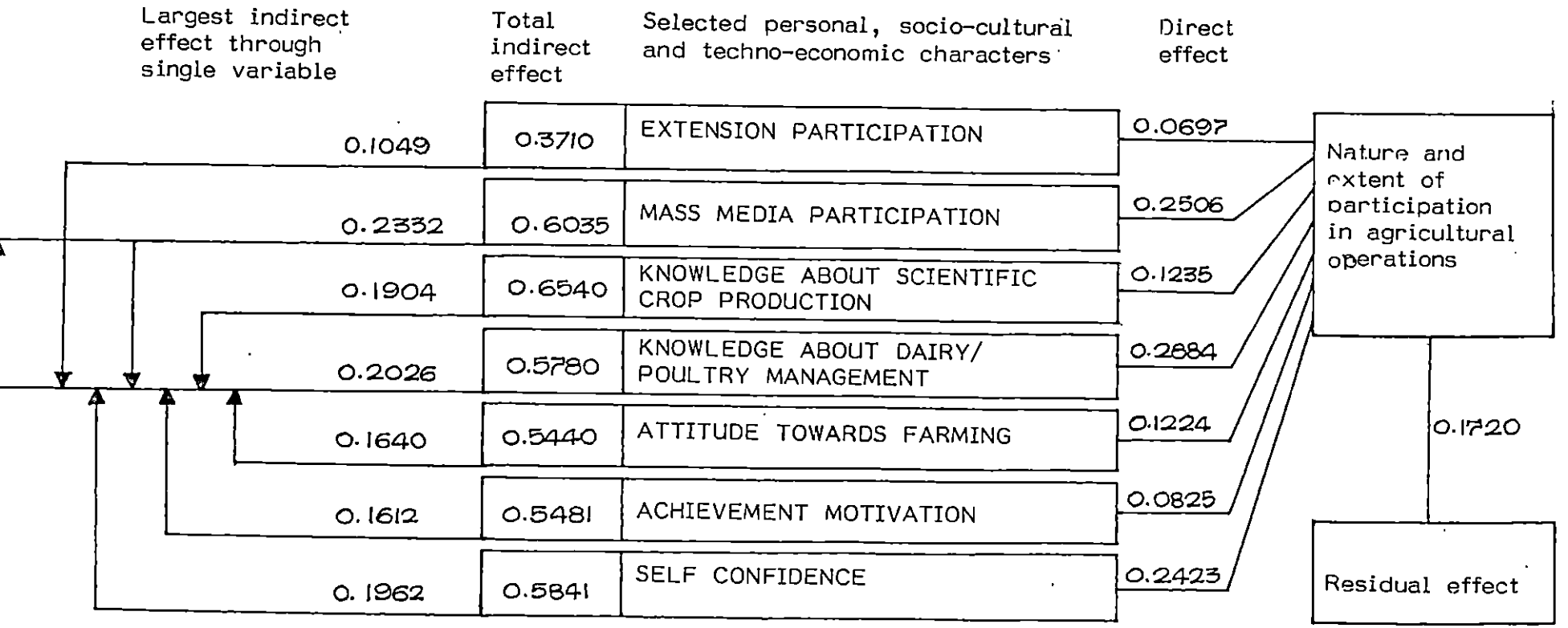


Fig.5. Path diagram showing the direct and indirect effect of the selected personal, socio-cultural and techno-economic factors and the nature and extent of participation in agricultural operations

2) possible indirect effect on NEPAO through the influence of other personal, socio-cultural and techno-economic characteristics.

Since this information was not available in the earlier analysis, the data were subjected to the multivariate path analysis inorder to get the desired information. This path analysis would enable us to measure the direct and indirect effects of each of the personal, socio-cultural and techno-economic characteristics on the NEPAO and the results are presented in Table 17.

From the Table 17, it could be observed that the variable knowledge about dairy/poultry management had the highest direct effect on NEPAO, followed by mass media participation. Similarly, self confidence and attitude towards farming were the other two important variables with substantial direct effects.

The remaining variables such as knowledge about scientific crop production, achievement motivation and extension participation also had positive direct effects on the dependent variable.

One interesting thing to be noted from the Table 17 was that all the variables had their largest indirect effect through the variable knowledge about dairy/poultry management whereas knowledge about dairy/poultry management had its indirect effect through the variable mass media participation.

4.6 Influence of personal, socio-cultural and techno-economic factors on the Nature and Extent of participation of farm family women in Decision making

4.6.1 Simple correlation analysis of the nature and extent of participation of farm family women in decision making with the personal, socio-cultural and techno-economic factors

From the Table 18, it was found that out of the 20 independent variables extension participation, mass media participation, social participation, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, level of aspiration, economic motivation, innovation proneness, cropping intensity, achievement motivation, self confidence and risk preference showed positive and significant relationship with the dependent variable 'Nature and extent of participation in decision making' at one per cent level of significance. Variables like education, farm size, family size and extension contact showed negative and significant relationship with the dependent variable. But age, farming experience and information source utilization did not have any significant relationship with the dependent variable.

4.6.2 Multiple linear regression analysis of the nature and extent of participation in decision making and the selected personal, socio-cultural and techno-economic factors of farm women

The findings of multiple linear regression analysis furnished in Table 19 revealed that the F value (82.08) obtained was significant indicating that all the variables contributed significantly in the variation of NEPDM of farm women. The coefficient of determination revealed that 72.42 per cent of the variation in the NEPDM was explained by these 20 variables.

Table 18. Correlation between nature and extent of participation of farm family women in decision making and selected personal, socio-cultural and techno-economic factors

n = 150

Sl.No.	Independent variables	Correlation coefficient 'r'
1	Age	0.113 NS
2	Education	-0.442**
3	Farm size	-0.695**
4	Family size	-0.638**
5	Farming experience	0.091 NS
6	Extension participation	0.388**
7	Mass media participation	0.831**
8	Social participation	0.489**
9	Extension contact	-0.336**
10	Knowledge about scientific crop production	0.710**
11	Knowledge about dairy/poultry management	0.823**
12	Attitude towards farming	0.588**
13	Level of aspiration	0.542**
14	Economic motivation	0.479**
15	Innovation proneness	0.492**
16	Cropping intensity	0.464**
17	Achievement motivation	0.612**
18	Self confidence	0.757**
19	Risk preference	0.482**
20	Information source utilization	0.137 NS

** Significant at 1% level
NS - Non significant

Table 19. Results of multiple linear regression analysis of the nature and extent of participation in decision making and selected personal, socio-cultural and techno-economic factors of farm family women

(n = 150)

Variable No.	Characteristics	Regression coefficient	Standard partial regression coefficient	t value
1	Age	0.21001	0.07716	0.633
2	Education	-0.87760	0.03384	-0.769
3	Farm size	-2.12950	-0.01649	-0.283
4	Family size	-0.57155	-0.03638	-0.680
5	Farming experience	-0.16675	-0.05618	-0.459
6	Extension participation	0.56738	0.03809	0.891
7	Mass media participation	2.24900	0.23845	2.783**
8	Social participation	-0.04384	-0.00226	-0.048
9	Extension contact	1.57590	0.08086	1.929*
10	Knowledge about scientific crop production	0.37029	0.08552	1.492
11	Knowledge about dairy/ poultry management	2.76690	0.27311	3.660**
12	Attitude towards farming	0.57989	0.09967	1.892*
13	Level of aspiration	0.53046	0.03302	0.653
14	Economic motivation	-3.02970	-0.13192	-2.314*
15	Innovation proneness	0.67004	0.03431	0.618
16	Cropping intensity	0.04173	0.07928	1.762*
17	Achievement motivation	0.70037	0.09750	2.060*
18	Self-confidence	3.12960	0.21515	3.461**
19	Risk preference	0.25660	0.04962	1.109
20	Information source utilization	-0.29678	-0.02943	-0.764

Intercept = -27.19
R^2 = 72.42
F = 82.08**

* Significant at 5% level of significance
**Significant at 1% level of significance

Out of these 20 variables, only eight were found to be significant. These variables were mass media participation, extension contact, knowledge about dairy/poultry management, attitude towards farming, economic motivation, cropping intensity, achievement motivation and self confidence.

4.6.3 Step down regression analysis of the nature and extent of participation in decision making and selected personal, socio-cultural and techno-economic factors of farm family women

In this case also, after the exclusion of the variables with high probability, eight out of the 20 variables were got in the final step. They were mass media participation, extension contact, knowledge about dairy/poultry management, attitude towards faming, economic motivation, cropping intensity, achievement motivation and self confidence. The coefficient of determination was found to be 0.716, which indicated that 71.6 per cent variation in NEPDM could be explained by these seven variables at probability levels of 0.01 and 0.05 per cent. Results of step down regression are presented in the Table 20.

4.6.4 Path analysis of the selected personal, socio-cultural and techno-economic factors of farm family women with the Nature and extent of participation in decision making

A bird's eye view of the results presented in Table 21 and Fig.6 showed that mass media participation had the highest direct effect on the nature and extent of participation of farm family women in decision making, followed by knowledge about dairy/poultry management. Similarly self confidence and attitude towards farming are the other two important variables with substantial direct effect.

Table 20. Results of step down regression analysis of the nature and extent of participation in decision making and selected personal and socio-cultural and techno-economic factors of farm family women

(n = 150)

Variable No.	Characteristic	Regression coefficient	Standard partial regression coefficient	t value
7	Mass media participation	3.0940	0.643	4.815**
9	Extension contact	1.4180	0.788	1.800*
11	Knowledge about dairy/ poultry management	2.9750	0.689	4.320**
12	Attitude towards farming	0.6640	0.273	2.431*
14	Economic motivation	-2.6160	1.057	2.476*
16	Cropping intensity	0.0420	0.022	1.965*
17	Achievement motivation	0.7740	0.328	2.358*
18	Self confidence	3.5810	0.806	4.442**

Intercept = -22.17
R^2 = 0.7163
F = 90.15**

* Significant at 5% level of significance
** Significant at 1% level of significance

Table 21. Results of path analysis of selected personal, socio-cultural and techno-economic factors of farm family women and the nature and extent of participation in decision making

n = 150

Variable No.	Characteristics	Direct effect		Total indirect effect		Largest indirect effect	
		Effect	Rank	Effect	Rank	Effect	Through variable No.
7	Mass media participation	0.3320	1	0.4986	5	0.2462	11
9	Extension contact	0.0727	7	-0.4688	8	0.0298	14
11	Knowledge about dairy/ poultry management	0.3044	2	0.5183	2	0.2685	7
12	Attitude towards farming	0.1288	4	0.4571	6	0.1731	11
14	Economic motivation	-0.1172	8	0.5960	1	0.1812	7
16	Cropping intensity	0.0934	6	0.3704	7	0.1487	7
17	Achievement motivation	0.1059	5	0.5062	3	0.1985	7
18	Self-confidence	0.2523	3	0.5044	4	0.2293	7

Residual effect = 0.2837

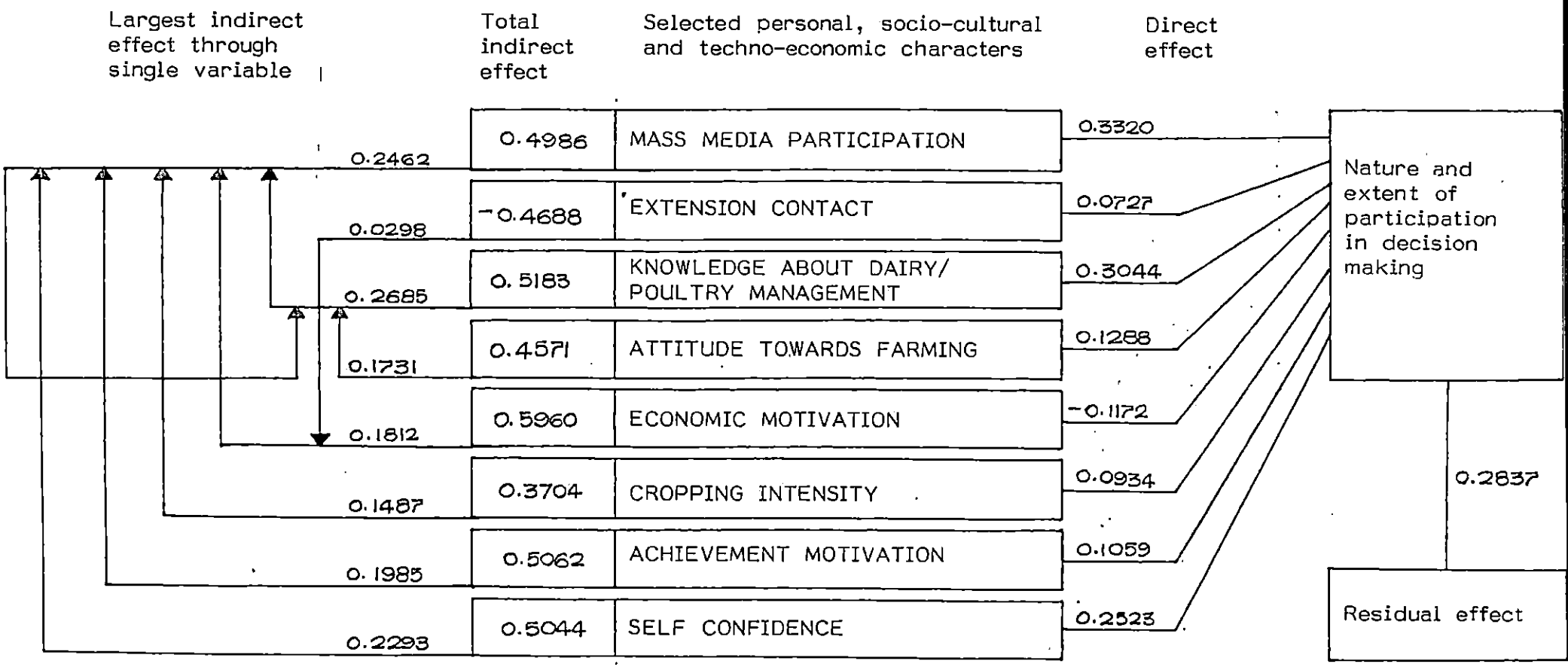


Fig.6. Path diagram showing the direct and indirect effect of the selected personal, socio-cultural and techno-economic factors and the nature and extent of participation in decision making

The remaining variables such as achievement motivation, cropping intensity and extension contact also had direct positive effect on the dependent variable. The variable economic motivation had negative direct effect on the dependent variable.

It was also seen from the table that all the variables excluding extension contact and attitude towards farming had their largest indirect effects through the variable mass media participation. The variable extension contact had its indirect effect through the variable economic motivation while attitude towards farming had its indirect effect through the variable knowledge about dairy/poultry management. The variable mass media participation also exerted its largest indirect effect through the variable knowledge about dairy/poultry management.

Discussion

CHAPTER-V

DISCUSSION

The results obtained in this study are discussed in this chapter under the following sections.

5.1 Distribution of the respondents based on the nature and type of homesteads prevailing in Thrissur district

5.2 Distribution of respondents based on their personal, socio-cultural and techno-economic factors

5.3 Nature and extent of participation of farm family women in agricultural operations (NEPAO)

5.4 Nature and extent of participation of farm family women in decision making (NEPDM)

5.5 Influence of personal, socio-cultural and techno-economic factors on the nature and extent of participation of farm family women in agricultural operations (NEPAO)

5.6 Influence of personal, socio-cultural and techno-economic factors on the nature and extent of participation of farm family women in decision making (NEPDM)

5.7 Empirical models of the study

5.1 Distribution of the respondents based on the nature and type of homesteads prevailing in Thrissur district

Homesteads constitute the major agricultural production system of the

marginal farmers of Thrissur district. The close association of agricultural crops, tree crops and animals in the homesteads represents an excellent example of sustainable and productive homegarden. The size of the homestead is the primary factor that determines the garden components, species composition and diversity and the temporal and spatial arrangement of crops.

As evidenced from the Table 1 and Fig.3, it is very clear that coconut based homestead farming system is the dominant one. Known as the "Tree of heaven" (Kalpa Vriksha) and "Tree of a hundred uses", coconut plays a vital role in the conomy of the district. The characteristic growth and planting pattern facilitate successful growing of other crops in between or under them. Further, the labour input required for managing this crop is comparatively lesser than that for many other crops, which makes it an ideal for the people engaged in other occupations. Intercropping or other forms of crop combinations with coconuts is a very common practice, especially around the homesteads throughout the district.

Two distinct varieties of coconut were found - the Tall and Dwarf - of which the Tall is extensively cultivated in the district. In the crop combination, a major portion of the upper canopy goes to coconut. This is followed by other crops like banana, yams, etc. At the floor level, pineapple, vegetables and other herbaceous crops are grown.

When coconut is present as the dominant component, the intercrops that are grown vary according to the age and canopy size of the coconuts. During the initial stages of growth of coconut, all sun-loving crops form the lower tier. From the bearing stage, ie. 8 years to about 25 years, when the shade is rather dense, shade loving crops like yams, pinapple etc. are grown. The canopy architecture and pattern

of component interaction are similar to those of other tropical homegardens as described by Fernandez *et al.* (1984), Fernandes and Nair (1986) and Soemarwoto and Soemarwoto (1984).

A number of cultivars of banana are widely grown in the interspaces of coconut in these homesteads. Among them Nendran is found to be the most important. Poovan, Palayankodan etc. are also grown widely.

Cultivation of vegetables is very popular almost everywhere in the district. The commonly grown vegetables in the interspaces are bhindi, brinjal, bittergourd, cucumber etc. They provide a good source of income to the growers and play an important part in human nutrition.

Yams are found to be the next most common crop here. Of this, greater yam and lesser yam are the most common. Satisfactory yield in the partially shaded condition existing in the home garden, easy processing and long storage life after processing are the factors that encourage widespread cultivation of these crops in the homesteads.

Among the tuber crops apart from yams, tapioca is also common as an important subsidiary food crop. It is grown in the homesteads under partially shaded conditions, with lesser tuber productivity compared to open areas.

Arecanut palm which is the main source of common masticatory nut is grown in some homesteads with assured irrigation facilities. Pepper is also grown in some homesteads as an intercrop using coconut or other tree crops as live standards. Pineapple is a common floor crop grown in these homesteads.

Apart from these crop combinations, most farm families have a variety of other enterprises in their homesteads. Among them, dairy and poultry are the most common. The waste materials from crops and homes are used as fodder/feed for animals/birds and barn wastes are used as manure for crops. Cows and buffaloes are maintained for milk, bullocks for draught and chickens for eggs and meat. A number of improved breeds of cows like Jersey and Brown Swiss are reared in some homesteads. Austrolope and White Leghorn are the common breeds of chicken reared. The dairy/poultry system not only ensures enterprise diversification, but also augment farm income by the sale of surplus milk and eggs. Also it helps to minimise the manuring costs of cropping system. Continuous addition of organic manures from the livestock system help to maintain soil health and sustain productivity.

5.2 Distribution of the respondents based on their personal, socio-cultural and techno-economic factors

A close observation of the sample profile presented in Table 3 indicated that the sample was more or less following an even distribution except for a few variables.

It could be observed from the results that maximum number of respondents in the high category were observed for the variable knowledge about dairy/poultry management. The involvement of farm women was widespread and large in respect of dairy and livestock related activities. This knowledge actually makes the farm family women involved in many operations like bringing fodder from the field, chaff cutting, preparing feed for cattle, bathing and cleaning the cattle, cleaning the cattleshed, milking and other activities.

Similarly, it was observed that 59.33 per cent of the respondents were in the high category for the variable education. It is not the formal education that one attains, from schools and colleges that orients an individual to perform the participation to greater extent. It is the actual involvement in different aspects of farm and home management coupled with experience obtained by the members that enables the farm family women to participate in various activities. The theory of instinct of initiation may operate, where in farm women who had not undergone any formal education, during their stay in the home, might have got opportunities to observe the nature and extent of participation of their mothers and grand mothers resulting in proper participation of farm family women in agricultural operations.

Cropping intensity is another important variable and 58.00 per cent of the respondents congregated in the high category of this variable. The intensity of cropping is always higher for progressive farms than non-progressive farms in spite of the fact that the irrigated percentage of operated area is higher in non-progressive farms. The female labour participation is higher for non-progressive than progressive farms.

It was found that 54.67 per cent. of the respondents were in the high category of Mass media participation and 51.33 per cent of information source utilization. This showed that farm family women had high mass media participation by reading newspapers, farm magazines and listening to radio and television. This finding is obvious since the literacy rate in Kerala is high and that most of the households in Kerala subscribe to at least one daily newspaper. The listening habit of farm family women to radio, television and radio rural programmes also constituted to the high level of mass media participation.

About 82.67 per cent of the respondents were found in the low category of social participation. Farm family women, whose main occupation being farm and home activities, seldom get involved in various activities of different rural organisations. Limitations of leisure time might be another constraint. This might be the probable reason for the majority of the respondents for their lower degree of involvement in social organisations.

It is evident from the Table 3 that in respect of the varible extension participation, 72.67 per cent of the respondents were found in the lower category. The reason is that majority of the farm women were reluctant to participate in various extension activities. So also they may not be getting the freedom and leisure time to get involved in various extension activities.

Sixty per cent of the respondents were found in the low category in the case of the variable extension contact. As the female head of the family, the farm woman may not be getting exposure with the extension agencies or concerned staff of the Agriculture department.

The sample showed that 57.33 per cent of the respondents had low farm size. In a state like Kerala where more than 87 per cent of the farmers are small and marginal, the sample drawn for the study typically represents the population and it is only natural to have more respondents belonging to lower category in respect of farm size.

Farming experience is another variable wherein 56.67 per cent of respondents were found in the low category. Similarly 54.67 per cent of the respondents were in the low category for the variable knowledge about scientific crop production. Considering the two sets of results it could be deduced that the respondents in the area of study were largely not very actively involved in farming and that their participation had been only of a supportive nature. As a result, their knowledge about scientific crop cultivation aspects was also not very appreciable.

Another important variable is the attitude towards farming wherein 51.33 per cent of the respondents were in the lower category. Though the individual develops a favourable attitude towards farming, the values of the society which decides the actions of the individual may come in the way of rational behaviour.

Innovation proneness is another variable in which case 54 per cent of the respondents congregated in the low category. Only those farmers who are prone to change might show the characteristics of innovators. But women in our society who are preoccupied with child care and other home activities may not be getting much time to devote their attention for innovations.

The results also showed that 52.67 per cent of the respondents were in the low category for the variable risk preference. The reason may be that the farm family women have lesser courage to face any problems occurring and are not much oriented towards risk and uncertainity in farming. Also most of the households are marginal, who have only subsistence economy, the majority of farm women were averse to take away the risk.

Yet another finding from the table was with respect to level of aspiration. As much as 51.33 per cent of the respondents were in the lower category. The probable reasons might be that lower the level of wishes and hopes of an individual to attain a high standard of life, lesser will be her chances of making efforts for attaining the desired goal.

5.3 Nature and extent of participation of farm family women in agricultural operations

A. Coconut

A persual of the Table 4 shows that majority of the respondents 'did dnot participate' in any of the agricultural operations of coconut. The reason may be that since it is an economical crop many of its activities are done by men themselves. It also requires intensive labour during the initial periods. Also 'to some extent', they participated with their husband as a help in operations like manure and fertilizer application, irrigation management, dehusking and storage of the produce which is not so difficult to be undertaken. Since most of the operations of coconut is being difficult and needs more physical effort, naturally family female participation would be comparatively low in these operations.

B. Banana

From Table 5 it is evident that farm family women were not at all involved in many of the activities of banana. Only in some activities like intercultural operations and harvesting they only 'supervise' as they were not getting enough leisure time for involving in many activities. As in the case of coconut also they did

not participate to a 'greater extent'. Their activities to 'some extent' were in operations like organic manure application, irrigation and intercultural operations as a help to their husbands or as a creative work during their free times. These practices are usually carried out in the leisure periods especially during afternoon and evening hours.

C. Vegetables

In the case of vegetables as evidenced from the Table 6, majority of the respondents 'solely' participated in the agricultural operations like sowing/planting and harvesting. Here also during their leisure times they were found to actively engage in these operations. Also the quantum of work required will be less in these cases. The timing of the practices of irrigation, plant protection etc. which are being carried out in the morning hours makes it difficult for the farm family women to participate, since they would be otherwise engaged at that time. Regarding their extent of participation, they were found to a greater extent actively participating in the harvesting operations. To some extent they were involved in activities like plant protection measures and marketing.

D. Yams

From the Table 7, it can be understood that in the case of yams, farm family women participated on a 'supervisory' nature in activities like fertilizer application and plant protection measures. The risky nature of plant protection measures and fertilizer application may be one of the reasons for their low contribution in this field. The contributions as 'solely' were found to be minimal in almost all operations except in some cases like storage of seed material, selection of

seeds/cut pieces and intercultural operations. They also 'jointly' participated in the activities like manuring and selection of seed/cut pieces. The traditional pattern of carrying out the manurial practices by the men or hired labour may be one of the reasons for their low contribution in these cases. Also women were found to be actively participating in the activities like storage of seed material, selection of seed/cut pieces from time immemorial since men were neglecting this crops to a greater extent.

Considering their extent of participation, to 'some extent' they were found to be actively participating in activities like weeding, harvesting and sowing/planting. Since during evenings and afternoon hours they get enough time to involve in these activities may be one of the reasons. Also the lesser risky nature of the activities may be another reason for this.

E. Dairy/Poultry

As evidenced from the Table 8, farm family women were found to be 'solely' participating in the activities like maintenance of cattle shed, feeding of birds and hatching of eggs/chicks. The traditional pattern of carrying out these practices by the 'mother' or family women may be one of the reasons for this. Also men were not found to be actively participating in these activities. Similarly majority 'jointly' participated in taking care of sick animals. It is to be reckoned here that while handling sick animals the help of men folk is inevitable. For applying medicines, feeding of medicines/potions and such other operations women will have to depend on their husbands for physical help. Similarly, for taking the animals to hospitals or for consulting the Veterinary doctors, the assistance of men folk is a

must. These could possibly be attributed to as the reasons for the above observed result. They only 'supervised' some activities like care and management of milch animals and milking. The availability of the labourers for the care and management as well as milking may be one of the reasons for their lower contribution in these cases.

Considering their extent of participation, they were actively involved to a 'greater extent' in operations like care and management of milch animals, maintenance of cattle shed, feeding of birds, preparation of milk and milk products, care and management of poultry birds, feeding of birds, hatching of eggs/chicks and marketing of milk and eggs. The traditional pattern of carrying out of these activities by the female members of the family may be one of the reasons for this.

5.4 Nature and extent of participation of farm family women in decision making

A. Coconut

A persual of the Table 9, shows that only very few respondents 'solely' participated in the decision making process in the case of coconut. In almost all the operations of coconut men were involved than women, may be one of the reason for this. Their contributions were 'jointly' with their husbands in areas like deciding the irrigation management, intercultural operations, storage and marketing of the produce. 'Joint' decision making appeared to be at its peak in the beginning stage with largest amount of consultation by women in home management and men in money management may be another reason.

Regarding their extent of participation, majority of the respondents 'sometimes' participated in areas like deciding the irrigation management, intercul-

tural operations, time of harvest and storage of the produce. Farmers sought the advice of their wives in the above areas with a view to arrive at a decision. Also these areas which have long term influence on the farm and home were perceived as important by farm family women.

B. Banana

As evidenced from the Table 10, only very few respondents 'solely' participated in the decision making areas of Banana. Majority were found to be 'jointly' involved in the area, deciding the type of propping to be adopted. Since in many cases men were found to consult their wives before doing the propping may be the reasons. Their presence was found in areas like deciding the type of weeding to be adopted, intercultural operations and plant protection measures. The risky nature and lack of proper knowledge regarding the image of chemicals may be the reason for their low contribution in these areas.

Regarding the extent of participation, a majority of the respondents sometimes participated in areas like selection of a crop/variety, deciding the type of weeding to be adopted, manurial/fertilizer application, intercultural operations, propping to be adopted and marketing.

C. Vegetables

From Table 11, it can be seen that in the case of vegetables, only few respondents 'solely' participated in decision making areas whereas nearly half of the respondents participated 'jointly' in taking decision regarding the type of weeding to be adopted, manure/fertilizer application and irrigation management. Farmers are often seeking the advice of their wives in decisions regarding the type of weeding to

be adopted, manure and fertilizer applications and irrigation management.

Regarding the extent of participation, majority of the respondents participated 'sometimes' in areas like deciding the crop/variety to be grown, type of weeding to be adopted and marketing. Farm women usually perceive those areas linked with management of household and family as important and those linked with farming and farm management as less important may be one of the reasons for this.

D. Yams

From Table 12 it can be seen that farm family women's participation as 'solely' were very few in the case of yams. They 'jointly' participated with their husbands in some of the areas like deciding the standards to be used for trailing, irrigation, time of harvest and storage of the produce. Their husbands were found to be discussing these matters with them before the final decision is taken, may be one of the reasons. Their presence were found in some areas like selecting the seed/cut pieces, deciding the manure application and plant protection measures. Here also they are found to involve in one or the other way.

Considering the extent of participation, only very few respondents 'always' participated in decision making in the case of yams. Majority of the respondents 'sometimes' participated in areas like deciding the fertilizer application and time of harvest. Since these crops are almost looked after by the females in a family, men usually neglect these crops. So, as a responsibility, it is the farm family women's right to think for that.

E. Dairy/Poultry

As evidenced from the Table 13, nearly majority of the respondents 'solely' participated in decision making areas like deciding the type of milk products to be made, hatching of eggs and marketing of milk and eggs. Since most of the above areas come under a female member of the family from earlier time onwards, they may be actively engaging in these areas. So also almost all the tasks related with farm animals were predominantly carried out by wives and they took decisions in these areas.

Regarding the extent of participation, majority of the respondents 'always' participated in areas like deciding the time and frequency of milking, and the type of milk products to be made. From time immemorial women decide and participate in these activities. Similarly a majority participated 'sometimes' in areas like deciding the variety/breed to be grown, care of sick animals and the care and management of cattleshed. Since in almost all the areas mentioned above, men were found to be actively deciding and they made a consultation with their counterpart regarding these aspects which may be the reason for this.

5.5 Influence of personal, socio-cultural and techno-economic factors on the Nature and extent of participation of farm family women in agricultural operations

The correlation analysis (Table 14), regression analysis (Table 15), step down regression analysis (Table 16), path analysis (Table 17) and Fig.5 revealed that the most important variable significantly affecting NEPAO was knowledge about dairy/poultry management. The earning from the landholdings of the majority

of the marginal and small farmers alone were not adequately sufficient for the household of an average size around the year. Knowledge about dairy/poultry management and their inclusion provided an alternative to the small farmers as well as those whose income from operational holdings is very much low. It makes a substantial contribution to the daily subsistence needs in the case of families of Thrissur district. In this background it is logical to think that in the case of farm family women, with better knowledge about dairy/poultry management, her nature and extent of participation in agricultural operations will be high as evidenced from the study. These findings comply with that of Singh (1971), Singh and Singh (1975), Mehta *et al.* (1980) and Joshi and Jha (1981) who reported a positive relationship between knowledge about dairy/poultry management and participation of farm women in agricultural operations.

The results obtained in the study also revealed a positive and significant relationship between Mass media participation and nature and extent of participation of farm family women in agricultural operations. In the present era of technological explosion, it is quite logical that a farm family woman who has better access to different mass media sources of information gain higher level of knowledge and hence participate in various agricultural operations. Also the daily broadcast programmes designed for the farmers by the stations of Akashvani in Kerala have become very popular and considerably helped in exposing these women farmers to new techniques in agriculture. The 'Nattinpuram' programme by the Doordarshan has helped in improving their skills. The timings of these programmes might also have helped the farm family women to attend them.

The next variable significantly and positively correlated with NEPAO was self-confidence. It was clear here that those respondents who exhibited high self confidence had higher extent of participation in agricultural operation. 'Confidence breeds confidence' is the saying to be recollected in this context. The respondents who had appreciable self confidence deserve special mention viewed in the back-ground of gender bias in the family and the society. Self confidence, actually helps the farm family women to feel about her own power, abilities and resourcefulness to perform an activity which she desires to undertake. So there is no surprise in the present finding that self confidence is positively and significantly correlated with the NEPAO.

The variable attitude towards farming also showed positive and significant correlation with the dependent variable NEPAO. Attitude is individual-oriented-while values are society oriented. Though the individual develops a favourable attitude towards farming, the values of the society decides the action of the individual which may come in the way of rational behaviour. But study conducted has shown a positive and significant relationship. The reasons may be substantiated as follows. The theory of attitude behaviour congruency (Fishbein and Raven, 1962) indicates that the development of favourable or unfavourable attitude towards an object or situation will be dependent on the benefits associated with the object. Since the household economy works at a subsistence or below subsistence level, majority of the men in the household are engaged in some other occupation which fetches them a subsidiary income. Consequently, the responsibility of looking after a family farm devolves on the women in the household. Secondly, there does not exist any cultural taboo, especially among the self-cultivating farmers, which inhibits women from

participating in agricultural operations. Attitude of a person will decide and direct his behaviour and to certain extent it may be reflected through the behaviour. Participation is nothing but an expressive behaviour. Hence it is reasonable to think that a farm woman having favourable attitude towards farming would participate more in it. Studies conducted by Seema (1986) and Gowda (1988) also justified the above result.

The result also showed that knowledge about scientific crop production was another important variable positively and significantly correlated with NEPAO. The farm women might have acquired knowledge in farming as a result of their formal education or informal eduation. This actually equips her to participate in various agricultural practices and she will feel that she has some realistic goals or opportunities in the farm. Knowledge is one of the three components of behaviour, which is vital for behavioural change and adoption. The concept of Information influence as given by Deutsch and Gerald (1955) which operates when an individual possess adequate knowledge was largely determined by a tendency to conform with the knowledge level, which could be the reason for enhanced adoption and participation. Hence it is possible that knowledge of crops had positive and significant relationship with NEPAO. This finding comply with that of Dipali (1979) who reported a positive relationship between level of knowledge of farm women in farm operations and their degree of participation in agricultural operations.

Achievement motivation was another variable found to be positively and significantly correlated with NEPAO. Mc Clelland's basic theme of achievement motivation locates the 'need to achieve' as an individual's orientation within the value complex of culture. Achievement motivation thus being embedded in the value

system of an individual, it is quite probable that social values might have influenced their perception and participation. The farm family women may get chance to come in contact with their counter parts. Also the high level of perception about their potential changes of development might be another main reason for their high level of achievement motivation.

The results obtained in the stud. ealed a positive and significant relationship between extension participation and NEPAO. Participation in various extension activities will naturally enhance their curiosity to know more about the scientific practices. The study by Gondi *et al.* (1983) established close relationship between the extension participation and agricultural advancement.

5.6 Influence of personal, socio-cultural and techno-economic factors on the nature and extent of participation of farm family women in decision making

The correlation analysis (Table 18), regression analysis (Table 19), step down regression analysis (Table 20), path analysis (Table 21) and Fig.6 revealed that the most important variable significantly affecting NEPDM was Mass media participation. Because of higher level of education, they were exposed to various mass media sources. They were aware of the outerworld, of market forces, bringing and selling abilities etc. Also their contact with other workers is increased, and their ability to work collectively to obtain particular ends becomes easy. The varietal programmes from these mass media sources also have contributed to the popularity of this medium which in turn helped these women farmers to attend these agricultural programmes and to take decisions the

Knowledge about dairy/poultry management was the next variable found to be positively and significantly related with NEPDM. This result may be due to the fact that women are specialised in the care of animals and as such had a greater say in decision concerning animal care. Also almost all the tasks of farm animals were predominantly carried out by wives and they were found to have decisions with respect to bringing fodder from the field, chaff cutting, preparing feed for cattle, cleaning the cattle shed, milking and making curd and ghee. The studies reported by Badiger (1979), Puri (1981) and Dubey *et al.* (1982), also supported the above finding.

The next variable significantly and positively correlated was self-confidence. The study indicated that the respondents who exhibited high self confidence had their nature and extent of participation in decision making high.

Altitude towards farming is another important variable positively and significantly correlated with NEPDM. An individual with favourable atitude towards farming is likely to take decisions independently rather than consulting others. All decision making involves a subjective aspect and an objective aspect (Deacon and Firebough, 1981). Altitude is subjective while resources can be considered as objective. Decision making is a process through which the subjective and objective evaluation takes place and the decision is a form of value.

The results showed that achievement motivation was also significantly and positively correlated with NEPDM. Higher level of achievement motivation creates a desire in the farm family women for better performance which motivates

them to seek out information on method of scientific cultivation. Their high perception about the potential changes for development might be the main reason for their high achievement motivation.

The next variable significantly and positively correlated with NEPDM was cropping intensity. Intensive cultivation in any homestead is an indication of high economic motive of the farmers which warranted a higher adoption of improved scientific practices and hence the observed positive trend between cropping intensity and NEPDM.

Extension contact also showed positive and significant relationship with NEPDM. Those farm family women who had opportunities to come in contact with extension agencies might have developed a sense of confidence in their ability to make rational decisions and hence the present finding. Deb *et al.* (1968) and Grunig (1970), had reported that rationality of farmers was related to their extension contact.

The variable significantly but negatively related was economic motivation. Farmers with high economic motivation exhibit a better concern for innovations. There are well established theories in psychology that different motives of an individual energise and drive them towards the achievement of specific goals. A farm woman with high economic motivation feels that she has no realistic goals or opportunities in the farm. Her agricultural work was considered merely an extension of their role as a housewife. Also agriculture has assumed the characteristics of more or less a business enterprise rather than a way of life as in the past. Therefore the importance of economic gain in crop and livestock will be the prime consideration of any farmer. But being confined to the four walls and suppressed by female

behavioural norms, their economic consideration is less or limited. They were doing only for the subsistence.

The above results led to the rejection of the hypotheses that there would be no significant relationship between the personal, socio-cultural and techno-economic factors of farm family women and their participation in agricultural operations and decision making except for age, farming experience, mass media participation and information source utilization.

5.7 Empirical Models of the study

The results on the nature and extent of participation of farm family women in agricultural operations are diagramatically represented in the empirical model presented in Fig.7.

The nature and extent of participation of farm family women in agricultural operations is depicted by the middle square. Their nature and extent of participation is influenced by external and internal factors like personal, socio-cultural and techno-economic characteristics. These factors are represented by the rectangles on either side of the middle square.

The characteristics significant in predicting the nature and extent of participation in agricultural operations are education, farm size, family size, farming experience, extension participation, social participation, extension contact, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, level of aspiration, economic motivation, innovation proneness, cropping intensity, achievement motivation, self confidence and risk preference.

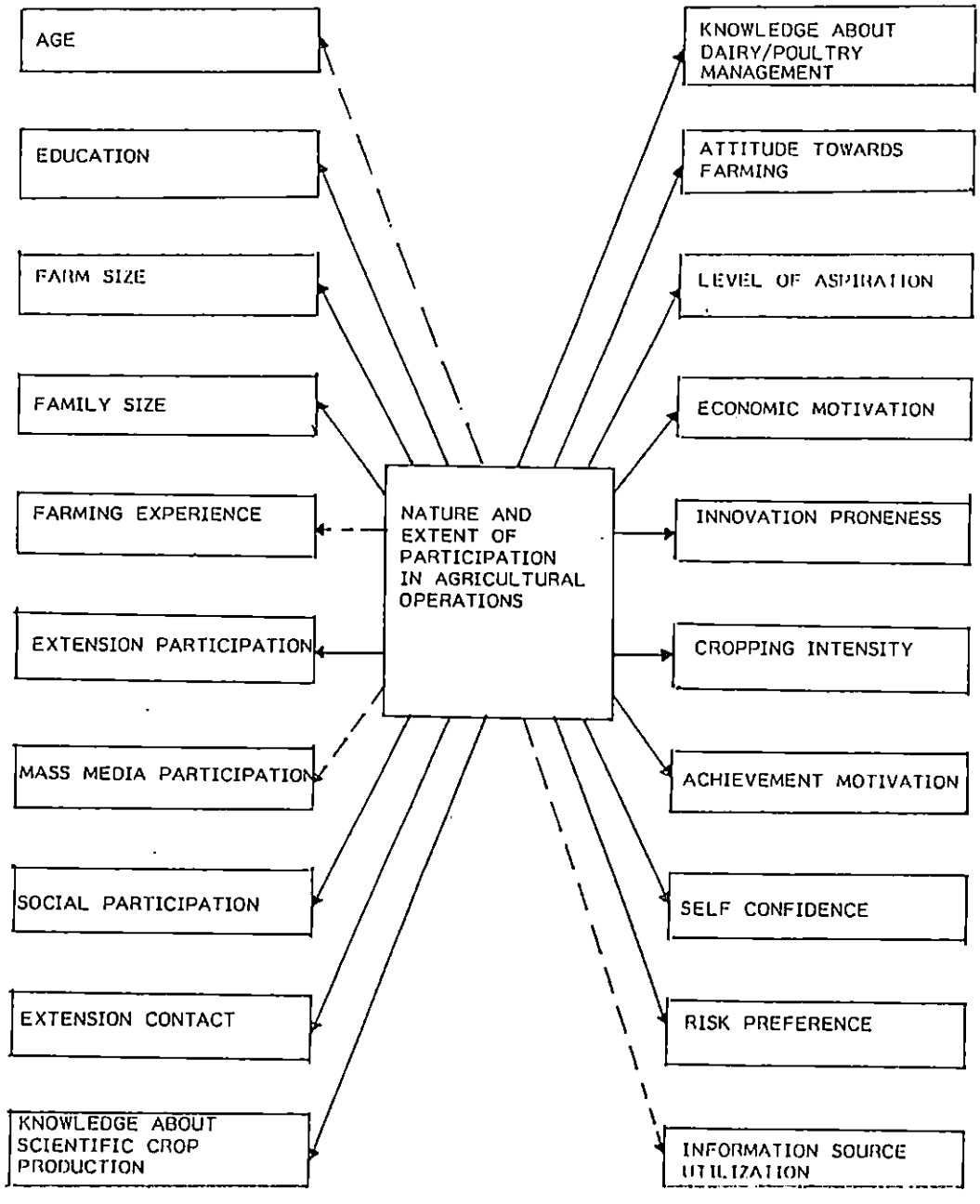


Fig.7. Empirical model of the study showing the relationship between selected personal, socio-cultural and techno-economic factors and the nature and extent of participation in agiricultural operations

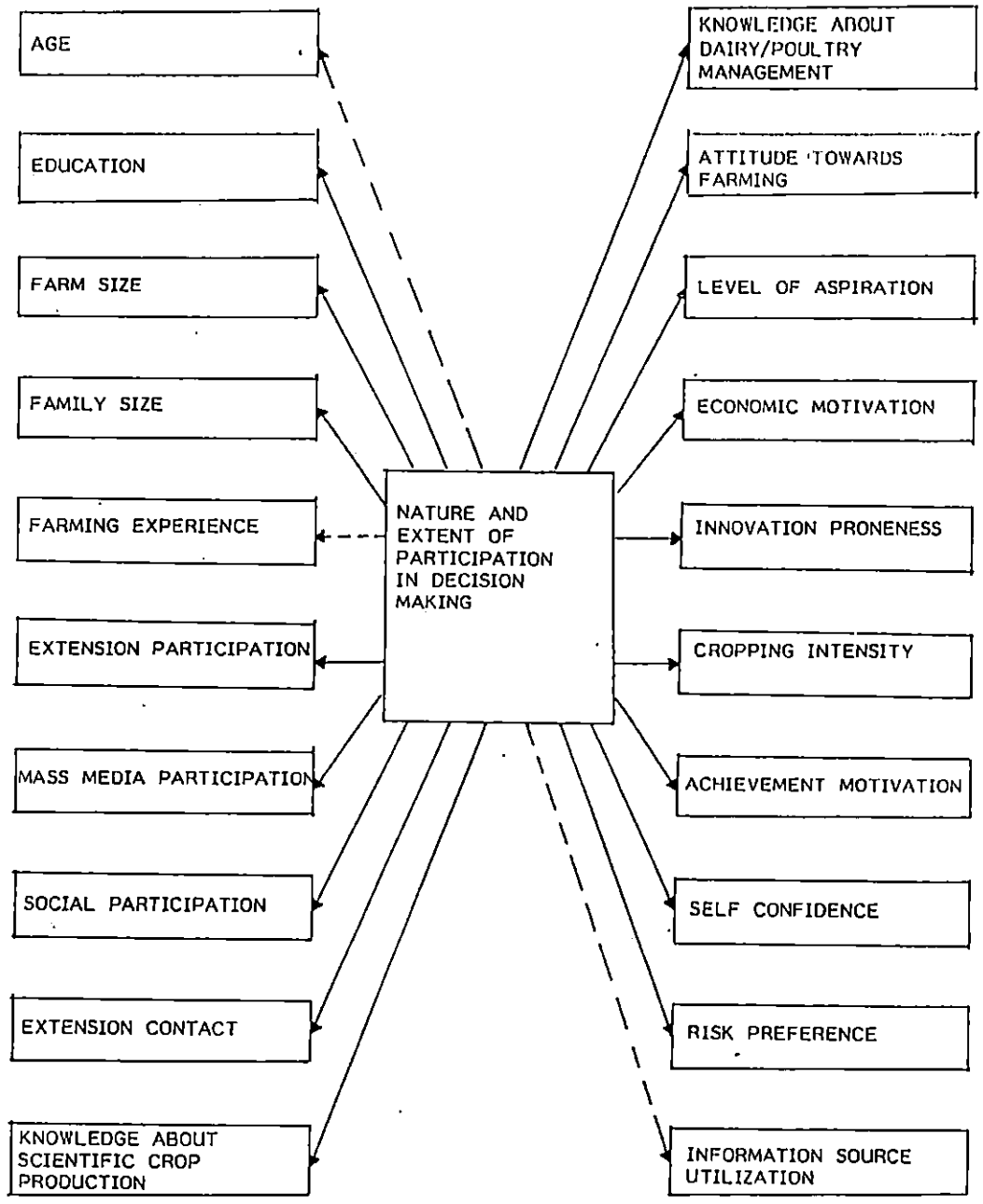


Fig.8. Empirical model of the study showing the relationship between selected personal, socio-cultural and techno-economic factors and the nature and extent of participation in decision making

The results on the nature and extent of participation in decision making of farm family women are represented diagramatically in Fig.8.

Here also the nature and extent of participation in decision making is depicted by the middle square. The personal, socio-cultural and techno-economic factors influencing the nature and extent of participation is represented by the rectangles on either side of the middle square.

The characteristics significant in predicting the NEPDM are education, farm size, family size, extension participation, mass media participation, social participation, extension contact, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, level of aspiration, economic motivation, innovation proneness, cropping intensity, achievement motivation, self-confidence and risk preference.

Summary

CHAPTER-VI

SUMMARY

Farm women form the backbone of Indian agriculture. But most of their contributions to the farm sector go unaccounted as they are not in the forefront. The homestead system of cultivation is a very common farming system in the Thrissur district. The homestead agriculture of Thrissur district often combines with crop farming and livestock farming ensuring a synergistic interaction between the components. Inspite of their key role in crop husbandry, animal husbandry, services and public policies of rural areas have been tended to neglect the productive role of women. They always remained as invisible workers inspite of their pivotal role and remain silently behind all efforts of men. Though the farm women perform a number of farming operations and play an important role in decision making, so far no empirical investigations have been made to know their nature and extent of participation.

Therefore, the present research study was undertaken with the following objectives.

6.1 Objectives

1. To identify the nature and type of homestead farming system prevailing in the area.
2. To understand the nature and extent of participation of farm family women in the agricultural operations and in decision making in the identified marginal homestead farming systems.

3. To identify the relationship between personal, socio-cultural and techno-economic factors and the extent of participation of farm family women in farm operations and in decision making in the different marginal homestead farming systems.

6.2 Methodology

The study was conducted in Thrissur district of Kerala. There are three sub-divisions and 17 blocks in Thrissur district. From each of these three sub-divisions, one block was selected randomly, and from each of these three blocks, one panchayat was also selected at random. The study was confined to these three panchayats namely Melur, Pananchery and Thekkumkara. From each Panchayat, 50 homesteads were selected randomly. The female head of the family was selected as the respondent from each homestead. Thus altogether there were 150 women respondents for the study.

The dependent variables for the study were the nature and extent of participation of farm family women in agricultural operations and the nature and extent of participation of farm family women in decision making. These dependent variables were quantified using measurement devices developed for the study. Twenty independent variables were selected for the study which included age, education, farm size, family size, farming experience, extension participation, mass media participation, social participation, extension contact, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, level of aspiration, economic motivation, innovation proneness, cropping intensity,

achievement motivation, self confidence, risk preference and information source utilization. All these independent variables were quantified with the help of available measurement procedures. The relationship between these independent variables and the dependent variables was also studied.

The data were collected during April to June 1994 using pre-tested structured interview schedule prepared for the purpose. The statistical tools used were correlation analysis, categorisation, multiple linear regression analysis, step down regression analysis and multivariate path coefficient analysis.

6.3 Findings

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

1. The characteristic feature of the homesteads in Thrissur showed that coconut based homestead farming system is the most common one. Of this coconut-banana-vegetable crop combinations occupies the first position followed by coconut-banana-yams. It showed that intercropping or other farms of crop combination with coconut is a very common practice around the homesteads of Thrissur district.
2. Apart from the crop conbinations, most families have a variety of other enterprises, of which dairying occupied the first place followed by poultry.
3. The nature and extent of participation of farm family women in different crops were as follows:

(a) With regard to the nature of participation of farm farmily women in the agricultural operations of coconut, their involvement were found to be 'Supervisory only' in many of the operations like irrigation management, plant

protection measures. With regard to the extent of participation they participated 'to some extent' in operations like manure and fertilizer application, irrigation management, dehusking and storage of the produce.

(b) In the case of banana, majority of farm family women 'only supervised' intercultural operations and harvesting. Also regarding the extent of participation, majority participated to 'some extent' in operations like organic manure application, irrigation and intercultural operations.

(c) For vegetables, a majority of the farm family women 'solely' participated in the operations like sowing/planting and harvesting. With regard to the extent of participation, the respondents participated to a 'greater extent' in harvesting and 'to some extent' in plant protection measures and marketing.

(d) With respect to yams, majority of the respondents participated as 'supervision only' in operations like fertilizer application and plant protection measures. Regarding the extent of participation, majority participated to 'some extent' in weeding, harvesting and sowing/planting.

(e) Regarding dairy/poultry, a majority of the respondent 'solely' participated in the operations like maintenance of cattle shed, feeding of birds, hatching of eggs and 'jointly' in the care of sick animals. With respect to the extent of participation, majority participated to a 'greater extent' in the care and management of milch animals, maintenance of cattle shed, feeding of animals, preparation of milk and milk products, care and management of poultry birds, feeding of birds, hatching of eggs and marketing of milk and eggs.

4. The nature and extent of participation of farm family women in decision making for different crops were given below:

(a) In the case of coconut, majority of the respondents 'jointly' participated in deciding the intercultural operations. Considering their extent of participation, majority participated 'sometimes' in areas like deciding the irrigation management, intercultural operations, time of harvest and the storage of the produce.

(b) For banana, majority participated 'jointly' in deciding the type of propping to be adopted. Regarding the extent of participation majority ' sometimes' participated in areas like selection of the crop/variety, deciding the type of weeding to be adopted, manure/fertilizer application, intercultural operations, the type of propping to be adopted and marketing.

(c) As far as vegetables are concerned, nearly half of the respondents 'jointly' participated in the areas like deciding the type of weeding to be adopted, manure/fertilizer application and irrigation management. Majority participated 'sometimes' in areas like deciding the crop/variety to be grown, type of weeding to be adopted and marketing.

(d) In the case of yams, the farm family women's nature of participation in decision making was found to be minimal. They 'jointly' participated in some areas like deciding the standards to be used for trailing, time of harvest and the storage of the produce. But with regard to their extent of participation, majority 'sometimes' participated in areas like deciding the fertilizer application and time of harvest.

(e) Regarding knowledge about dairy/poultry management, a majority of the respondents 'solely' participated in deciding the type of milk products to be made. Considering their extent of participation, majority 'always' participated in areas like deciding the time and frequency of milking and the type of

milk products to be made. They also 'sometimes' participated in deciding the variety/breed to be grown, the care of sick animals and the care and management of cattle shed.

5. The correlation analysis revealed that out of the 20 independent variables selected for the study 12 variables were found to be positively and significantly related with the dependent variable, nature and extent of participation of farm family women in agricultural operations at 1 per cent level of significance. Four variables such as education, farm size, farmily size and extension contact were negatively and significantly related with the dependent variable. The other variables did not have any significant relationship with the dependent variable.

6. The findings of the multiple linear regresion analysis revealed that the F value obtained (88.4) was significant indicating that all the variables together contributed significantly in the variation of nature and extent of participation of the respondent group. The coefficient of determination revealed that 84.3 per cent of the variation in the NEPAO can be explained by these variables. Of these, seven variables were found to be significant namely extension participation, mass media participation, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, achievement motivation and self confidence.

7. Results of the step down regression analysis revealed that as a final step seven variables were obtained after exclusion of the variables with high probability values. They were extension participation, mass media participation, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, achievement motivation and self

confidence. The coefficient of determination (R^2) was found to be 0.828 which indicated that 82.8 per cent of the variation in NEPAO could be explained by these seven variables at a probability level of 0.01.

8. The results of path analysis showed that knowledge about dairy/poultry management had the highest direct effect on NEPAO followed by mass media participation. Similarly, self confidence and attitude towards farming are the other two independent variables with substantial effect. The remaining variables such as knowledge about scientific crop production, achievement motivation and extension participation also had positive direct effects on the dependent variable. All the variables had their largest indirect effect through the variable knowledge about dairy/poultry management.

9. The correlation analysis revealed that out of the 20 independent variables selected for the study, 13 variables were found to have positive and significant relationship with the dependent variable, nature and extent of participation of farm family women in decision making at 1 per cent level of significance. Four variables such as education, farm size, family size and extension contact showed negative and significant relationship with the dependent variable. But three variables were found to have no significant relationship at all.

10. The findings of the multiple linear regression analysis revealed that the F value (82.08) obtained was significant indicating that all the variables contributed significantly to the variation in NEPDM of the farm family women. The coefficient of determination revealed that 72.42 per cent of the variation in the NEPDM was explained by these eight variables namely mass media participation, extension contact, knowledge about dairy/poultry management,

attitude towards farming, economic motivation, cropping intensity, achievement motivation and self confidence.

11. The results of step down regression analysis revealed that after the exclusion of the variables with high probability, eight variables namely mass media participation, extension contact, knowledge about dairy/poultry management, attitude towards farming, economic motivation, cropping intensity, achievement motivation and self-confidence were found to be significant. The coefficient of determination was found to be 0.716 which indicated that 71.6 per cent of the variation in NEPDM could be explained by these seven variables at probability levels of 0.01 and 0.05 per cent.

12. The path analysis results showed that mass media participation had the largest direct effect on the NEPDM of farm family women followed by knowledge about dairy/poultry management. Similarly self confidence and attitude towards farming were the other two important variables with substantial effect. The other variables like achievement motivation, cropping intensity and extension contact also had direct effect on the dependent variable. The study also showed that all the variables excluding extension participation and attitude towards farming had their largest indirect effects through the variable mass media participation.

6.4 Implications of the study

The following implications and recommendations emerge out of the findings of the present study:

1. The development, standardization and application of the measurement devices of this study would open up new avenues of research resources in studying in detail about the nature and extent of participation of farm family women in various activities in other parts of the state and the nation.
2. The relationship established in the present study between the selected independent and dependent variables could serve as guidelines to the extension agency in formulating and implementing strategies for effective participation of farm family women in the agricultural sector.

6.5 Suggestions for future research

A detailed indepth research involving the time utilisation of the farm family women is of paramount importance as they play an important role in the agricultural operations and decision making in the prevailing situation.

The present study helps only in the revelation of the Homestead farming systems in Thrissur district. An extensive cross-sectional research can be undertaken to probe the state of Homestead farming system in the entire Kerala State.

Studies to assess the effectiveness of various employment oriented home based subsidiary occupational programmes for women such as sericulture, mushroom cultivation, fruit preservation and processing etc. would be of great significance in the present day context.

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Appendices

APPENDIX-I(a)

Difficulty Indices and Discrimination Indices of the items of knowledge test (coconut)

Sl. No.	Frequencies of correct answers given by each group of respondents		Total frequencies of correct answers (n=30)	Difficulty index (P)	Discrimination index E 1/3
	G_1	G_3			
* 1	10	4	14	46.67	0.60
2	8	6	14	46.67	0.20
* 3	10	4	14	46.62	0.60
* 4	7	3	10	33.33	0.40
5	9	9	18	60.00	0.00
6	8	6	14	46.67	0.20
* 7	9	0	9	30.00	0.90
8	7	5	12	40.00	0.20
9	10	8	18	60.00	0.20
* 10	10	6	16	53.33	0.40
11	2	0	2	6.67	0.20
12	8	8	16	53.33	0.00
13	4	4	8	26.67	0.00
14	9	7	16	53.33	0.20
15	9	7	16	53.33	0.20
16	10	8	18	60.00	0.20
* 17	10	4	14	30.00	0.60
* 18	8	0	8	26.67	0.40
19	8	6	14	46.67	0.20
20	10	7	17	56.67	0.30
* 21	6	2	8	26.67	0.40
22	2	0	2	6.67	0.20
* 23	9	0	9	30.00	0.90
24	9	9	18	60.00	0.00
25	10	7	17	56.67	0.30
26	7	5	12	40.00	0.20
27	5	3	8	26.67	0.20
* 28	10	6	16	53.33	0.40
29	10	10	20	66.67	0.00
30	4	4	8	26.67	0.00

* Items selected for the final test

APPENDIX-I(b)

Difficulty Indices and Discrimination Indices of the items of knowledge test (Banana)

Sl. No.	Frequencies of correct answers given by each group of respondents		Total frequencies of correst answers (n=30)	Difficulty index (P)	Discrimination index E 1/3
	G_1	G_3			
*1	10	6	16	53.33	0.40
2	10	8	18	60.00	0.20
3	10	7	17	56.67	0.30
4	10	7	17	56.67	0.30
*5	10	5	15	50.00	0.50
6	10	8	18	60.00	0.20
7	10	9	19	63.33	0.10
8	10	8	18	60.00	0.20
9	6	5	11	36.67	0.10
*10	10	2	12	40.00	0.80
*11	10	3	13	43.33	0.70
12	10	9	19	63.33	0.10
13	10	9	19	63.33	0.10
14	3	0	3	10.00	0.30
*15	8	4	12	40.00	0.40
16	10	8	18	60.00	0.20
*17	8	4	12	40.00	0.40
*18	9	5	14	46.67	0.40
19	10	10	20	66.67	0.00
20	8	6	14	46.67	0.40
*21	5	0	5	16.67	0.50
22	6	5	11	36.67	0.10
23	10	10	20	66.67	0.00
24	2	2	4	13.33	0.00
*25	8	0	8	26.67	0.80
26	5	2	7	23.33	0.30
27	9	7	16	53.33	0.20
28	7	6	13	43.33	0.10
29	9	9	18	60.00	0.00
*30	8	4	12	40.00	0.40

*Items selected for the final test

APPENDIX-I(c)

Difficulty Indices and Discrimination Indices of the items of knowledge test (Vegetables)

Sl. No.	Frequencies of correct answers given by each group of respondents		Total frequencies of correct answers (n=30)	Difficulty index (P)	Discrimination index E 1/3
	G_1	G_3			
1	10	10	20	66.66	0.00
*2	7	1	8	26.67	0.60
*3	10	3	13	43.33	0.70
4	10	10	20	66.67	0.00
*5	10	3	13	43.33	0.70
6	10	8	18	60.00	0.20
7	8	8	16	53.30	0.00
8	10	7	17	56.62	0.30
9	9	7	16	53.33	0.20
10	10	8	18	60.00	0.20
11	1	1	2	6.67	0.00
*12	10.	6	16	53.33	0.40
13	8	8	16	53.30	0.00
*14	7	2	9	30.00	0.50
*15	9	5	14	46.67	0.40
16	7	5	12	40.00	0.20
17	4	4	8	26.67	0.00
18	10	7	17	56.67	0.30
19	9	9	18	60.00	0.00
20	9	7	16	53.33	0.20
*21	10	5	15	50.00	0.50
22	7	6	13	43.33	0.10
23	9	9	18	60.00	0.00
24	10	9	19	63.33	0.10
*25	8	0	8	26.67	0.80
26	7	5	12	40.00	0.20
*27	8	8	16	53.33	0.00
*28	10	6	16	53.33	0.40
29	9	7	16	53.33	0.20
*30	10	2	12	40.00	0.80

*Items selected for the final test

APPENDIX-I(d)

Difficulty Indices and Discrimination Indices of the items of knowledge test (Yams)

Sl. No.	Frequencies of correct answers given by each group of respondents		Total frequencies of correct answers (n=30)	Difficulty indiex (P)	Discrimination index E 1/3
	G_1	G_3			
* 1	4	0	4	13.33	0.40
2	6	3	9	30.00	0.30
3	6	5	11	36.67	0.10
4	4	3	7	23.33	0.10
* 5	6	0	6	20.00	0.60
* 6	9	2	11	36.67	0.70
7	7	5	12	40.00	0.20
8	7	10	17	56.67	0.30
9	4	3	7	23.33	0.10
*10	5	0	5	16.67	0.50
11	8	6	14	46.67	0.20
12	8	7	15	50.00	0.10
13	8	7	15	50.00	0.10
*14	10	4	14	46.67	0.60
15	10	8	18	60.00	0.20
*16	10	5	15	50.00	0.50
17	6	4	10	33.33	0.20
18	7	7	14	46.67	0.00
19	6	4	10	33.33	0.20
*20	10	6	16	53.33	0.40
21	7	7	14	46.67	0.00
22	7	6	13	43.33	0.10
*23	9	3	12	40.00	0.60
24	7	6	13	43.33	0.10
25	9	6	15	50.00	0.30
*26	6	2	8	26.67	0.40
27	7	7	14	46.67	0.00
28	9	6	15	50.00	0.30
29	6	3	9	30.00	0.30
*30	10	6	16	53.33	0.40

*Items selected for the final test

APPENDIX-I(e)

Difficulty Indices and Discrimination Indices of the items of knowledge test (Dairy/Poulty)

Sl. No.	Frequencies of correct answers given by each group of respondents		Total frequencies of correct answers (n=30)	Difficulty index (P)	Discrimination index E 1/3
	G_1	G_3			
* 1	10	4	14	46.67	0.60
2	7	5	12	40.00	0.20
* 3	10	6	16	53.33	0.40
4	9	9	18	60.00	0.00
5	7	5	12	40.00	0.20
* 6	10	4	14	46.67	0.60
7	9	7	16	53.33	0.20
8	9	7	16	53.33	0.20
* 9	10	6	16	53.33	0.40
*10	9	0	9	30.00	0.90
*11	6	2	8	26.67	0.40
12	8	8	16	53.33	0.00
13	4	4	8	26.67	0.00
*14	7	3	10	33.33	0.40
15	9	7	16	53.33	0.20
*16	10	6	16	53.33	0.40
17	10	8	18	60.00	0.20
18	8	8	16	53.33	0.00
19	1	1	2	6.67	0.00
20	7	5	12	40.00	0.20
21	9	7	16	53.33	0.00
22	9	9	18	60.00	0.00
23	7	6	13	43.33	0.10
24	7	5	12	40.00	0.20
25	8	8	16	53.33	0.00
*26	9	0	9	30.00	0.90
27	4	4	8	26.67	0.00
*28	10	4	14	46.67	0.60
29	9	7	16	53.33	0.20
30	7	6	13	43.33	0.10

*Items selected for the final test

APPENDIX-II(a)

Statements for the knowledge test (Coconut)

Answer the following:

1. Name a variety recommended to your locality
2. Every leaf axil produces a spadix of inflorescence. T/F
3. Propagation through seed nut is the most successful method in coconut. T/F
4. Name a green manure crop suitable for coconut gardens.
5. Seed rate of sannhemp is 100 g/palm. T/F
6. Basins should be taken at 1.8 m radius around the palm and at 25 cm depth. T/F
7. Basins should be closed during the months of November - December. Yes/No
8. Rainfall is a limiting factor for favourable coconut cultivation. Yes/No
9. Inadequate drainage is harmful to the palm. Yes/No
10. What is the fertilizer recommendation for coconut?
11. Organic manures/FYM at the rate of 25-50 kg/palm is to be applied duringJune-July T/F
12. Lime is applied at the rate of 1 kg/palm/year. T/F
13. Lime should be applied two weeks before or after the application of chemicalfertilizers. T/F
14. Name a hybrid coconut.
15. Normally palms in the age group of 25-60 years are recommended for motherpalm selection. T/F
16. High yield of coconut must ultimately mean high copra output/palm. Yes/No
17. What is the best time for the collection of seednuts ?
18. Storage of seednuts in the shade for about a month prior to sowing in thenursery facilitates speedy and maximum germination. T/F
19. Horizontal planting is the commonest and recognised method. Yes/No

20. Transplanting of the seedlings should be done at 9-12 months age. T/F

21. What is the spacing recommended for coconut ?

22. During summer the palms should be irrigated at an interval of 5-6 days. T/F

23. During summer, the seedlings should be shaded properly. Yes/No

24. Intercultivation will increase the yield of coconut significantly. Yes/No

25. Name an important pest of coconut.

26. What is the control measure for Rhinoceros beetle?

27. Husk burial is an important operation in coconut. T/F

28. Name an important disease of coconut.

29. What is the control measure for Bud rot disease?

30. Application of Magnesium sulphate at the rate of 0.50 kg/palm is necessary for better production. T/F

APPENDIX-II(b)
Statements for the knowledge test (Banana)

Answer the following:-

1. Name two culinary varieties of banana.
2. Heavy monsoon and severe summer drought are not suitable for banana culti vation. T/F
3. Rhizomes are to be smeared with cowdung solution and dried in sun before planting. T/F
4. Size of the pits normally used is 50 x 50 x 50 cm. T/F
5. What is the spacing recommended for Nendran variety?
6. Application of wood ash at the rate of 2 kg/pit is recommended. Yes/No
7. What is the fertilizer recommendation for Nendran?
8. Name two varieties of banana suitable for planting as intercrop in coconut gardens.
9. Irrigation 6-10 times per crop is recommended. Yes/No
10. Irrigation immediately after manuring is a must in banana. T/F
11. Name a green manure crop suitable for banana plantation.
12. For conserving the moisture 4-5 diggings may be given. T/F
13. Removal of side suckers is recommended till the emergence of flowers. Yes/No
14. Name a chemical used for weed control in banana gardens.
15. Propping is recommended to prevent the crop from the damage of wind. Yes/No
16. Desuckering is an important operation in banana. Yes/No
17. Name two vegetables used for intercropping in banana gardens.
18. Propagation in banana is by means of suckers. T/F
19. 3-4 months old suckers are generally used for planting. T/F
20. Sword suckers are preferred over water suckers. T/F

21. Which is the best season for planting Nendran?
22. Name two table varieties of banana.
23. Banana is known as the "Queen of Tropical fruits". Yes/No
24. Fertilizers are generally applied in 6 splits. T/F
25. Name two important pests of banana.
26. Rhizome weevil is a major pest of banana. Yes/No
27. How can you control the attack of rhizome weevil?
28. Name two important diseases of banana.
29. Give the control measure for leaf spot disease.
30. Which is the best season for harvesting Nendran?

APPENDIX-II(c)

Statements for the knowledge test (Vegetables)

Answer the following-

1. Priya is a good quality marketable bittergourd Yes/No
2. Amaranthus is the most popular leafy vegetable in Kerala Yes/No
3. Give the name of a pesticide largely used in vegetable cultivation
4. Mosaic disease is an important problem in Pumpkin cultivation T/F
5. Planting of vegetables in pits during summer helps in conserving moisture Yes/No
6. What is the spacing for bittergourd cultivation?
7. Ambili is an important variety of pumpkin. Yes/No
8. Little leaf is a common viral disease of chilli. T/F
9. Name a cucumber variety suitable for your locality.
10. What is the recommended seed rate for chilli?
11. Shakthi is a good tomato variety. T/F
12. Chikkurmanis is a leafy vegetable. Yes/No
13. Name an important variety of brinjal.
14. Give the name of a fungicide used for soil drenching in vegetable nursery.
15. Fruit flies are the most common pest of bittergourd. T/F
16. Give the control measure for fruit fly.
17. Application of carbaryl 0.15% at interval of 15-20 days is recommended for the control of shoot borers. T/F
18. Kannara local is an amaranthus variety. Yes/No
19. Name an important disease of brinjal.
20. What is the fertilizer doze for cucurbitaceous vegetables?

21. Mulching is an important cultural practice in vegetables. Yes/No

22. Colour of chilli is an important factor in determing the value. T/F

23. High dose of plant protection chemicals are recommended for leafy vegetables. T/F

24. Foliar spray of 1% Urea after each harvest gives higher yield in amaranthus. T/F

25. Residual toxicity is an important criterion in the selection of pesticides for vegetables. T/F

26. Yellow vein mosaic disease is transmitted by a fly. T/F

27. For tomato, irrigation should be given on alternate days. T.F

28. Staking is an important operation in tomato. Yes/No

29. Application of Eupatorium leaves at the rate of 250 g/plant in the basins is usually recommended in vegetables. Yes/No

30. Harvesting should be done at least 10 days after the insecticide or fingicide application. T/F

APPENDIX-II(d)
Statements for the knowledge test (Yams)

Answer the following:

1. Which is the best season for growing yams?
2. Excessive high temperature has deleterious effect in the crop. T/F
3. Waterlogged condition is suitable for growing yams. T/F
4. Yams require loose, deep, well drained fertile soil for proper growth. Yes/No
5. The part used for propagation is seed tubers. Yes/No
6. Normally cut pieces of size 250-300 g each are taken for planting. T/F
7. To cover 1 ha of land 2500-3000 kg of seed material is required. T/F
8. Name two improved varieties of Greater yam.
9. The normal pit size recommended is 45 x 45 x 45 cm. T/F
10. Mulching is essential to conserve moisture during planting stage. Yes/No
11. What is the manuring schedule for greater yam?
12. Name an important pest of greater yam.
13. What prophylatic measure do you use for the control of yam scale?
14. Trailing is generally done within 15 days after sprouting by coir ropes. T/F
15. In open areas, trailing is done to a height of 3-4 m. T/F
16. Yams which started sprouting in storage is undesirable for planting. T/F
17. Name an important disease of greater yam.
18. Day lengths of greater than 12 hours during initial stages and shorter day lengths during the later part of the growing season favour satisfactory tuber formation. T/F
19. Inadequate drainage in harmful to yams. T/F.
20. During rainy season earthing up should be done. Yes/No
21. Name an improved variety of lesser yam

22. In the case of lesser yam, mounds are usually taken at a spacing of 75 x 75 cm. T/F

23. Medium sized tubers weighing 100-150 g each are ideal for sowing. T/F

24. How much quantity of seed materials are required to plant 1 hectare of lesser yam?

25. What is the fertilizer doze for lesser yam?

26. What is the best harvesting time for lesser yam?

27. Usually planting materials are dipped in 0.05% Monocrotophos suspension for 10 min as a prophylatic measure. T/F

28. Name an important disease of lesser yam.

29. By improved methods of cultivation, an yield of 20-25 t/ha can be obtained. T/F

30. How the harvesting time is noticed in greater yam?

APPENDIX-II(e)
Statements for the knowledge test (Dairy/Poultry)

Answer the following:

1. Name a cross-bred cattle
2. Cows with a body weight of 200 kg should be selected. Yes/No
3. Selection of cows should be based on genetic inheritance. Yes/No
4. A paddock space of 2 m^2 should be provided to the calf. T/F
5. What is the paddock space for cows?
6. It is better to feed the animals individually according to production and requirement. Yes/No
7. Good quality roughages save concentrate. T/F
8. Production ration should be fixed based on yield. Yes/No
9. It is important to feed collustrum to infants. Yes/No
10. Udder should be disinfected using light disinfectants after milking. Yes/No
11. Name an important disease of cattle
12. Application of griseofulvin is effective against ringworm. Yes/No
13. Foot and Mouth disease is an important disease of cattle. Yes/No
14. Artificial insemination is the best method in the case of dairy animals. T/F
15. The cattle shed and the surrounding areas should be well cleaned. Yes/No
16. Name a variety of broiler chicken
17. What is the average weight of 6 months old broilder chicken?
18. What is the brooder space/chick?
19. Name an egg type
20. A temperature of 21 °C should be ensured for chicks. Yes/No
21. One infrared bulb per 100 chicks is sufficient to maintain the temperature. Yes/No

22. Which is the best time for giving RD vaccine?
23. Pigeon pox vaccine is to be given at 3-4 weeks stage. T/F
24. Debeaking prevents cannibalism. Yes/No
25. Debeaking prevents feed wastage. Yes/No
26. Birds should be dewormed prior to RD vaccination. Yes/No
27. Birds should be dusted against ectoparasites. Yes/No
28. Name a disease affecting poultry.
29. Temperature should be reduced at the rate of 2.7°C per week upto 4 weeks. T/F
30. Unproductive and infected ones should be culled. Yes/No

APPENDIX-III

INTERVIEW SCHEDULE

Sub-Division :

Panchayat :

Block :

Respondent No. :

1. Name and address of the farmer :

2. Age :

3. Education : Illiterate/Read only/Can read and write/Primary school/Middle school/ High school/Collegiate

4. Farm size Areas in ha

a. Wet land :
b. Dry land :
c. Total :

5. Family size No

a. Men :
b. Women :
c. Children :

Total :

6. Farming experience:
For how many years you are have been engaged in farming?: years

7. Particulars of crops grown Area in ha

a. Coconut - banana - yams
b. Coconut - arecanut - banana
c. Coconut - pepper - tapioca
d. Coconut - banana - vegetables
f. Coconut - tapioca - yams
g. Arecanut - banana- vegetables
h. Arecanut - banana - nutmeg
i. Coconut - banana - ginger
j. Coconut - pepper - pineapple

8. Other enterprises

	Hybrid No.	Exotic No.	Crossbreed No.	Desired No.	Local No.
a. Dairying					
b. Poultry					
c. Dairying + Poultry					
d. Other (specify)					

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

Sl.No.	Extension activities	Frequency of participation		
		Whenever conducted	Occassion-ally	Never
1.	Campaigns			
2.	Film shows			
3.	Seminars			
4.	Group meetings			
5.	Exhibitions			
6.	Demonstrations			
7.	Any others (specify)			

10. Mass media participation (Please indicate how often do you attend to different medias)

Sl. No.	Sources	Frequency			
		Most often	Often	Sometimes	Rarely
1	Television				
2	Radio				
3	Movies				
4	News paper				
5	Farm magazine				
6	Any others (specify)				

11. Social participation (Please indicate whether you are a member or office bearer in the following organization)

Sl. No.	Organization	Nature of participation		Frequency of participation		
		As a member	As an office bearer	Regularly	Occasionally	Never
1	Panchayat					
2	Co-operative society					
3	Agrl. Advisory Committee					
4	Group farming committee					
5	Farmers organizations					
6	Arts and sports club					
7	Recreation club					
8	Any others (specify)					

12. Extension contact (Indicate how often you contact with various extension agencies for getting information)

Sl. No.	Category of Extension	Frequency of contact				
		Once a week	Once a fortnight	Once a month	Once a year	Never
1	Agricultural Officer					
2	Agricultural Assistant					
3	B.D.O.					
4	Other extension agencies (specify)					

13. Knowledge about scientific crop production

Answer the following items:

A. Coconut

1. Name a variety recommended to your locality

2. Propagation through seed nut is the most successful method in coconut. T/F

3. Name a green manure crop suitable for coconut gardens.

4. Basins should be closed during the month of November-December. Yes/No

5. What is the fertilizer recommendation for coconut?

6. What is the best time for the collection of seed nuts?

7. Storage of seed nuts in the shade for about a month prior to sowing in the nursery facilities speedy and maximum germination. T/F

8. What is the spacing recommended for coconut?

9. During summer, the seedling should be shaded properly. Yes/No

10. Name an important disease of coconut.

B. Banana

1. Name two culinary varieties of banana

2. What is the spacing recommended for Nendran variety?

3. Irrigation immediately after manuring is a must in banana. T/F

4. Name a green manure crop suitable for banana plantation

5. Propping is recommended to prevent the crop from the damage of wind. Yes/No

6. Name two vegetables used for intercropping in banana gardens.

7. Propagation in banana is by means of suckers. T/F

8. Which is the best season for planting Nendran?

9. Name two important pests of banana.

10. Which is the best season for harvesting Nendran?

C. Vegetables

1. Amaranthus is the most popular leafy vegetable in Kerala. Yes/No

2. Give the name of a pesticide largely used in vegetable cultivation.

3. Planting of vegetables in pits during summer helps in conserving moisture. Yes/No

4. Chikkurmanis is a leafy vegetables. Yes/No

5. Give the name of a fungicide used for drenching in vegetable nursery.

6. Fruitflies are the most common pest of bittergourd. T/F
7. Mulching is an important cultural practice in vegetables. Yes/No
8. Residual toxicity is an important criterion in the selection of pesticides for vegetables. T/F
9. Staking is an important operation in tomato. Yes/No
10. Harvesting should be done at least 10 days after the insecticide or fungicide application. T/F

D. Yam

1. Which is the best season for growing yams?
2. The part used for propagation is seed tubers. Yes/No
3. Normally cut pieces of size 250-300 g each are taken for planting. T/F
4. Mulching is essential to conserve moisture during planting stage. Yes/No
5. Trailing is generally done within 15 days after sprouting by coir ropes. T/F
6. Yams which started sprouting in storage is undesirable for planting. T/F
7. During rainy season earthing up should be done. Yes/No
8. Medium sized tubers weighing 100-150 g each are ideal for sowing.
9. What is the best harvesting time for lesser yam?
10. How the harvesting time is noticed in greater yam?

14. Knowledge about dairy/poultry management

1. Name a cross-beed cattle
2. Selection of cows should be based on genetic inheritance. Yes/No
3. It is better to feed the animals individually according to production and requirement. Yes/No
4. It is important to feed collustrum to infants. Yes/No

5. Udder should be disinfected using light disinfectants after milking. Yes/No

6. Name an important disease of cattle

7. Artificial insemination is the best method in the case of dairy animals. T/F

8. Name a variety of broiler chiken

9. Birds should be dewormed prior to RD vaccination. Yes/No

10. Name a disease affecting poultry.

15. Attitude towards farming

The following are some statements which reflect the attitude towards farming. What is your opinion in each case?

Sl. No.	Statement	Opinion		
		Agree	Undecided	Disagree
1	I feel farming is not a promising occupation			
2	Farming leads to overall development of one's family			
3	Absolute gain in terms of economic return from farming is very low			
4	Farming is a challenge to farmers and they should accept it			
5	Farming is an occupation of rich			
6	Farming is not the solution to remove the poverty of farmers			
7	Farming is a non-profit enterprise and I fell useless to stick to it			
8	Food problem of farmers can be solved by undertaking farming on a wide scale			
9	Farming is a profitable occupation			
10	Farming provides settled living for farmers			

16. Level of aspiration
Choose one of the alternative from each:

1. Suppose you have some money with you. Would you spend it on buying some land or for buying a TV

a) Land b) T.V.

2. You are urgently in need of some money and you have two courses of action. Which would you choose?

   a) Forego the money set apart for festival
   b) Forego the money set apart for purchasing a new plough

3. Suppose your parents are in possession of a car and a piece of land. If you are given the choice to choose any one of these, which would you prefer?

   a) Car b) Land

4. If you are eligible for a loan, which you will suggest?

   a) Purchasing a house in the city
   b) Purchasing a pumpset

5. If you have a saving of Rs.5000/- in a bank, would you opt to continue the saving deposit or would you purchase a valuable piece of furniture?

   a) Continue the saving
   b) Purchase the furniture

6. If you have some money at your disposal, would you prefer to

   a) renovate the house
   b) use for land development

7. In the next 5 years time, which do you feel is most likely to happen?

   a) Purchase a more cultivable land
   b) Built a new house and buy more luxuaries

8. If you get a lottery for Rs.10,000/- what will you do from the following?

   a) Start some business and leave farming
   b) Use to purchase luxuaries of life
   c) Use it to make improvements on the farm

17. Economic motivation
   (Below are given 3 sets of statements. From each set select two statements 'most like' or 'least like')

Sl.No.	Items	Most like	Least like
I.	a) All I want from my farm is to make just a reasonable living for the family		
	b) In addition to make reasonable amount of profit, the enjoyment in farming life is also important to me		

c) I would invest in farming to the maximum to gain large profit

II. a) I do not hesitate to borrow any amount of money in order to run the farm properly

b) Instead of growing new cash crops, which cost more money, I follow the routine farming practices

c) It is not only monetary profit, but the enjoyment of work done well, which gives me satisfaction for my hardwork on farming

III. a) I hate to borrow money, on principles, even when it is not necessary for running the farm

b) My main aim is maximising profits by growing cash crops in comparison to growing of crops which are simply consumed by my family

c) I avoid excessive borrowing of money for farm investment

18. Innovation proneness
(Below are given a set of statements. Select two statements 'most like' or 'least like')

Sl.No.	Statements	Most like	Least like
A.	a) Try to keep myself up-to-date with information on new farm practices, but does not mean that I try out all the new methods on farms (2)		
	b) I feel restless till I try out a new farm practices, I have heard about (3)		
	c) They talk of many new farm practices these days but who knows if they are better than the old ones (1)		
B.	a) From time to time I have heard of several new farm practices and I have tried out most of them in the last few years (3)		
	b) I usually wait to see what results my neighbours obtain before I try out these new farm practices (2)		
	c) Somehow I believe that the traditional ways of farming are the best (1)		
C.	a) I am cautious about trying a new practice (2)		
	b) After all our forefathers were wise in their farming practices and I do not see any reason for the change of these old methods (1)		
	c) Often new practices are not successful, however, if they are promising, I would surely like to adopt them (3)		

19. Cropping Intensity
How many crops do you raise in an year?
Give details

1) Wet land

a) Single/double/triple cropped
b) Specify (crop sequence)

2) Dry land

a) Single/double/more than two crops or crop combination
b) Specify (crop sequence)

20. Achievement motivation
(Check one of the alternatives for each item)

Sl.No.	Item	Categories				
1	Success brings relief or further determination and not just pleasant feeling	SA (5)	A (4)	UD (3)	D (2)	SDA (1)
2	How true it is to say that your efforts are directed towards?	Quite nature (1)	Not true (2)	Not sure (3)	Fairly true (4)	Quite true (5)
3	How often do you seek opportunity to excell?	Hardly ever (1)	Seldom (2)	About half the time (3)	Frequ-ently (4)	Nearly always (5)
4	Would you hesitate to undertake anything that might lead to your failing?	Hardly ever (1)	Seldom (2)	About half the time (3)	Frequ-ently (4)	Nearly always (5)
5	How many situations do you avoid in which you may be exposed to evaluation?	Most (1)	Many (2)	Some (3)	Few (4)	Very few (5)
6	In how many spheres do you think you will succeed in doing as well as you can?	Most (1)	Many (2)	Some (3)	Few (4)	Very few (5)

21. Self confidence
Please check whether the following statements are true or false in your case

Sl.No.	Statements	True	False
1	I have a horror of failing in everything I wan to accomplish		
2	I feel insecure within myself		
3	I can face a difficult situation without worry		
4	I am hesitant about farming decisions		
5	I frequently feel unworthy		

Sl.No.	Statements	True	False
6	I can adjust readily to new situations		
7	I am usually discouraged when the opinions of others differ from my own		
8	I have several times given up doing a thing because I thought too little of my ability		
9	I find it hard to keep my mind on a task or job		
10	I have enough faith in my ability		

22. Risk preference
(Please give your degree of agreement for the following statements)

Sl.No.	Statements	Responses				
		SA	A	UD	DA	SDA
1	A farmer should resort to multiple cropping to avoid greater risk involved in growing a single crop					
2	A farmer should rather take more of a chance in making a big profit than to be content with a similar but less risky profits					
3	A farmer who is willing to take greater risks than the average farmer, usually does better financially					
4	It is good for a farmer to take risks when he knows his chance of success is fairly high					
5	It is better for a farmer not to try new farming unless most others have used them with success					
6	Trying an entirely new practice in farming by a farmer involves risks but it worth it					

23. Information source utilization
How often do you use the following information sources?

Sl.No.	Sources	Whenever needed	At times needed	Never
1.	MASS MEDIA SOURCES			
	T.V.			
	Radio			
	Films			
	Newspapers			
	Farm publications			
	Agrl. Exhibitions			
2.	PERSONAL COSMOPOLITE SOURCES			
	Research scientists			
	Agricultural Officers			
	Agricultural Assistance			
	Others (specify)			
3.	PERSONAL LOCALITE SOURCES			
	Neighbours			
	Friends			
	Family members			
	Relatives			

Part II A. Nature and extent of participation in Agricultural operations

Operations	Nature of participation				Extent of participation		
	Not at all	Super-vision	Jointly carrying out	Solely	Greater extent	Some extent	No participation at all
	0	1	2	3	2	1	0
A. COCONUT							
1. Land preparation							
2. Planting operation							
3. Manure and fertilizer application							
4. Irrigation							
5. Intercultural operation							
6. Plant protection measures							
7. Harvesting							
8. Dehusking							
9. Storage of the produce							
10. Marketing							
B. BANANA							
1. Land preparation							
2. Selection and treatment of suckers							
3. Planting							
4. Organic manure application							
5. Fertilizer application							
6. Propping							
7. Irrigation							
8. Intercultural operations							
9. Plant protection measures							
10. Harvesting							

C. VEGETABLES

1. Cleaning the field
2. Seed bed preparation
3. Sowing/planting
4. Organic manure application
5. Fertilizer application
6. Weeding
7. Intercultural operations
8. Plant protection measures
9. Harvesting
10. Marketing

D. YAMS

1. Land preparation
2. Selection of seed/cut pieces
3. Sowing/planting
4. Manuring
5. Fertilizer application
6. Weeding
7. Intercultural operations
8. Plant protection measures
9. Harvesting
10. Storage of the seed material

E. DAIRY/POULTRY

1. Care and management of milch animals
2. Maintenance of cattle shed
3. Feeding of animals
4. Milking

5. Care of sick animals
6. Preparation of milk and milk products
7. Care and management of poultry birds
8. Feeding of birds
9. Hatching of eggs/ chicks
10. Marketing of milk & eggs

Part II B. Nature and extent of participation in decision making

Decision making areas	Nature of participation				Extent of participation		
	Solely	Jointly	Presence only	Not at all	Always	Some-times	Never
	3	2	1	0	2	1	0

A. COCONUT

1. Selection of crop or variety
2. Deciding the type of weeding to be adopted
3. Deciding the manures/fertilizers to be applied
4. Deciding the type of irrigation
5. Decision regarding intercultural operations
6. Decision with respect to the type of implements to be used
7. Deciding the plant protection measures

8. Deciding the time of harvest
9. Decision regarding the storage of the produce
10. Decision with respect to marketing of the produce

B. BANANA

1. Selection of variety
2. Deciding the type of weeding to be adopted
3. Deciding the manure/fertilizer application
4. Deciding the irrigation
5. Decision regarding intercultural operations
6. Decision with respect to the type of propping to be adopted
7. Decision regarding the plant protection measures
8. Decision with respect to the time of harvest
9. Deciding the storage of the planting material
10. Decision regarding marketing

C. VEGETABLES

1. Deciding the crop/variety to be grown
2. Decision regarding the type of weeding to be adopted
3. Deciding the manure/ fertilizer application
4. Deciding the irrigation management
5. Decision with respect to intercultural operations
6. Deciding the type of implements to be used
7. Deciding the plant protection measures
8. Deciding the time of harvest
9. Decision with respect to storage of the produce
10. Deciding the marketing

D. YAMS

1. Selecting the seed/cut pieces
2. Deciding the manuring application
3. Deciding the standards to be used for trailing

4. Deciding the fertilizer application
5. Decision regarding irrigation
6. Decision with respect to intercultural operations
7. Deciding the plant protection measures
8. Deciding the time of harvest
9. Decision with respect to storage of the produce
10. Deciding the marketing

E. DAIRY/POULTRY

1. Decision regarding the variety/ breed to be grown
2. Decision regarding the care and management of cattle shed
3. Deciding the type of feed to be used
4. Deciding the time and frequency of milking
5. Decision regarding the care of sick animals

6. Decision regarding the type of milk products to be used
7. Deciding the care and management of poultry birds
8. Deciding the stage at which vaccination has to be adopted
9. Decision regarding the hatching of eggs
10. Decision with respect to marketing of milk and eggs

ABSTRACT

The study aimed at analysing the nature and extent of participation of farm family women in agricultural operations and decision making in the identified marginal homestead farming systems.

The study was undertaken in three panchayats of Thrissur district namely Melur, Pananchery and Thekkumkara. From each panchayat, 50 homesteads were selected randomly. The female head of the family was selected as the respondent from each homestead.

The dependent variables of the study were the nature and extent of participation of farm family women in agricultural operations and in decision making. These variables were quantified using measurement devices developed for the study.

Twenty independent variables were selected for the study viz., age, education, farm size, family size, farming experience, extension participation, mass media participation, social participation, extension contact, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, level of aspiration, economic motivation, innovation proneness, cropping intensity, achievement motivation, self-confidence, risk preference and information source utilization. All these independent variables were quantified with the help of available measurement procedures. The data were collected using pre-tested structured interview schedule prepared for the purpose. The statistical tools used were correlation analysis, categorisation, multiple linear regression analysis, step down regression analysis and multivariate path coefficient analysis.

The study revealed that coconut based homestead farming system is the predominent one in Thrissur district. Of this, coconut-banana-vegetable crop combination occupied the first position followed by coconut-banana-yams. Also most families have a variety of other enterprises, of which dairying occupied the first place followed by poultry. The nature and extent of participation of farm family women in agricultural operations of coconut was found to be 'supervision only' and that too 'to some extent' and in decision making they participated 'jointly' with their husbands. In the case of banana, they 'only supervised' many of the agricultural operations and it was also 'to some extent' and in the case of decision making majority 'sometimes' participated 'jointly' with their husbands. As far as vegetables are concerned, majority 'solely' participated to a 'greater extent' in the agricultural operations and 'sometimes' participated 'jointly' with their husbands in decision making. Regarding yams, majority participated in the form of 'supervision only' and that too to 'some extent', whereas they 'sometimes' participated 'jointly' with their husbands in decision making. Considering other enterprises like dairy/poultry, majority 'solely' participated to a 'greater extent' in the activities and in decision making they 'always' participated 'solely' in these areas. The results of correlation analysis, multiple linear regression analysis, step down regression analysis and path analysis revealed that only seven independent variables namely extension participation, mass media participation, knowledge about scientific crop production, knowledge about dairy/poultry management, attitude towards farming, achievement motivation and self confidence influenced the nature and extent of participation in agricultural operations. Whereas the results of correlation analysis, multiple lenear regression analysis, step down regression analysis and path analysis revealed that

only 8 variables influenced the nature and extent of participation of farm family women in decision making. They were mass media participation, extension contact, knowledge about dairy/poultry management, attitude towards farming, economic motivation, cropping intensity, achievement motivation and self confidence.