GENDER ANALYSIS IN DIFFERENT FARMING SYSTEMS

Thesis submitted in part fulfilment of the requirements for the Degree of Doctor of Philosophy in Agricultural Extension to the Tamil Nadu Agricultural University, Coimbatore.

BY

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CERTIFICATE

This is to certify that the thesis entitled, **GENDER ANALYSIS IN DIFFERENT FARMING SYSTEMS** submitted in part fulfilment of the requirements for the award of the degree of **DOCTOR OF PHILOSOPHY** in Agricultural Extension to the Tamil Nadu Agricultural University, Coimbatore, is a record of **bonafide** research work carried out by **Tmt.J.JANE SUJATHA** under my supervision and guidance and that no part of this thesis has been submitted for the award of any other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

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Dedicated to

My Beloved Parents

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"It is a good thing to give thanks unto the Lord, And to sing praises unto thy name".

- Psalm 92:1.

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JANE SUJATHA

ABSTRACT

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The research study entitled, "Gender analysis in different farming systems" was undertaken in Anaimalai block of Coimbatore district and Modakurichy block of Periyar district of Tamil Nadu. The study was conducted with the specific objectives of studying the gender variation in decision making pattern, assessing the knowledge level, role performance and extent of adoption and identifying the skills and activities of male and female farmers; finding out the time utilisation pattern and perceived training needs and farming constraints; and identifying the different farming systems with respect to income generation.

As regards decision making pattern in agriculture, selection of seeds, nursery preparation, mainfield preparation and fertilizer application were done by 'farmers alone', 'equally by both' and 'consulting with others'. In the case of animal husbandry, poultry and mushroom cultivation women's contribution is more in decision making

than men. In the case of fodder crops and sericulture men's contribution is more in decision making than women.

Majority of the farmers and farm women had medium level of knowledge followed by high knowledge, and 75 per cent of farmers and 60 per cent of farm women had medium level of adoption in different farming systems.

Regarding agriculture, most of the agricultural activities viz., nursery preparation, mainfield preparation, transplanting and after cultivation practices were carried out by most of the farmers and post harvest activities were done by farm women. With respect to animal husbandry, grazing of animals, feeding of animals, washing of animals and cleaning the shed were attended to by most of the farm women and other activities were carried out by most of the farmers. Regarding poultry, feeding the birds was attended to by most of th farm women and in sericulture selling the cocoons was done by most of the farmers. In the case of mushroom cultivation most of the activities were carried out by farm women except selling mushroom.

Regarding time utilisation pattern, most of the respondents worked for more than 8 hours a day during peak season.

With respect to training needs, pest and disease management, feed ratio for animals and feed ratio for broilers/layers were the important areas, in which farmers needed training.

Most of the respondents expressed pest and disease problem, scarcity of water and lack of labour were the problems faced by them.

For the combination of (Agriculture + Sericulture + Agro-forestry), (Agriculture + Agro-forestry + Sheep/goat rearing) the income generation/year was Rs.90,000 - 1,00,000 and (Agriculture + Mushroom + Animal husbandry and fish culture) the income generation/year was Rs.1,00,000.

The variables social participation, education, annual income and extension agency contact showed positive and significant association with extent of adoption in the case of farmers. The variables education, family type, material possession, social participation, knowledge level, credit orientation and annual income showed positive and significant association with training needs in the case of farmers. The variables farming experience, annual income, mass media participation and knowledge level showed positive and significant association with the role performance in agriculture and allied activities by farmers. Farming

experience and knowledge level showed positive and significant association with the role performance in agriculture and allied activities by farm women.

The variables farming experience, social participation, farm power and knowledge level showed positive and significant association with the extent of adoption in the case of farm women. The variables family size, land holding, knowledge level showed positive and significant association with training needs in the case of farm women. The variables farming experience and knowledge level showed positive and significant association with role performance in agriculture and allied activities of agriculture by farm women.

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INTRODUCTION

CHAPTER I

INTRODUCTION

An essential feature of Indian agriculture is that even the fast changing industrialisation has not dethroned it from its eminent position. Even now, decades after the first changes brought about by industrialisation, agriculture remains as the backbone of the country, representing by over 843 million people in rural areas. According to 1994 census, 48.14 per cent of the 843 million population were females, constituting almost half of the Indian population. Women formed part of a highly valuable human resource which, with appropriate training and education, can bring about phenomenal changes in the desirable direction.

Women carry out almost all the farming activities by way of self-doing, supervising and assisting roles. Enhancing their work efficiency in different farming systems will definitely help in boosting up farm production.

Indian agriculture has moved fast in time and space heralding an era of self-reliance in food production. However, the progress in different farming systems has been quite uneven. Little achievements were made in different farming systems in the last two decades. Only recently

these systems are engaging the attention of policy makers, planners, administrators, scientists, change agents and even peasants too. The importance of different farming systems in Indian agriculture can either be ignored or disregarded. They account for nearly 30 per cent of the total cultivated area contributing more than their share to total agricultural income (Gupta, 1993).

Different farming systems are more remunerative than agriculture alone. This clearly speaks off the importance of different farming systems in the Indian context. In order to augment production and productivity, the work efficiency of farm men and women should be increased.

Farm women's role is also very important and distinct in different farming systems. The marginal and small farmers and farm women, owing to their limited farm size and economic backwardness, play the role of self-doing in all the activities. On the contrary, the big farmers and farm women who are economically sound enough to offer employment for others, assume the task of supervising and assisting the farm activities carried out by others in their farm.

Women who perform two-thirds of the world's work earn only one-tenth of its income and own less than one-hundredth of its property. Women get up early in the morning and

start cleaning the little courtyard, ramming it with cowdung. Her back-breaking chores begin in the wee hours with milking the cattle, feeding her children, going to farm for sowing, weeding, harvesting, winnowing etc. So, daily grinding of the unsung housewife-cum-mother-cum-worker goes on and on, unrecognised by labour statistics. An attempt to unearth the facts regarding their degree of participation in agriculture and other allied agro-enterprises such as dairy, poultry, sericulture, and mushroom would be worthwhile and timely.

As a pre-requisite to accomplish any activity with utmost accuracy, decision making plays an important role. Right decision at the right time occupies the prominent place in any activity.

Efficient participation in any activity is influenced by the possession of sufficient knowledge by farmers and farm women in their particular activity. Knowledge is an indispensable and non-monetary input to perform any operation.

The process of evolution of modern, proven and economically advantageous technologies in different farming systems are taking place from time to time and it is the duty of extension personnel to diffuse these technologies in

an understandable form through various media among the clientele. At secondary and tertiary stages, such information would diffuse among farmers and farm women by the web-of-word-of-mouth, through family members, friends, relatives and neighbours. The understanding, comprehension and adoption of the transferred technologies amongst clientele especially farmers and farm women will depend upon the utilisation of sources of information which are preferred by them.

Having recognised the importance of farmers and farm women in performing certain decisive and vital farm operations, they should develop good knowledge of different farming systems technologies. This will be of immense use to them to carry out the operations more effectively. Training not only makes them to become aware of the existence of a particular farm innovation but also makes them as the carriers of information to spread the same in their neighbourhood by the word of mouth. This, in turn, will make the farmers and farm women as viable and effective communicators and as a source of reference for others in the social network. Moreover, farmers and farm women were the decision makers in their family regarding farming system operations. Entnusing them to acquire knowledge and skill on farm technologies through training will further enable them to take proper decisions on farm problems.

Farm women shoulder two-fold burden-on the domestic front and on the farm. It is obligatory on the part of women to attend to the regular household chores as well as seasonal women-oriented farm operations. Hence, they face the pinch of pressure for time due to dual work on the farm and at home. They also experience the problems of pest and disease attack, lack of availability of inputs, inadequacy of credit, high labour cost, etc., in crop cultivation. Agriculture is subjected to the vagaries of nature and the problems emanating due to natural calamities are unavoidable. Agriculture generally involves five stages viz., production, processing, consumption, storage and marketing. In all these stages, farm women are actively involved. They participate in most of the agricultural operations like breaking clod, sowing of seeds, transplanting, weeding, harvesting, compost making, application of manures and fertilisers, cleaning of farm produce and storing of seeds and food grains. To consume food, women have all important roles as they cook and serve the food to the family members. They are involved in processing and storage of food grains. Their participation in marketing is significant where trade is traditional but not highly commercialized and industrialised.

A clear understanding of the participation of farm women in crop production and other land based activities like dairy, poultry, sericulture and mushroom cultivation; their pattern of decision making, knowledge and skill level, time utilisation pattern, training needs, and their problems would enable the extension organization and other policy makers to develop strategies for enhancing their participatory efficiency in different farming systems. Keeping this broad frame work in mind, the study was planned and conducted with the following specific objectives.

SPECIFIC OBJECTIVES

1. To assess the gender variation in decision making pattern in farm families
2. To identify the knowledge level and extent of adoption in different farming systems among farmers/farm women
3. To assess the role performance of male and female farmers in different farming systems
4. To study the time utilisation pattern of of farmers/ farm women in farm activities
5. To analyse the training needs and farm related problems of farmers and farm women

6. To identify the different income generating farming systems.

SCOPE OF THE STUDY

The study on gender analysis helps to plan solution to test, identify fruitful areas needing component research, to do ex ante analysis of proposed solutions, identify whose interest is at stake and assuring that the "who" male or female is adequately involved in on-farm experimentation and identify desirable characteristics of new technologies and the criteria by which they will be evaluated. The goal of agricultural research is "the development of technologies that farmers will use to improve their welfare and that of the country". So, the challenge for agricultural research, a challenge which gender analysis helps to meet is to begin to better specify research toward specific groups in order to increase equity and efficiency.

More specifically, the study of gender issue contributes substantially to plan and design in two ways. The first is in the better design and testing of new technologies for agricultural production by taking into account the actual pattern of activities and resource use. This results in greater efficiency in the operation of technologies and in the use of scarce resources for

research. The extent gender role is appropriate to its appropriate targeting to women where equity objectives are important. The findings of the study would reveal the importance of gender issue and pattern of gender responsibility in agriculture and allied activities. Another important feature of this study on gender issue will guide the policy makers, researchers for the development of technologies which must improve farm family welfare and ultimately the welfare of the country. The study on gender issue is again needed for the development of women focussed strategies that will lead to development of feminine gender. In this context, it is appropriate to quote Abraham Lincon's dictum - "If you could know where you are now and where you ought to go, you could better judge what to do and how to do it".

Scope refers to the extent that all phases of a problem are studied. Despite the overwhelming importance of the agricultural sector for female employment, research on women in agriculture is a relatively new area of concern. There are significant differences between men and women in extent and nature of involvement in agricultural tasks; the

extent and nature of involvement in non-field work such as cattle rearing, poultry, sericulture etc., and the extent of control over pattern of distribution of household earnings and expenditure. Women participation in agriculture also varies tremendously not only between but even within the regions also. As a matter of fact, their participation varies from one household to another. In order that we have a comprehensive and reliable data base on different aspects of women's role in agriculture, it is of utmost importance that indepth studies are made in all dimensions of women's role in agriculture.

A thorough insight on the profile of farmers and farm women with regard to their socio-personal characteristics will not only throw light on the background of farm women but also pave way for the formulation and implementation of various developmental programmes and schemes especially for bringing about "socio-economic and cultural metamorphosis" in the lives of rural men and womenfolk.

Though farm women are over loaded with the activities both in home and farm front, their contribution to these

sectors is neglected and unaccounted. An analysis of their level of decision making and participation in farming and allied activities will bring to surface their actual contribution to farm sector apart from their unpaid usual domestic chores which will facilitate in drawing out exquisite solutions to reduce their drudgery.

Exploring the areas of potential training needs of farmers and farm women in modern and improved technologies in different farming systems will be of immense help of synthesizing and organising the need-based training programmes to tone up the cognitive, affective and psychomotor domains of farmers and farm women in a desired direction.

The findings on combinations of enterprises would give a clear picture to the scientist on the area of technologies that are to be more concentrated on, so as to make the prevalent combinations of enterprises more viable and more lucrative, which would in turn improve the standard of living.

The findings on contribution of women in different enterprises would help to identify the area of their intense involvement. Relevant research may help to ease their work and hence their participation in other enterprises (less involved enterprises) can be increased.

An assessment on the existing level of knowledge of farmers and farm women on recommended different farming systems technologies will serve as an influencing factor to impart skill-oriented training to the client group in the subject matter areas.

The findings on constraints of scientists would help the policy makers to draw schemes to solve their problems and hence facilitate the researchers to carry out their research efficiently.

LIMITATIONS OF THE STUDY

This study is no exception to the limitations of time availability, resource adequacy, physical accessibility and conveyance facility as any scientific investigation undertaken by a student researcher in social science would face. The study also suffered to some extent due to the lack of full co-operation by the respondents and the intervention by their spouses during the interview. Inspite of all these bottlenecks, sincere efforts were made by the researcher to make the study as objective, definite and systematic as possible by deliberately following the norms of scientific research.

OPERATIONAL DEFINITIONS OF KEY CONCEPTS AND TERMS USED

Farm family: A farming which operates a farm owned or leased in and produce crops for market as well as to meet out most of the family needs was referred to as farm family. Besides, the family which lived on the farm and worked with tne help of hired workers was also considered as the farm family.

Farmer: Refers to male farmer in a family.

Farm woman: Farm woman was operationalised as an adult female actively involved in either agriculture or allied farm activities in each selected farm family.

Training need: Training need was operationalised as the expressed level of training required as expressed by the respondents in each of the specified training areas.

Training: Training is an activity designed to help participants to learn the manual skills necessary to perform an economic task.

Knowledge: Knowledge is operationalised as the awareness of certain facts and detailed information/message/content regarding subject matter areas under farm activities.

Crop diversification: Crop diversification consists of technologically feasible and economically viable changes in

the existing cropping system towards more balanced cropping system.

Farming system: Entire complex of development, management and allocation of resources as well as decisions and activities which, within an operational farm unit or combination of units, result in agricultural production, processing and marketing of the products.

Gender analysis: It is a socio-economic analysis of technology which starts with a series of questions related to "who", what are the goods and services produced and who produces what? What resources are available and who has access to control of them? Who benefits?

Responsibility: The term responsibility means the state or quality of being responsible for the success or failure of task performed. In the present study, the respondents were asked for the responsibility assigned to men only, women only, both in agriculture and allied activities.

Role performance: It is the degree to which an individual respondent performs the various roles in agriculture and allied activities.

THEORETICAL ORIENTATION

CHAPTER II

THEORETICAL ORIENTATION

A proper understanding of the problem demands the analysis of the existing body of knowledge in that area, hence, in this chapter an attempt is made to present the relevant aspects of the problem under study which provides strong theoretical base for the empirical investigation. The following aspects are explained for their contextual meaning and application to the present study.

2.1. Gender variation in decision making pattern in farm families

2.2. Knowledge level and extent of adoption among farmers/ farm women in different farming systems

2.3. Role performance of male and female farmers in different farming systems

2.4. Time utilisation pattern of farmers/farm women in farm activities

2.5. Training needs perceived and farming constraints of farmers/farm women

2.6. Different farming systems with respect to income generation

2.1. GENDER VARIATION IN DECISION MAKING PATTERN IN FARM FAMILIES

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

Savarimuthu (1981) reported that women made lesser independent decisions on matters relating to farming when compared to collective decisions.

Singh and Chander (1981) stated that 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 made decisions on procuring loans and credits. They also reported that in general women's participation at procurement, utilisation and repayment stages was at a very high level.

Rani and Bhava (1982) revealed that majority of the farm women were participating passively in different areas of decision-making with regard to production oriented expenditures. However, a fair majority of respondents played a dominant role in taking decisions regarding the amount to be spent on labour charges.

Renuka (1982) reported that farm women played an important role in taking decisions relating to farm such as the procurement of farm credit, the purchase and sale of cattle and crops to be sown. She concluded that farm home makers emerged as independent decision makers after the onset of technological breakthrough. Decisions made by the farmers alone had declined over the years. It was established that with the rapid technological change, the role of farm wives in the process of farm decision-making had considerably increased.

Achanta (1983) reported that in addition to participation in farm activities and physical work, women helped in decision-making with regard to farm practices operations. Women as wives and mothers had a considerable part in decision making in the farm.

Puri (1983) found that all the farming, animal related tasks were predominantly carried out by the wives, and they took decisions with regard to bringing fodder from the field, chaff cutting, preparing feed for cattle, bathing and cleaning the cattle, cleaning the cattleshed, making cowdung cakes, compost making, milking, making curd, butter and ghee.

Singh and Chander (1983) reported that while working together in the fields men and women usually discussed matters with each other. The final decisions was taken by men in consultation with women only.

Rexlin (1984) concluded that farm women consulted peer group, elderly people, sons and daughters while deciding the crop husbandry and dairy management practices.

Singh **et al.** (1985) reported that men associated themselves with agriculture mainly at the time of ploughing and marketing. They also played a leading role in decision making for farming and other household activities. More than half (51 per cent) of the total decisions with respect to the agricultural operations were taken solely by men.

Singh (1988) observed that women played a positive role in decision-making. More than half (57 per cent) of the total decisions in respect to agricultural operations were taken solely by the women and only 20 per cent of the decisions were taken by the men. In crop production, women played a main role in most of the operations like weeding, hoeing, harvesting and transplanting. They were also involved in threshing, winnowing, grass cutting, feeding and milking of animals.

Iccu (1990) explained that the Bogor Agricultural University study in Indonesia revealed no rigid demarcation between the sexes in decision-making, though there was greater equity when men were employed outside agriculture. Women's decision-making predominates in expenditure on foods.

Leonard (1992) stated in Andhra Pradesh a higher proportion of women participated in decisions regarding family expenditure than among Tamil women.

Castillo (1993) explained the decision-making pattern is more egalitarian than patriarchal in Philippines villages in matters concerning household and family as well as farming.

Licuanan and Ganzalep (1994) found among lower class rural families that women exercised the greatest influence in matters concerning household activities, care of children, discipline of daughters and allocation of monetary resources.

Gangaded (1995) explained that the most important areas in which women were found to influence the decisions were purchase and sale of land, borrowings and purchase and sale of land.

Jemi et al. (1995) reported that in Uttar Pradesh a higher proportion of women participated in decisions regarding family matters, and animal husbandry aspects.

2.2. KNOWLEDGE LEVEL AND EXTENT OF ADOPTION AMONG FARMERS/ FARM WOMEN IN DIFFERENT FARMING SYSTEMS

Sandhu and Sharma (1976) reported that existing level of knowledge of farm women about poultry, animal husbandry practices were found to be medium (50 per cent) while it was low (37 per cent) and high (13 per cent).

Seethalakshmi (1978) reported that the farm women with previous training experience possessed better knowledge than the untrained farm women in mushroom cultivation.

Anantharaman (1979) opined that 50 per cent of the farmers were in the 'below average category' while the rest were in the 'above average category' of knowledge on poultry farming.

Gopal (1979) opined that the farmers with previous training experience possessed better knowledge than the untrained farmers.

Sandhu and Sharma (1979) stated that the existing level of knowledge of farm women about animal husbandry

practices were found to be medium (50 per cent) and it was low (37 per cent) and high in only 13 per cent.)

Selvi (1979) reported that the farmers gained knowledge about the latest scientific techniques after their training at the Farmers Training Centre.

Stewart (1979) explained that there were statistically significant differences in their knowledge level in favour of members of the vocational agriculture young farmers classes as compared to young farmers who did not participate in vocational agriculture.

Subramanyan and Viswanathan (1979) reported that all the farmers under irrigated as well as rainfed conditions were found to possess knowledge, in fertilizer application.

Manivannan (1980) reported that 63.33 per cent of fodder crop growers had medium level of knowledge while 19.97 per cent possessed high level and 17.50 per cent low level.

Arumugam (1983) reported that there was significant difference in the knowledge level of small and big farmers. Nearly 50 per cent in each category of small and big farmers possessed medium level of knowledge; about 70 per cent of small farmers and 31.67 per cent of big farmers had high level of knowledge.

Senthil (1983) had concluded that 55.46 per cent of poultry farmers possessed medium level of knowledge, 25.45 per cent of the respondents had high level and the rest 19.09 per cent had low level of knowledge.

Alexander (1985) opined that majority of the fodder crop growers (63.34 per cent) were found to have medium level of knowledge while 22.72 per cent and 13.64 per cent of the small growers had high and low level of knowledge respectively.

Devi (1986) in her study revealed that the knowledge level of farm women was medium (76 per cent) followed by high knowledge level and low knowledge with 14 per cent and 10 per cent respectively.

Gamble (1986) explained that 60 per cent of the sericulture farmers possessed medium level of knowledge, 20.5 per cent of the respondents had high level and the rest 20 per cent had low level of knowledge.

Kherde **et al.** (1986) found that 60 per cent of the rural respondents fell under 'medium knowledge group' while 17.12 per cent came under 'high knowledge group' and 22.68 per cent under 'low knowledge group'.

Satyanarayana (1986) revealed that 60 per cent of the untrained mulberry crop growers had medium level of knowledge. Low level of knowledge was reported in the case of 21.67 per cent and high level of knowledge in 18.33 per cent.

Bhuyan and Tripathy (1988) reported that knowledge on diversified farming was widespread among the farm women.

Savari (1988) opined that majority of the farm women possessed medium level of knowledge on animal husbandry fodder crops, poultry and sericulture.

Thakur (1988) reported that women were not aware of the modern technology, nor the implements that can reduce their drudgery in different farming systems.

Azariah (1994) explained that mixed farming wherein dairying would play the role for recycling the organic residues, should be encouraged. He also stated that the high yielding fodder for the cows and thereby farm yard manure to the soil would be enhanced considerably.

Ganguly (1994) opined that the occupational pattern closely followed by pattern of distribution of land, whereby 40 to 46 per cent each of households were either landless or small farmers having less than 2.5 acres. Average holding worked out to be 1.0 ac of which 30 per cent was irrigated.

He also observed that 19 per cent of the milch animals were found to be cross bred, kept by an average of 28 per cent of the producer householders. Rearing of cross bred was equally frequent among the small land operation. They accounted for 63 per cent of the total milch animals and 67 per cent of the cross bred milch animals.

Gupta and Tewari (1994) stated that larger farms were relatively less diversified. Farms with higher irrigation intensity and located nearer to market were relatively more diversified.

Singh and Sharma (1995) revealed that fodder crops occupied about 65 per cent of the total cultivable area due to maximum number of milch animals. He also found that the crop intensity in the optimal farming system (crop + dairy farming system) was 188 per cent as against 159 per cent in the existing system and the cropping intensity was 190 per cent in the optimal farming system (crop + dairy + goat farming system) as against 179 per cent in the existing system.

2.3. ROLE PERFORMANCE OF MALE AND FEMALE FARMERS IN DIFFERENT FARMING SYSTEMS

According to Epstein (1982) dairy farming is the domain of women in South Indian villages and the dairy

products provide women with a small but independent income. She further stated that in Dalena, women provide the major part of the labour required for their dryland farming, while their men focus on irrigated cultivation.

Patnaik and Saibala (1982) stated that the female participation in agriculture includes the work of transplanting, weeding, threshing and reaping. However, they participated in other activities relating to farm having economic significance like looking after the farm, cattle, poultry, goatery, sheep rearing, collecting fodders and watering of horticultural plants, tending plants on kitchen gardening, preparing manures for the farm and carrying manures. They help the male members in construction of field channels for transportation and storage of food grains and other produce.

Satnamkaur (1982) reported that women of landlord class did not devote any amount of their time in agriculture and allied activities as they spent most of the time in domestic work. In Himalayan region, the major role in agriculture production was played by women in terraced cultivation. The men's activities were to undertake ploughing and the women engaged themselves in all other agricultural activities. The jobs traditionally done by

women were transplanting, sowing, weeding, harvesting, winnowing and threshing. He also reported that in Haryana, a women did every kind of work except ploughing. She helped men in preparing the field for sowing, making embankments in the fields, weeding, hoeing and winnowing.

Madeena Sherwani (1983) reported that in rural areas female workers were mostly helpers to men in agriculture activities. They did works like harvesting, weeding, planting, threshing and manuring. They were engaged in the cultivation of their own small and uneconomic holdings in the absence of their husbands, who migrated in search of jobs.

Venkatachalam (1983) opined that rural women's work included preparation of concentrate food for animals, feeding and giving water to animals, cleaning the cattleshed, washing, cleaning and bathing of animals, milking, taking the animals for road side grazing, management and feeding of calves and marketing of milk. Besides this, she also attends planting and harvesting of crop, preparing and cooking of food, looking after the children and husband and general house work.

Uma (1989) reported that women performed various tasks like fish trade, collection and selling of grass, cow

dung cakes, fire wood, selling of dairy products, ghee, milk etc.

Singh (1991) reported that women provide the major part of the labour required for their dryland farming, while their men focuses on irrigated cultivation.

Lovely (1993) stated that largest percentage of farm women participated in sowing (90 per cent) followed by storage (88.3 per cent), weeding (80 per cent) and harvesting (76.6 per cent) practices while the lowest percentage of rural women were involved in watching birds (41.6 per cent).

Singh **et al.** (1993) explained that the maximum number of women participating in the operations of storage, harvesting, threshing, watching birds, sowing and fertiliser application belong to the age groups of above 10 years, while the majority of the women below 30 years participated in irrigation, plant protection measures, weeding and land preparation.

Sirohi (1993) reported that caste played a dominant role in influencing the degree of participation of farm women in farming operations as observed from the highly significant results of the chi-square test.

Alexander (1994) revealed that women were excluded from operations like ploughing, terracing, pitting and refilling, levelling, forming canals and bund forming. For transplanting, the responsibility of female was as high as 76.0 per cent and for harvesting 98.0 per cent were males.

Bilgoami (1994) reported that in cultivation, except ploughing, levelling and irrigating the field, all the other works such as sowing, weeding, transplanting, harvesting, stocking of straw, husking, drying and storing were female dominated tasks.

Bodade **et al.** (1994) revealed that women were involved in all operations including the task of broadcasting the seeds. They also observed that women were actively engaged in soil conservation.

Dak **et al.** (1994) opined that majority of women were playing a monopolising or dominating role in about half of the total of 17 agricultural production tasks. Those tasks were tending farm cattle, collecting fodder for the cattle, selling livestock products, weeding and storage of produce, treatment of cattle, harvesting of crops and making farm yard manure. The tasks such as preparation of field, irrigating crops and construction/repair of field channels were arduous ones and were mainly male dominated tasks.

Maundy (1994) observed that women performed the tasks like breaking the clods of the earth, prepared the land, carried manure, sowed seeds, pulled out weeds, attended to hoeing, harvested crops and stayed the hay.

Mohamed (1994) reported that Nigerian women play an important role in production and processing activities. Alone or with the help of man, they work in the farms. Livestock were invariably tended by the women. They also transport produce to market.

Nagpoli (1995) reported that women worked with the male members of the household in various sowing operations. They carried inputs such as seeds, manures and fertilisers to the fields, made farm yard manure and picked fruits and vegetables.

Revu et al. (1995) opined that in operations like preparatory cultivation, purchase of seed quantity, place of purchase of insecticide and frequency of spray, women showed a passive pattern of responsibility. Thus male dominated in decisions in these aspects.

Sethini (1995) revealed that on the whole more than 95 per cent of the work related to animal care was performed by feminine gender.

Sethu (1995) conducted a study in Andhra Pradesh to assess the gender responsibility in cattle care. The analysis showed that 97 per cent of women participated in fetching fodder and cutting grass whereas only 34.10 per cent of the men performed this activity.

Sheela **et al.** (1995) corroborated that farm women involvement was found to be at a lesser degree in four activities viz., purchase of animals, taking care of calves, taking animals for grazing and care of sick animals which were predominantly men oriented activities by nature.

Thippaiah (1995) observed that women workers in urban unorganised sector were engaged in papad making, masala making, embroidery work, zari work, match splits, waste paper collection, retail trading and so on.

2.4. Time utilisation pattern of the respondents in farm activities

Bhatnagar (1982) opined that participation of women in agriculture was seasonal. During the peak season of sowing and harvesting, the rural women spent 8-9 hours in the field, which was almost a full day. During ordinary days, the rural women spent on an average of 2-3 hours on the farm daily which included intercultural operations. About 8 hours on the farms (daily) which included

intercultural operations. About 8 hours were spent in irrigations and this was done 4-5 times in one season.

Lakshmi Devi (1986) Pointed out that on an average a rural women spends 40.41 per cent of her time on household activities and 15.83 per cent on agricultural activities.

Paulmer (1987) reported that women worked upto 8 hours a day in cultivating crops in addition to 3 or 6 hours of labour.

Mitra (1988) reported that in many of the farm families, about 70 - 80 per cent of the time of the women is utilised in household work activities.

Montios Von Hardes (1989) indicated an adult female household member in Bangladesh spends about 6 hours in the household sphere and another 6 hours in the agriculture sphere.

Whyte and Clark (1989) conducted a study in Bangladesh and expressed that an adult women devote 1.61 hours per day in income earning activities, while adult men devote 7.04 hours in them. But women work for 6.68 hours daily in home production tasks compared to 1.21 hours by men. Altogether both work for a little more than shows women work longer hours than their men in Indonesia and Malaysia.

Shashi Majna et al. (1990) noticed that a farm women on an average worked for 13.62 and 12.10 hours daily during peak and slack agricultural season respectively.

Suryawanshi and Kapore (1990) estimated that during the peak period a women works for about 8 - 9 hours in agriculture and 5 hours during ordinary days.

Jain and Chand (1991) indicated that the women of poor households put in long hours of work often much longer than that of men when domestic work is also included.

Chakravarthy (1992) observed that an active farm women spent 5 - 9 hours per day in the farm during peak agricultural season, 3 - 4 hours in cattle rearing and 3 - 4 hours in their household chores.

Kaur (1992) shows that rural women devote on an average of 8.70 hours daily in home, 1.70 hours in dairy/ livestock/animal husbandry and 1.73 hours in the farm sector.

Beevi (1993) opined that women's work in agriculture was seasonal. During the peak season of sowing and harvesting the rural women spent 8 - 9 hours in the field, which was almost a full day. During ordinary days, the rural women spent on an average of 2 - 3 hours on the farm,

daily. This included intercultivation operations, weeding, hoeing and application of manure and fertilisers. About 8 hours were spent in irrigation and this was done 4 - 5 times in a season.

Venkatachalam (1993) opined that rural women in India worked for 14 - 16 hours per day which included farming, livestock keeping, sericulture and house work.

Aviskar (1994) reported that women were found to work for 12 - 16 hours per day in agriculture, animal husbandry, fetching of fuel and fodder and in household activities, wherein men were found to work for 10 - 12 hours per day in agriculture, animal husbandry and in sericulture.

Kumari Jyotsna (1994) observed that women spent 10 - 12 hours in household activities and also for agricultural production.

Mukta Nagpal (1994) reported that rural farmers spent 8 hours per day in farming activities, animal husbandry and in sericulture, wherein the farm women spent several hours a day on post harvest operations like peeling of fruits, removal of stones, dust and dirt, drying of vegetables, fruits and seed crops that easily attracted, birds and insects which need a careful attention.

Prasad **et al.** (1994) reported that 62.0 per cent of farm women devoted more than 8 hours per day for farm work during the peak period and 16.0 per cent of them devoted 4 - 6 hours per day during the slack season. In Bhijpur majority of women spent 6 - 8 hours per day and 2 - 4 hours per day during peak and slack seasons respectively.

Ram Ajit (1994) reported that women were found to work for 12 - 16 hours per day in agriculture, animal husbandry, fetching of fuel and fodder and in household activities. In the case of men they were found to work for 10 - 12 hours per day in agriculture, animal husbandry and in sericulture.

Vairavi **et al.** (1994) observed that rural women spent in all about 12.2 hours per day in home, dairy and farm related activities. In peak season, average time spent by them increased to about 14 hours per day. There was an inverse relationship between the time spent on farm activities and land holding. However the relationship between time spent in home activities and size of land holding was positive and linear. Women belonging to marginal and small farm holdings devoted more time on farm activities due to economic factor.

2.5. TRAINING NEEDS PERCEIVED AND FARMING CONSTRAINTS OF FARMERS/FARM WOMEN

Chaney et al. (1961) argued that the problems of women in agriculture were their inaccessibility to land, limited agricultural extension services and lack of agricultural and non-agricultural employment opportunities.

Sohal and Singh (1962) found that farmers needed training in disciplines of agronomy, crop husbandry, dairying, poultry farming and farm management.

Sukumar and Singh (1964) reported that kitchen gardening, feeding animals, storage of grains, care of sick animals, maintenance of cattleshed, weeding, hoeing and harvesting were the specific items in which farm women were interested.

Singh et al. (1970) observed that farmers needed training in plant protection, manures and fertilizers use and improved seeds.

Tig (1969) stated that farmers needed training on kitchen gardening, sowing of seasonal vegetables and the use of pesticides for kitchen gardening and grain storage.

Singh et al. (1970) observed that farmers needed training in plant protection, manures and fertilizers use and improved seeds.

Tripathy and Trimy (1972) noticed that farm women require intensive training since they are involved in farming activities and often join with their husbands in performing different agricultural operations. They require training on methods of sowing, transplanting, harvesting and knowledge on storage technology to avoid losses.

Chaney et al. (1973) argued that the problems of women in agriculture were their inaccessibility to land, limited agricultural extension services and lack of agricultural and non-agricultural employment opportunities.

Tripta (1973) pointed out that farmers required training predominantly in crop husbandry followed by poultry and dairy.

Ayyadurai (1974) reported that high electricity charges, high feed price and non-availability of vaccines were the major problems perceived by a majority of poultry farmers.

Arputharaj et al. (1979) pointed out that there was a general complaint about the present high charges of electricity as a burden on poultry farming.

Dantwala (1979) expounded that the reason for low participation of females in farm activities was heavy domestic work including rearing of small children.

Gupta (1979) indicated that the cost of cattle feed alone accounted for more than two-thirds of the price of milk and the poultry farmers also faced a high feed ingredient price.

Devadoss **et al.** (1980) opined that 31.40 per cent of home makers stated lack of time as a major problem.

Swaminathan (1980) pointed out that presence of young children prevented the women from taking part in the rural labour force irrespective of the level of agricultural development.

Singh **et al.** (1981) identified that imperfect market for milk, low price for milk, high cost of concentrates, perishable and seasonal nature of milk, high price of milch animals were the major constraints experienced by the farm families in dairy farming.

Pai (1982) reported that poultry farming did not attracted the attention of higher classes to a desirable extent since they were not member of central multipurpose agencies that could look after the various aspects of poultry production.

A study on dairying by Rangarajulu (1991) it was stated that the member category attributed high cost + non

member attributed "Heavy feeding" as important reasons for non-favouring upgraded animals. The members did not opt for artificial insemination due to their impossibility to take their animals to artificial insemination centres for all time on account of distance and non-members due to their unfavourable attitude. Veterinary aid was not used by the members since the animals were not seriously affected by disease and non-members were also behaved similarly.

Sundarasamy (1991) reported that lack of knowledge and lack of money were the main reasons for non-adoption of sericulture.

Ayyadurai (1993) found that lack of finance was the main constraint as reported by majority of their respondents, lack of knowledge about the institutional help and poultry enterprises, dislike among the family members, disinterest towards poultry risk and uncertainty etc., was the order of sequence.

Bant Singh **et al.** (1995) identified imperfect market for milk, low price of milk, high cost of concentrate, perishable and seasonal nature of milk, high price of milch animals, high risks to the milch animals and shortage and adequate space and capital on many fairs as major constraints.

Sethi (1995) while analysing the report of Reserve Bank of India (1995) quoted the following poultry difficulties as obstacles in the successful implementation of the programme: (1) Non-availability of high quality chicks from the government farms, (2) High rise in price of poultry feed, (3) Lack of facilities for marketing of egg and birds, (4) Absence of veterinary infrastructure facilities, (5) Lack of extension education to the farmers and supply of inputs during implementation of the programme and (6) Lack of co-ordination between banks and various extension agencies in implementing the programme.

2.6. DIFFERENT FARMING SYSTEMS WITH RESPECT TO INCOME GENERATION

Senthamil Selvan (1978) found that the most profitable multitier cropping system was sorghum - redgram - coriander (Rs.3661.70/hectare) followed by sorghum - redgram - onion (Rs.3525.48/ha) as the price levels were considered.

Madhavaswamy (1985) found that the optimum size of diversified farming unit should be upto 4-5 milch cattle or 30 sheep or 500 poultry birds to lead to moderate standard of living and also to cross the poverty line.

Sainis and Rajvirsingh (1985) stated that the diversification of crop farming with high yielding milch

animal can play an important role in increasing income and employment of small farmers.

Singh et al. (1985) revealed that nearly 46 per cent farm families in the sub-urban and 32 per cent in the rural villages sold milk. Nearly 50 per cent of the families were found selling the milk and families of both sub-urban and rural villages sold milk regularly, whereas the other 50 per cent sold milk occasionally/seasonally. Dairy farming on per unit area basis was more profitable than farming.

Thorve and Galgalikar (1985) concluded that mixed farming with dairy enterprises has a positive effect on the income of the farmers in all the size of groups. Small farms having upto 2 hectare each can get maximum net returns from medium and large farms having land above 4 hectare should maintain 4 milch cattle for maximising net returns from the existing resources.

Azariah (1986) recommended that cultivation of agricultural crops alone should be discouraged and animal husbandry should be practiced for getting regular income. Mixed farming wherein dairying will play the role of recycling should be encouraged. High yielding fodder for the cows and farm yard to soil, a legume should be introduced in rotation.

Chandramouleeswaran (1987) found that 6 per cent of respondents had grown only crops and majority of respondents (52 per cent) had gone for dairying in addition to crops. The annual farm income due to diversification revealed that the farm income was Rs.10,950/- (crop alone), Rs.15,025 (crop + poultry), Rs.20,428 (crop + dairy + sericulture), Rs.21,170 (crop + dairy + sheep + goat + fodder), Rs.26,000 (crop + dairy), Rs.30,929 (crop + dairy + sheep + goat), Rs.38,100 (crop + floriculture + dairy + poultry), Rs.41,121 (crop + dairy + renting of bullock cart), Rs.63,838 (crop + dairy + poultry) and Rs.65,643 (crop + dairy + floriculture).

Gangwar (1987) reported that poultry + animal husbandry + sericulture could be economically feasible farming system, and input level it should be possible to attain 3-4 fold increase in production.

Krishnaswami (1987) reported that mulberry had attained a status of an important cash crop along with sugarcane, cotton and tobacco. Instances are many where mulberry has made in roads into traditional cotton and sugarcane areas at the cost of traditional crops. The average net return per acre ranged between 7 and 10 thousand rupees in the case of irrigated lands and 2 to 3 thousand rupees under dry farming condition.

Rangaiah (1987) stated that in Kerala, tea in the small growing sector, cultivated as mixed crop along with coconut, rubber, pepper and tapioca, the income from other crops is more remunerable than tea. In Himachal Pradesh fodder crops are cultivated along with tea and it pays more to them.

Singh and Sharma (1987) found that the farming intensity increased to 188 per cent with crops and dairying as against 158 per cent with the existing system. However, the farming intensity registered only a marginal increase of two per cent when a combination of crop + dairy + goats was adopted.

Jaiteley (1988) observed that diversification of agriculture is the best remedy for steady trend of agricultural production in Punjab. The farmers of Punjab have started growing kinu, guava and grapes. There has also been cultivation in exotro flowers, bee keeping and eucalyptus plantation. Farmers have found eucalyptus cultivation profitable and they prefer it to conventional crops.

Sharma (1988) found that in South Andaman Islands, there were 27 different types of enterprises combination adopted by farmers. The most preferred combinations among

farmers were (crop + poultry + dairy), (crop + plantation + poultry + dairy) and (crop + plantation + poultry + dairy + goats) and which were adopted by 14, 15 and 16 per cent of farmers respectively.

Flora (1990) stated that sustainable agriculture had the potential of increasing farm diversity and may or may not have implications regarding farm size.

Renola (1990) found that returns from livestocks were 59 per cent of total and its cost was 51 per cent of total cost. This was indicative of the significant contribution of the livestock enterprises to total returns.

Rajkumar (1992) reported that six major enterprises viz., crop, dairy, sheep/goat, poultry, sericulture and tree culture were integrated by farmers. Among two enterprise combinations crop + dairy was maximum. In three enterprise combinations crop + dairy + goat/sheep was maximum. There was not much variation found among the three modernity levels in terms of taking up different enterprise combinations.

Subramanian and Subbarayalu (1993) stated that the annual income of 18 per cent of different farming systems was more than Rs.10,000/-. They opined that the different

farming systems was more remunerative than crop alone and suggested to make great efforts to integrate the crops and livestock enterprises.

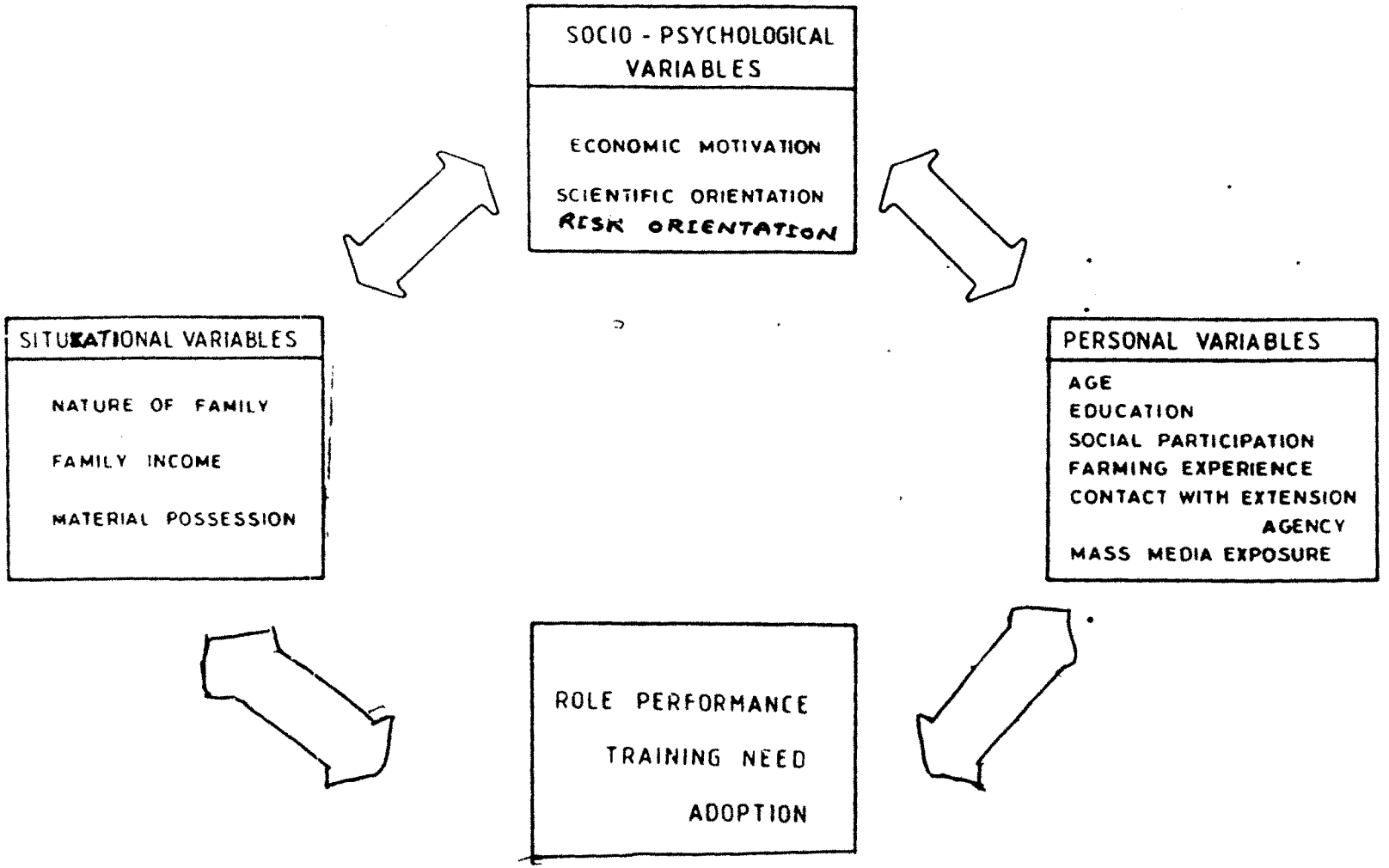
Amrik et al. (1994) stated that the diversification of crop farming with high yielding milch animal can play an important role in increasing income and employment on small farms.

Madhavasamy (1994) found that the optimum size of a diversified farming unit should be upto 4-5 milch cattle or 30 sheep or 500 poultry birds to lead a moderate standard of living and also to cross the poverty line.

Singh and Sharma (1994) revealed that fodder crop occupied about 65 per cent of the total cultivable area due to maximum number of milch animals. He also found that crop intensity in the optimal farming system (crop + dairy) was 188 per cent against 158 per cent in the existing system. Crop intensity was 190 per cent in the optimal farming system (crop + dairy + goat farming system) as against 179.33 per cent in the existing systems.

Gamshed (1995) explained that diversified farming with dairy and poultry enterprises has a positive effect on the income of the farmers in all the size of groups.

Fig. 1. CONCEPTUAL MODEL



The models developed by Dean and Marsh (1958), Supe and Singh (1988) and Hiriyannaiah (1983) with slight modifications have been considered to describe the conceptual relationship between the independent variables, intervening variable and the dependent variable (Fig.1).

RESEARCH METHODOLOGY

CHAPTER III

RESEARCH METHODOLOGY

This chapter deals with the methodology adopted in the present study. This has been discussed under the following sub-heads:

3.1. Locale of the study

3.2. Sample and sampling procedure

3.3. Description of study area

3.4. Operationalisation of concepts and measurement of variables

3.5. Method of investigation

3.6. Statistical tools used

3.1. LOCALE OF THE STUDY

This study was undertaken in Tamil Nadu. The selection procedure of the study area and sample have been given below.

3.1.1. Selection of district

Previous research have revealed that the involvement both men and women in farming was relatively high and better in the undivided Coimbatore district. Thus the Coimbatore and Periyar districts were selected besides the following reasons.

These districts have got good potentiality to take up different farming systems. Natural resources such as irrigation schemes, rich soil, salubrious weather conditions and the like required for different farming system are present.

3.1.2. Selection of block

This study was conducted in Anaimalai block of Coimbatore district and Modakurichy block of Periyar district. From the 21 blocks in Coimbatore district, Anaimalai block was found to operate maximum area under different farming systems. This block has got 10,324,30 hectares. Of the 20 blocks in Periyar district, Modakurichi block was found to operate maximum area under different farming systems. This block has got 9,849.26 hectares. The different farming systems practiced were

(i) Agriculture + Animal husbandry

(ii) Agriculture + Poultry + Dairying

(iii) Agriculture + Fodder crops + Animal husbandry

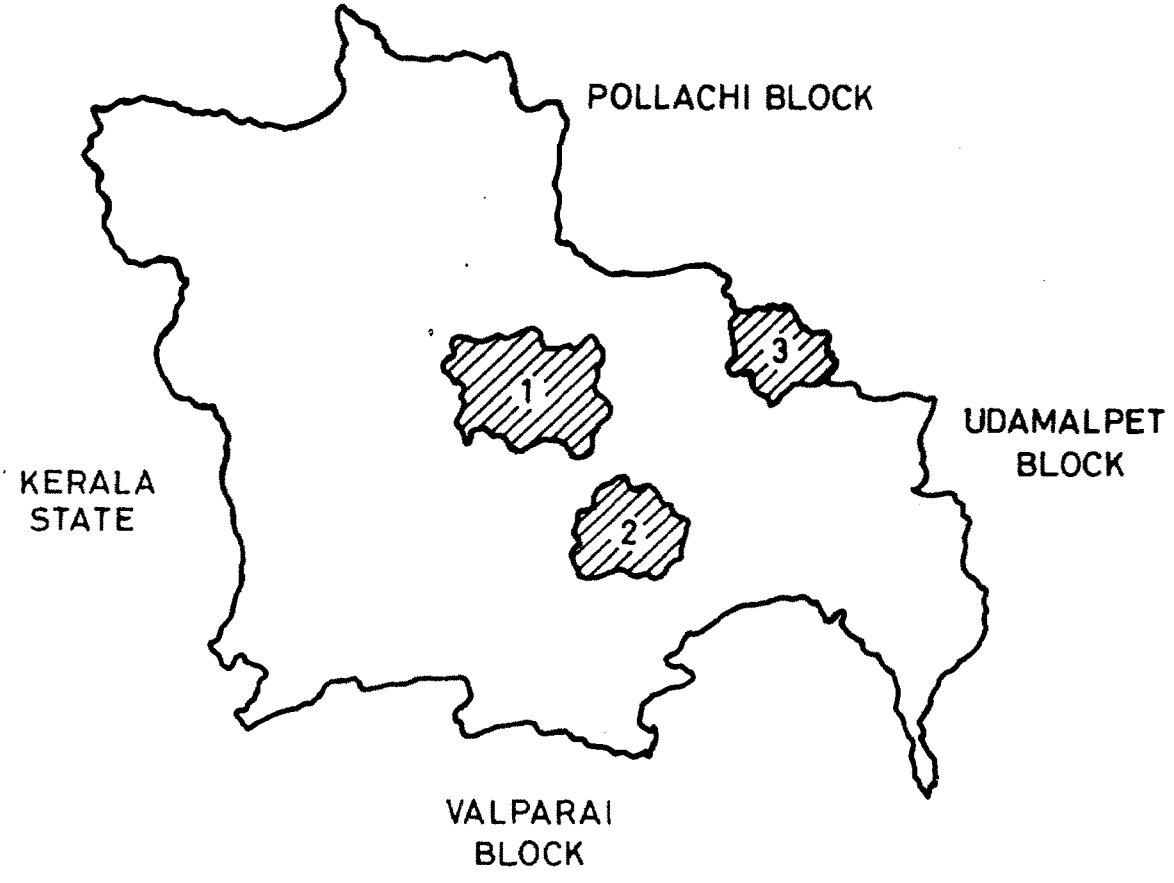
(iv) Agriculture + Mushroom + Animal husbandry + Fish culture

(v) Agriculture + Sericulture + Agro-forestry

(vi) Agriculture + Agro-forestry + Sheep/goat rearing

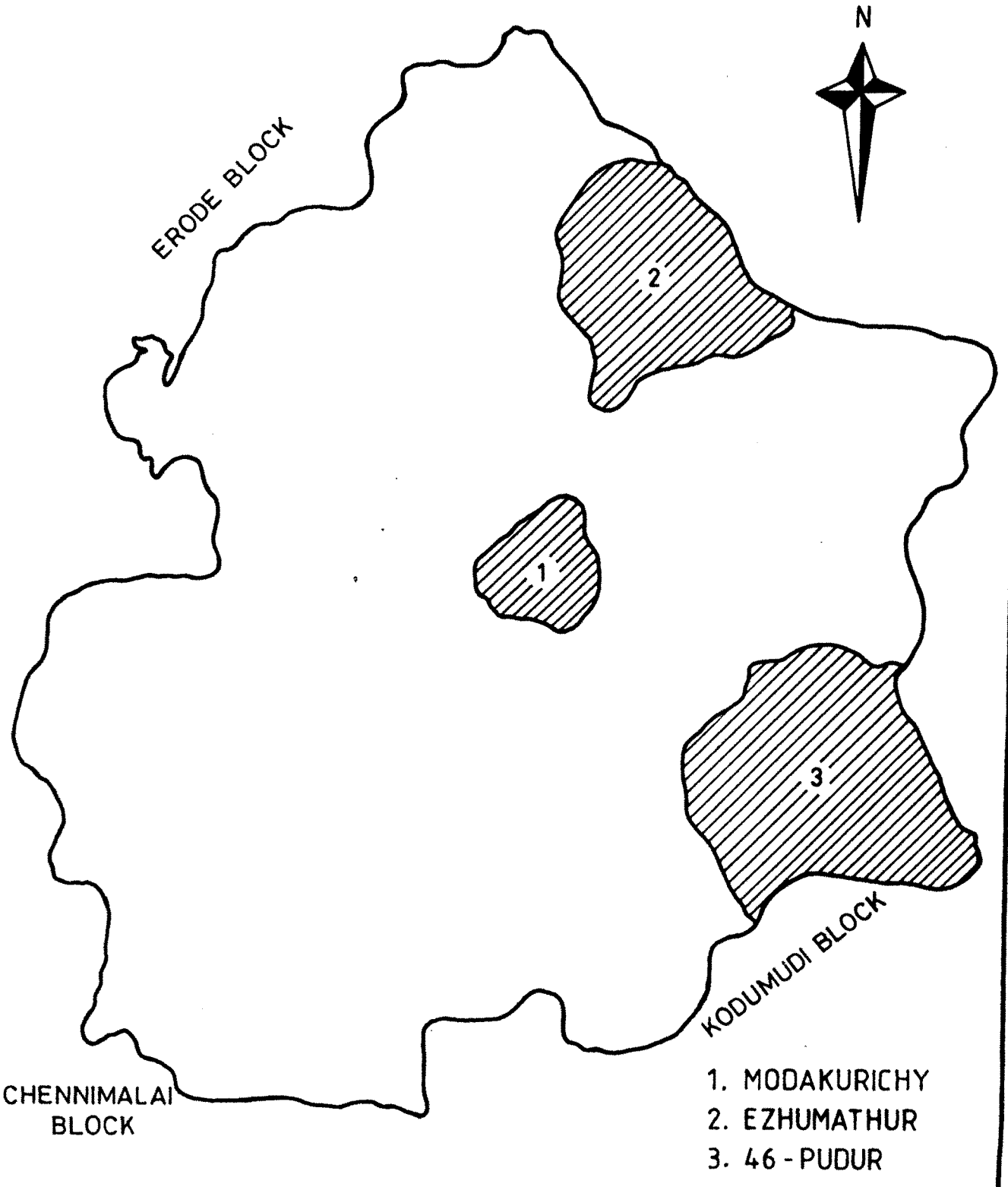
Besides the maximum area under farming system the following criteria were also taken into account to select the blocks. Both should

Fig.2. MAP OF ANAIMALAI BLOCK



1. ANAIMALAI
2. KOTTUR
3. PILLICHINAMPALAYAM

Fig.3. MAP OF MODAKKURICHI BLOCK



(i) have similar irrigation system

(ii) possess similar soil types

(iii) have marketing centres nearby

(iv) have similar pattern of rainfall

3.1.3. Selection of villages

Annamalai block has 28 revenue villages and Modakurichi block has 29 revenue villages. Considering the parameter similarity in soil types, irrigation system, cropping pattern and rainfall, villages were selected. Among the villages in the blocks, three from Anaimalai block namely Anaimalai, Kottoor and Pillichinampalayam and three from Modakurichy block namely Modakurichy, Ezhumathur and 46-Pudur were selected (Fig.2 and 3).

3.2. SAMPLE AND SAMPLING PROCEDURE

The population for the study has been defined as the farm men and farm women practicing different farming systems. The list of farm men and farm women who had been practicing different farming systems were collected from the village records and also records maintained in the block office. The sample size of 60 farm men and 60 farm women of different farm families of each block were selected by following probability prcportion to size (P.P.S.) random sampling procedure. Farm men are the heads of their own families and farm women are the housewives. The sampling details are given in Table 1.

Table 1. Number of respondents selected in each village

S. No.	Name of block	Name of the village	Population Male	Sample size male farmers	Population Female	Sample size farm women
1.	Anaimalai	Anaimalai	404	21	396	20
		Kottur	306	19	284	19
		Pillichinam-palayam	249	20	211	21
		Total	959	60	891	60
2.	Modakurichy	Modakurichy	309	21	298	21
		Ezhumathur	297	19	284	20
		46-Pudur	214	20	214	19
		Total	820	60	796	60

3.3. DESCRIPTION OF STUDY AREA

3.3.1. Description of the district

Coimbatore is an inland district which lies in north western part of Tamil Nadu. The Coimbatore district is bounded by the western ghats wherein the Vellingiri and Nilgiris are located on the north-west and Anaimalai on south. The height of Coimbatore district above the mean sea level comes to 2400 metres.

Modakkurichi block of Periyar district is situated in Erode-Sivagiri state highways in the southern direction from the district headquarters. About 50.0 per cent of the geographical area is bounded by Lower Bhavani project command area. The district has its southern border with Anna district, eastern border with Salem and Trichy

districts, northern border with Karnataka state and western border with Coimbatore district.

3.3.1.1. Rainfall

The average rainfall of the Coimbatore district is 714.0 mm and the climate as a whole in this district is moderate. Since this district lies adjacent to the Palghat gap of Western Ghats, it is showered with downpours of both the south west monsoon and north east monsoon.

The average rainfall received in Modakurichy block is 808 mm in 48 rainy days, which is higher than the district average of 717 mm.

3.3.1.2. Soil type

In Coimbatore district, rocks are the parent material for the formulation of the soil and the rock types available in the district can be broadly classified into three groups. They are granulite group, gneissic group and coarse pink pigmatoidal and granitoid group. The soil type projects the speed of infiltration of water and the depth shows the promise of the storage capacity.

In Modakurichy block the soil is predominantly red poor in nitrogen and phosphorus.

3.3.1.3. Cropping pattern

Once Coimbatore was famous for cotton cultivation; now the area under cotton had been considerably declined and diversified cropping system is followed by the farmers in cultivating groundnut and coconut. The frequent erratic nature of the monsoon has also forced the farmers to choose alternate cropping pattern. The area under sugarcane also deteriorated to a considerable extent in most of the villages except in the sugar mill areas, where the farmers are induced for its cultivation by the mills by way of tie-up arrangements.

In Modakurichy block the major crops grown are paddy, sugarcane and turmeric. Out of total area under cultivation 46.68 per cent comes under rainfed crops and the remaining 53.32 per cent of the area comes under well irrigation. In addition to paddy, gingelly, groundnut, cotton, tobacco and banana are the important crops grown in the district.

3.3.2. Description of blocks

Anaimalai block has a total geographical area of 48,480 ha and the area under forest covers 16,954 ha. The total population of this block is 1,59,182 of which male comprises 80,261 and female 78,921.

The other block Modakkurichi has a total geographical area of 13,802 ha and forest covering 795 ha. The total population of this block is 1,72,955 of which male numbering 88,419 and female 84,536. The occupational distribution of respondents in both the blocks are presented in Table 2.

Table 2. Occupational distribution of respondents

S. No.	Workforce	Anaimalai			Modakkurichi		
		Male	Female	Total	Male	Female	Total
1.	Cultivators	18270	8840	27110	9844	5018	14862
2.	Agricultural labourers	6080	3020	9100	3918	2010	5928
	Total	24350	11860	36210	13762	7028	20790

3.4. Operationalisation of Concepts and Measurement of Variables

The process of transforming the general level concepts into more perceived measures for empirical testing was referred to as 'explication' by Carnap (1950) and was termed as 'epistemic relation' by Rogers and Svenning (1969). According to Blalock (1960), prepositions involving concepts or variables defined theoretically are not directly testable and therefore, the actual test is made in terms of the concepts which are operationally defined. The empirical measures of the concepts are given below.

Variables	Techniques of measurement
Independent variables	
Situational variables	
Socio-economic status	
Nature of family Annual income Material possession	Socio-economic status scale developed by Trivedi (1963)
Personal variables	
Age	Chronological age of respondents
Educational status Occupational status	Socio-economic status scale developed by Trivedi (1963)
Social participation	Shasipuri (1972)
Farming experience	Scoring procedure followed by Somu (1982)
Contact with extension agency	Scoring procedure followed by Muthaiya (1981)
Mass media exposure	Schedule developed by Knight (1973) with slight modification
Socio-psychological variables	
Economic motivation	Scale developed by Supe (1969)
Scientific orientation	Scale developed by Supe (1969)
Dependent variable	
Extent of adoption	Adoption index developed for the study
Training need	Scoring procedure developed for the study
Role performance in agriculture and allied activities	Scoring procedure developed for the study

3.4.1. Independent variables

3.4.1.1. Age

It is one of the basic characteristics of an individual linked with his maturity, physical well being, productivity level and work efficiency. This was operationalised as the number of completed years of respondents at the time of enquiry/investigation. The respondents were classified into three categories viz., young, middle and old as found in Government of India Census Report (1981).

Young	-	Upto 35 years
Middle	-	36 to 45 years
Old	-	Above 45 years

3.4.1.2. Educational status

Beal and Sibley (1967) have pointed out that the individual's ability to read and write and the amount of formal education, he/she possess will affect the manner in which the individual gathers data and relates himself/herself to his/her environment.

Operationally, education referred to the academic qualification of the respondent acquired through formal schooling and training. The popular educational categories are given below. For quantitative analysis, each category was assigned with appropriate score values as noted against each category.

Classification	Score
Illiterate	1
Primary	2
Middle	3
Higher secondary	4
Collegiate	5

3.4.1.3. Occupation

Hiller as quoted by Chibber (1968) conceptualised occupation as any activity in which a person is regularly engaged to achieve a standard utilitarian award. Respondents primary occupation was taken into consideration and their score values are as follows.

Occupation	Score
Artisan	1
Business	2
Trade service	3
Agriculture	4

3.4.1.4. Nature of family

Nature of family referred to type and size of family. Type of family referred to nuclear and joint family. The size of family referred to the number of individual of both the sexes living together in a household. Hence, the following scoring procedure as used by Trivedi (1963) was adopted.

		Score
Type of family :	Joint	2
	Nuclear	1
Size of family :	Upto 5 members	1
	More than 5 members	2

3.4.1.5. Land holding

Land holding refers to the standard acres of cultivated land under irrigated condition, possessed by an individual family. When the farm includes dryland, it was

converted as irrigated land using the formula of 2 acres of dryland are equivalent to one acre of irrigated land. Farm size was classified into the following four categories with appropriate score values. This procedure was followed by Helen (1990).

Category	Score
2.5 acres	1
2.51 - 5.00	2
5.01 - 10.00	3
> 10.01	4

3.4.1.6. Farming experience

This was in terms of the number of years of experience in farming by the respondent. It was classified into three categories. This procedure was followed by Balaji (1990).

Category	Years
Low	0-10 years
Medium	11-20 years
High	21 and above

3.4.1.7. Livestock possession

Livestock data were limited to milch animals and poultry birds. According to the number of milch animals and poultry birds the livestock resource was quantified by assigning appropriate scores as detailed below.

Dairy	Score
1-2 milch animals	1
3-4 milch animals	2
5-8 milch animals	3
9 and above	4

Poultry	Score
1-5 birds	1
5 birds	2

Based on the respondents scores, mean $\pm$ one SD was worked out and then the respondents were classified into three fold classification of low, medium and high livestock possession with the corresponding score values. This procedure was followed by Manjula (1990).

Low	-	$<$ 0.88
Medium	-	0.88 - 3.733
High	-	$>$ 3.733

3.4.1.8 Material possession

Material possession included all the household appliances of differential nature with varying cost range. Based on prestige factor, they were brought under the following three groups of prestige status with the scores assigned against the category as indicated. This procedure was followed by Helen (1990).

(i) Ordinary items

Normal household items viz., cycle, radio, electric fan, chair, table	1

(ii) (a) Prestige items

Improved household items, tape recorder, scooter, motor cycle	2

(b) High prestige items

TV, washing machine, refrigerator, video, car, phone, etc.	3

The total score for each respondent was arrived at taking into consideration of the available household articles at the time of enquiry. The mean ± one SD was worked out and respondents were categorised into low, medium and high.

Low	-	(< 8.18)
Medium	-	(8.18 - 19.38)
High	-	(> 19.38)

3.4.1.9. Farm power

This referred to the power operated farm equipments used by the respondents. The scoring was done as per Venkatakrishnan (1988).

	Score
Tractor	6
Oil engine	4
Electric motor	4
Pumpset	4
Sprayer	2
Duster	2
Green manure trampler	1

Based on the respondents' scores, mean ± one SD was worked out and then the respondents were categorised into three fold classification of low, medium and high farm power.

Low	-	(< 1.951)
Medium	-	(1.951 - 12.889)
High	-	(> 12.889)

3.4.1.10. Annual income

In the present investigation annual income meant the annual monetary income received by the respondent's family from agriculture, dairy and other sources. The respondents were categorised into six groups based on mean and standard deviation. The following interval of income were arbitrarily fixed for analysis. This procedure was followed by Suguna (1994).

	Score
25,000 rupees	1
25,000 - 50,000 Rs.	2
50,001 - 1 lakh Rs.	3
Above 1 lakh - 2 lakh Rs.	4
Above 2 lakh - 3 lakh Rs.	5
Above 3 lakh Rs.	6

3.4.1.11. Social participation

This referred to the degree of involvement of an individual in formal organisation either as member or an office bearer. The scoring procedure developed by Trivedi (1963) was used in quantifying social participation and the respondents were categorised into social status groups viz., low, medium and high.

Social participation	Score
Non member	0
Member in one organisation	1
Member in more than one organisation	2
Office bearer in one organisation	3
Office bearer in more than one organisation	4

Low	-	(<8.41)
Medium	-	(8.41 - 2.33)
High	-	(>2.33)

3.4.1.12. Expenditure incurred

In the present investigation the expenditure referred to the amount spent by the respondent's family towards agriculture, dairy, and other items. Annual expenditure was expressed in rupees. This scoring procedure was followed by Suguna (1994).

	Score
25,000 rupees	1
25,000 - 50,000 Rs.	2
50,000 - 1 lakh Rs.	3
1 lakh - 2 lakh Rs.	4
2 lakh - 3 lakh Rs.	5
Above 3 lakh Rs.	6

3.4.1.13. Contact with extension agency

This variable was measured in terms of awareness, frequency and purpose of contacting the different change agents by farmers. The scores given by Badrinarayana (1977) and Manivannan (1980) were used in this study, with the following scoring procedure.

a) Not aware about extension agents	0
b) Aware about extension agents	1
c) Frequency of contact	
Rarely	1
Sometime	2
Often	3
d) Purpose of contact	
Casual	1
Non-agriculture	2
To avail input assistance	3
Subsidies and agricultural implements	4
Technical guidance	5

Based on the respondent's scores, mean ± one SD was worked out and then the respondents were categorised into three fold classification of low, medium and high extension agency contact.

Low	< 0.73
Medium	0.74 - 3.62
High	> 3.622

3.4.1.14. Mass media exposure

It referred to the regularity with which the respondents read/listened newspaper, magazines and bulletins, listening Radio and viewing TV and attended the training programmes etc.

The scale used by Knight (1973) was followed with slight modification. The scoring was done based on the frequency of exposure to different items.

		Scores
Read newspaper/listened to newspaper reading		
	No	1
	Yes	2
Subscribed to newspapers	No	1
	Yes	2
Frequency of reading newspapers		
	Occasionally	1
	Frequently	2
	Daily	3
Listening radio	No	1
	Yes	2

Frequency of listening radio	Occasionally	1
	Often	2
	Daily	3
Viewing TV	No	1
	Yes	2
Frequency of viewing TV	Occasionally	1
	Often	2
	Daily	3
Type of programme -		
Agriculture	Never	0
	Occasionally	1
	Often	2
	Regular	3
Non-agriculture	Never	0
	Occasionally	1
	Often	2
	Regular	3

Participation in training: Each participation was given one scoring

Based on the respondents scores mean $\pm$ one SD was woorked out and then the respondents were categorised into low, medium and high mass media participation.

Low	< 0.92
Medium	$0.93 - 3.89$
High	> 3.89

3.4.1.15. Migration habit

Migration habit was operationalised as the movement of farmers to other places for want of work and entry of labourers to their villages from other places.

3.4.1.16. Extent of employment

Extent of employment referred to the total number of days of work for an individual respondent during first season, second season and third season.

3.4.1.17. Job preference

Job preference referred to the preference of works by the respondent among the works done by them.

3.4.1.18. Knowledge level

Knowledge was operationalised as the extent to which they know the improved practices in different farming system. Bloom et al. (1955) defined knowledge as those behaviour and test situations which emphasised the remembering either by recognition or recall of ideas, materials or phenomena.

A teacher made informal knowledge test covering the aspects related to different farming system was prepared. The questions were in the dichotomous form - correct/incorrect and true/false. The correct/true and incorrect/false responses received scores of 1 and 0 respectively. The respondents were categorised into three groups namely, low, medium and high considering their total score.

Category	Score
Low	< 0-5
Medium	6-10
High	> 11-15

3.4.1.19. Credit orientation

Credit orientation refers to the responses obtained relating to the need for credit, use of credit, the

difficulties and treatment in securing credit (Beal and Sibley, 1967). The scoring procedure followed by Subburaj (1980) was used in this study.

3.4.1.20. Economic motivation

Economic motivation was operationalised in terms of profit maximisation and the relative value placed by a farmer on economic ends. It was measured with the help of the scale developed by Supe (1969). The scale consisted of six statements of which first five were positive and the last one was negative. The responses for each statement were rated over a five point continuum, which ranged from 'strongly agree' to 'strongly disagree'. The scoring procedure followed was as follows.

Responses	Strongly agree	Agree	Undi- cided	Dis- agree	Strongly disagree
Scores for positive items	7	5	4	3	1
Scores for negative items	1	3	4	5	7

To get final score of economic motivation for each individual, the scores of each statement were added. The maximum score an individual can get on this scale was 42 and minimum was 6.

Based on the respondents scores mean ± one SD was worked out and then the respondents were classified into low, medium and high economic motivation.

Low	<	0.81
Medium		0.82 - 3.92
High	>	3.92

3.4.1.21. Scientific orientation

Scientific orientation was operationalised as the degree to which a farmer/farm woman was oriented to the use of scientific methods in decision-making and farming. It was measured with the help of a scale developed by Supe (1969). The scale of six statements of which the second statement alone was negative. The response pattern and scoring procedure was the same as described under economic motivation. The maximum score an individual could obtain in this scale was 42 and minimum was 6.

Based on the respondents score mean ± one SD was worked out and then the respondents were classified into low, medium and high scientific orientation.

Low	<	0.88
Medium		0.89 - 3.88
High	>	3.88

3.4.1.22. Risk orientation

Risk orientation was defined as the degree to which a farmer/farm woman was oriented towards risk and uncertainty in adopting new ideas in farming. Risk orientation scale developed by Supe (1969) and adopted by Theodore (1988) was used. The scale consisted of six statements, wherein items one and five were negative and the rest were positive. The scoring was done as given below.

Responses	Strongly agree	Agree	Undi-cided	Dis-agree	Strongly disagree
For positive items	7	5	4	3	1
For negative items	1	3	4	5	7

The scores obtained for each statement were summed up to get individual respondent's risk orientation score. The possible range of score in this scale was from 6 to 42. Maximum score would reveal high risk orientation, while the minimum score would reveal low risk orientation.

Based on the respondents scores mean $\pm$ one SD was worked out and then the respondents were classified into low, medium and high risk orientation.

Low	$<$	0.86
Medium		0.87 - 3.91
High	$>$	3.91

3.4.2. Dependent variables

3.4.2.1. Extent of adoption

In the present investigation the adoption behaviour was measured with the help of farming system - practices - adoption index. The procedure of developing this index is discussed below, under two heads, namely selection of the practices and assignment of weights to the practices.

3.4.2.1.1. Selection of the practices

In the first instance, the practices for farming system was decided. These practices were those which were recommended by the extension personnel of the State Department of Agriculture, Tamil Nadu. In the list ten practices were included after consultation with the State Department officials for the purpose of measuring farming system - practices - adoption index. The criteria were laid out for the selection of practices. The first criterion was that the practice should be applicable to any farm if the farmer decides to adopt it. Secondly, the practice should be adopted by atleast some of the farmers in the area.

3.4.2.1.2. Assignment of weights to the practices

To assign weightages based on the importance of practices, 50 judges comprising teachers from extension discipline and experienced extension workers were selected.

They were requested to indicate the degree of importance of each practice for the farmers. The scoring procedure followed for quantifying the responses was

	Score
Most important	5
More important	4
Important	3
Less important	2
Least important	1

The mean score from the judges responses were rounded to the nearest whole number for each practice and assigned on the weightage for the respective practices. The procedure adopted in the quantification of extent of adoption of practices was as follows.

No.	Practice	Weight	Procedure
1.	Use of certified seeds	7	$\frac{\text{Actual quantity of seeds used}}{\text{Quantity of seeds weight recommended}} \times \text{weight}$
2.	Recommended dosage of feeding (for animals)	6	$\frac{\text{Actual quantity of feed used}}{\text{Quantity of feed recommended}} \times \text{weight}$
3.	Recommended dosage of feeding (for birds	3	$\frac{\text{Actual quantity of feed used}}{\text{Quantity of feed recommended}} \times \text{weight}$

4. Preparation of mushroom bed	4	Actual quantity of materials used / Quantity of materials recommended x weight
5. Application of fertilizer for mulberry plants	2	Actual quantity of materials used / Quantity of materials recommended x weight
6. Recommended leaves for feeding silkworm larvae	5	Actual quantity of leaves used / Quantity of leaves recommended x weight
7. Recommended feed for fish	1	Actual quantity of feed used / Quantity of feed recommended x weight
8. Disease management for animals	8	Actual quantity of chemicals used / Quantity of chemicals recommended x weight
9. Disease management for birds	9	Actual quantity of chemicals used / Quantity of chemicals recommended x weight
10. Seed rate for fodder crops	10	Actual seed rate used per acre / Recommended seed rate x weight

The proportions for each of the ten practices (actual/recommended) were calculated and multiplied by the

corresponding weights. Then, these values were summed and divided by 55, the total weight. This was taken as the "farming system adoption - Index" in the study to find out the extent of adoption of practices for farming system.

Based on the respondents scores mean $\pm$ one SD was worked out and then the respondents were categorised into low, medium and high adoption.

Low	$\leq$ 0.84
Medium	0.85 - 3.98
High	$>$ 3.98

3.4.2.2. Training need

Training is the process by which the desired knowledge, skill, attitude and ideas were inculcated, fostered and reinforced in an organisation (Singh, 1988).

Training need was operationally defined as the expressed level of training indicated as required by respondents in each of the training areas referred.

Training need in skill oriented activities	2
Training need in theoretical aspects	1

3.4.2.3. Role performance in agriculture and allied activities

The role performance was operationalised as the extent of participation of the respondents in agriculture and allied activities. The extent of participation of farmers and farm women were assessed under four categories viz., self doing, supervising, assisting and non-participation. The scoring procedure followed for quantifying the responses was

Self doing	3
Supervising	2
Assisting	1
Non-participation	0

3.4.2.4. Knowledge test

English and English (1961) defined knowledge as a body of information possessed by an individual which is in accordance with the established fact. In order to measure the knowledge level of the farm families in different farming systems, a knowledge test was developed using the steps given below.

3.4.2.4.1. Item collection

After the perusal of relevant literature and discussion with experts an exhaustive list of questions seeking information on various aspects of different farming systems was prepared. Accordingly 40 questions were collected (Appendix I).

3.4.2.4.2. Item analysis

The questions were administered to 30 respondents. Each item was dichotomised into right and wrong responses. Every correct answer received one score while the incorrect answer received zero score. The total score for each respondent was calculated and then the respondents were arranged in the descending order of the knowledge score obtained. Among the 30, the top 10 respondents and the bottom 10 respondents were deleted as high and low knowledge level groups respectively for analysis. The purpose of this item analysis is to arrive at two indices namely item difficulty and discrimination index.

3.4.2.4.3. Difficulty index

The percentages of correct answer for each item were calculated to arrive at the difficulty index.

$$\text{Difficulty index} = \frac{\text{The number of correct responses}}{\text{Total number of respondents}}$$

3.4.2.4.4. Discrimination index

This shows whether the items actually distinguish a person who is well informed and the other who is poorly informed in the subject matter. The formula used is given below.

$$E = \frac{S_1 - S_2}{N/3}$$

where,

E = Discrimination index

S_1 = Frequency of correct answers in high knowledge group

S_2 = Frequency of correct answers in low knowledge group

N = Total number of respondents in the sample taken for this item analysis

Final selection of items

Items with difficulty indices 0.1 to 0.9 and discrimination index 0.2 and above were selected for developing the knowledge scale to be administered to respondents in the study sample, in order to make all the questions valid and reliable. Thus the final selection consisted of 25 questions. The 25 questions so selected were dichotomised into correct and incorrect responses. Every correct answer was assigned one score, while incorrect response received zero score. All such scores on 25 questions were summed to obtain the knowledge scores of an individual respondent.

The possible range of score in this study was from 0 to 25. Maximum score would reveal high knowledge, while the minimum score would indicate low knowledge.

3.5. Method of Investigation

Data for the research were collected by personal interview. A structured interview schedule was prepared taking into consideration the various objectives of the study. Before finalising the interview schedule it was pretested with 20 farm families from the non-sampling area. After pre-testing, inconsistencies were rectified to suit the interview schedule to the study area. The interview schedule thus prepared consisted of 7 parts namely gender variation in decision-making, knowledge level and extent of adoption in different farming system, mechanical skills of male and female farmers, time utilisation pattern of the respondents in farm and home activities, training needs perceived and farming constraints experienced and different farming system with respect to income generation etc. Necessary precautions were taken to ensure that the questions in the schedule was unambiguous, clear, concise, complete and comprehensive.

In order to create a good rapport in the study area, a few informal visits were made to meet the convenors of Farmers Discussion Groups and the village leaders. The main purpose of the study was made clear to them. The survey was carried during October-November 1993.

3.6. Statistical Tools Used

The following statistical tools were used in the analysis of collected data.

Percentage analysis: Percentage analysis was done to make simple comparisons wherever necessary.

Mean and standard deviation.

Simple correlation coefficient: Pearson's simple correlation coefficient was calculated to find out the association between dependent and independent variables.

Multiple regression analysis: In order to find out the influence of independent variables on the dependent variable, linear multiple regression analysis was carried out.

Path analysis: To determine the direct and indirect contributions (effects) of the selected independent variables on the dependent variable, path analysis was carried out.

FINDINGS AND DISCUSSION

CHAPTER IV

FINDINGS AND DISCUSSION

This chapter contains the salient findings along with suitable discussion under the following sections.

Section A : Situational, personal and socio-psychological characteristics of respondents

Section B : Gender variation in decision making pattern in farm families

Section C : Knowledge level and extent of adoption among farmers and farm women in different farming systems

Section D : Role performance of male and female farmers in different farming systems

Section E : Time utilisation pattern of farmers/farm women in farm activities

Section F : Perceived training needs and farming constraints of farmers and farm women

Section G : Different farming system with respect to income generation

Section A

SITUATIONAL, PERSONAL AND SOCIO-PSYCHOLOGICAL CHARACTERISTICS OF RESPONDENTS

Situational characteristics

Nature of family: The respondents selected were classified into three categories as small, medium and big based on the mean score and standard deviation in respect of the variable - nature of family. Mean score with plus or minus one standard deviation was taken into consideration for categorising the nature of family. Results in Table 3 revealed that most of the respondents (53.33 per cent) selected for the study belonged to medium category.

Table 3. Distribution of respondents on the nature of family

(n=240)

Category	Male farmers (n=120)		Farm women n=120)	
	No.	Per cent	No.	Per cent
Small	48	40.00	52	43.33
Medium	64	53.33	60	50.00
Big	8	6.67	8	6.67
Total	120	100.00	120	100.00
	$\bar{X}$ = 2.28		$\bar{X}$ = 2.19	
	S = 0.58		S = 0.52	

Annual income: Based on the scores obtained by the respondents, it was classified as low, medium and high with the mean value of 1.38 and 1.34 and standard deviation of 0.68 and 0.62. Results in Table 4 revealed that 50 per cent of male farmers and 48.33 per cent of farm women belonged to low income group whereas 41.67 per cent of farmers and 35 per cent of farm women and 8.33 per cent of farmers and 16.67 per cent of farm women belonged to medium and high income groups respectively. Due to the adoption of more than one enterprises the respondents had medium income and due to farming constraints they had low income.

Table 4. Distribution of respondents on annual income

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	60	50.00	58	48.33
Medium	50	41.67	42	35.00
High	10	8.33	20	16.67
Total	120	100.00	120	100.00
	$\bar{X}$ = 1.38		$\bar{X}$ = 1.37	
	S = 0.68		S = 0.62	

Material possession

Based on the score obtained on material possession (Table 5), the respondents were classified into three

material possession is 7.22 and 7.01 and the standard deviation 2.58 and 2.56 respectively for farmers and farm women. Under medium category 50.00 per cent and 50.83 per cent of the respondents were included, about 43.33 per cent and 40.00 per cent belonged to low level category and 6.67 per cent and 9.17 per cent belonged to high level category for material possession. Most of the respondents belonged to medium level category for material possession due to the adoption of more enterprises and they had medium income.

Table 5. Distribution of respondents on material possession (n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	52	43.33	48	40.00
Medium	60	50.00	61	50.83
High	8	6.67	11	9.17
Total	120	100.00	120	100.00
	$\bar{X}$ = 7.22		$\bar{X}$ = 7.01	
	S = 2.58		S = 2.56	

Personal characteristics

Age: The respondents were classified as young, medium and old (Table 6) had a mean and their mean age level was 41 per cent and 38.97 per cent, respectively. Of them 48.33 per cent and 45 per cent belonged to middle age group, 30 per cent and 31.67 per cent and 21.67 per cent and 21.67 per cent and 23.33 per cent belonged to young and old age group, respectively.

Table 6. Distribution of respondents on age

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Young	36	30.00	38	31.67
Middle	58	48.33	54	45.00
Old	26	21.67	28	28.33
Total	120	100.00	120	100.00
	$\bar{X}$ = 40.86		$\bar{X}$ = 38.97	
	S = 9.98		S = 9.92	

Educational status: The respondents with the mean score of 2.44 and 2.31 on education were categorised into five categories as illiterate, primary, middle, secondary and collegiate education. Data in Table 2 revealed that 38.33 per cent and 40 per cent of them were educated upto middle school level, 20 per cent and 11.67 per cent upto primary school level, 16.67 per cent each upto higher secondary and collegiate level and 8.33 per cent and 23.33 per cent were illiterates. Formal education is likely to increase one's knowledge about different farming systems. Further educated people should be endowed with higher level of adoption as higher education in general is highly correlated with higher adoption.

Table 7. Distribution of respondents on education

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Illiterate	10	8.33	28	23.33
Primary	24	20.00	14	11.67
Middle	46	38.33	48	40.00
Higher secondary	20	16.67	9	7.50
Collegiate	20	16.67	21	17.50
Total	120	100.00	120	100.00
	$\bar{X}$ = 2.44		$\bar{X}$ = 2.31	
	S = 1.01		S = 0.99	

Occupational status: Agriculture was the main occupation for 56.67 and 75 per cent of farmer and farm women respectively. And 17.50 per cent each of farmers had operating business and trade service. Whereas, 15 and 10 per cent were in trade service and business.

Table 8. Distribution of respondents on occupation

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Artisan	10	8.33	-	-
Business	21	17.50	12	10.00
Trade service	21	17.50	18	15.00
Agriculture	68	56.67	90	75.00
Total	120	100.00	120	100.00
	$\bar{X}$ = 2.38		$\bar{X}$ = 2.36	
	S = 0.99		S = 0.97	

Social participation: Social participation of the respondents was categorised into low, medium and high based on the mean score of 6.62 and 6.41 and standard deviation 5.21 and 5.11. Data in Table 9 revealed that 53.33 per cent of farmers and 65 per cent of farm women of the respondents had low level of social participation, 40 per cent and 25.83 per cent had medium level of social participation and 6.67 per cent and 9.17 per cent of them had high level of social participation.

Table 9. Distribution of respondents on social participation

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	64	53.33	78	65.00
Medium	48	40.00	31	25.83
High	8	6.67	11	9.17
Total	120	100.00	120	100.00
	$\bar{X}$ = 6.62 S = 5.21		$\bar{X}$ = 6.41 S = 5.11	

Farming experience: Based on the scores obtained by the respondents, the respondents were classified into less,

medium and high. The farmers and farm women had a mean score of 1.32 and 1.21 and standard deviation of 0.69 and 0.58 respectively. Table 10 revealed that 51.67 per cent and 41.67 per cent of them had high farming experience, 40 per cent and 46.66 per cent of them had medium and 8.33 per cent and 11.67 per cent of them had low farming experience.

Table 10. Distribution of respondents on farming experience

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Less	10	8.33	14	11.67
Medium	48	40.00	56	46.66
High	62	51.67	50	41.67
Total	120	100.00	120	100.00
	$\bar{X}$ = 1.32 S = 0.69		$\bar{X}$ = 1.21 S = 0.58	

Contact with extension agency: A majority of farmers (56.67 per cent) had medium extension agency contact. Whereas nearly 52 per cent of farm women had low extension contact. An equal percentage of farmers and farm women had high contact with extension agency (Table 11). This finding is in accordance with Madivanane (1990) who reported that majority

of the farmers (60 per cent) had low and medium level of extension agency contact. In general, majority of the respondents had medium level of extension agency contact. Their active participation in formal as well as informal organisations might have caused them to maintain medium level of contact with extension agency:

Table 11. Distribution of respondents on contact with extension agency

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	32	26.67	62	51.67
Medium	68	56.67	38	31.67
High	20	16.66	20	16.66
Total	120	100.00	120	100.00
	$\bar{X}$ = 11.12		$\bar{X}$ = 10.99	
	S = 9.10		S = 8.99	

Mass media exposure: Farmers according to exposure to mass media were categorised into low, medium and high based on mean score 10.08 and 9.09 plus or minus one standard deviation 5.03 and 4.07. It is interesting to note that a majority of farmers had medium mass medium exposure, whereas a majority of farm women had low mass media exposure. Similarly one-third of farmers had high exposure and only 25 per cent of farm women had high exposure. This kind of result may be due to more exposure of farmers to mass media

than farm women (Table 12). This finding is in line with Shantha Govind (1984) who reported that majority of the farm women had low and high mass media exposure.

Table 12. Distribution of respondents on mass media exposure

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	16	13.33	68	56.67
Medium	64	53.33	22	18.33
High	40	33.34	30	25.00
Total	120	100.00	120	100.00
	$\overline{X}$ = 10.08 S = 5.03		$\overline{X}$ = 9.09 S = 4.07	

Socio-psychological characteristics

Economic motivation: The occupational success in terms of profit maximization and the relative value a respondent places on economic ends is measured in the economic motivation scale which was developed by Supe (1969). A good deal of farmers and farm women had medium economic motivation. It is noted that 40 per cent women had low economic motivation. But 25 per cent of farmers had high

economic motivation. Since farmers manage the financing matters of the family and are the heads of families they have better economic motivation than farm women.

Table 13. Distribution of respondents on economic motivation scale

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	26	21.67	48	40.00
Medium	64	53.33	54	45.00
High	30	25.00	18	15.00
Total	120	100.00	120	100.00
	$\bar{X}$ = 20.12 S = 5.01		$\bar{X}$ = 19.02 S = 4.09	

Scientific orientation: Total scores of the respondents measured through scientific orientation scale developed by Supe (1969) ranged from minimum score of 14 to maximum score of 42. Mean score value was 31.72 and 30.52 and standard deviation 5.98 and 5.87. Similar results can be seen on this variable also. Farmers have higher scientific orientation compared to farm women.

Table 14. Distribution of respondents on scientific orientation scale

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	20	16.67	52	43.33
Medium	58	48.33	38	31.67
High	42	35.00	30	25.00
Total	120	100.00	120	100.00
	$\bar{X}$ = 31.72 S = 5.98		$\bar{X}$ = 30.52 S = 5.87	

Risk orientation: A good deal of farmers and farm women had low risk orientation. It is noted that 56.67 per cent of farmers and 51.67 per cent of farm women had low risk orientation.

Table 15. Distribution of respondents on risk orientation scale

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	68	56.67	62	51.67
Medium	32	26.67	38	31.67
High	20	16.66	20	16.66
Total	120	100.00	120	100.00
	$\bar{X}$ = 11.12 S = 9.10		$\bar{X}$ = 10.99 S = 8.99	

Section B

GENDER VARIATION IN DECISION MAKING PATTERN IN FARM FAMILIES

Gender variation in decision making pattern was interpreted in the study as to how the farm activities are generally decided by men and women. Responses were obtained from a mixed sample of men and women respondents and the results are given in Table 16.

Perusal of the table 16 revealed that decision making regarding selection of seeds, nursery preparation, main field preparation and fertilizer application were done by farmers alone, equally by both and consulting with father, mother and brother. All these agricultural activities open to men and women were further substantiated by the table data in the column of "equally by both" and "consulting with others".

Table 16. Decision making pattern in farm families

(n=240)

Sl. No.	Particulars	Farmers alone		Farm women alone		Equally by both		Consulting with others	
		No.	%	No.	%	No.	%	No.	%
I.	**Agriculture**								
1.	Selection of seeds	120	50.00	-	-	62	25.83	58	28.16
2.	Nursery preparation	60	25.00	-	-	64	26.66	116	48.33
3.	Transplanting	-	-	68	28.33	52	21.66	120	50.00
4.	Mainfield preparation	62	25.83	-	-	58	24.16	120	50.00
5.	Fertilizer application	60	25.00	-	-	48	20.00	132	55.00
6.	Weeding	-	-	68	28.33	56	23.33	116	48.33
7.	Harvesting	-	-	58	24.16	60	25.00	122	50.83
8.	Storage	41	17.08	-	-	73	30.42	126	52.50
II.	**Animal Husbandry**								
1.	Feed ratio for cows	-	-	68	28.33	52	21.66	120	50.00
2.	Feed ratio for calves	-	-	58	24.16	60	25.00	122	50.83
3.	Disease management	-	-	60	25.00	48	24.16	132	55.00
4.	Selling milk	-	-	116	48.33	64	24.66	60	25.00
III.	**Poultry**								
1.	Feed ratio for broilers	-	-	63	26.25	78	32.50	99	41.25
2.	Feed ratio for layers	-	-	68	28.33	52	21.66	120	50.00
3.	Disease management	-	-	41	17.08	73	30.42	126	52.50
4.	Selling eggs/broilers	-	-	68	28.33	56	23.33	116	48.33
IV.	**Fodder crops**								
1.	Time of planting	73	30.41	-	-	51	21.25	116	48.33
2.	Pest and disease management	81	33.75	-	-	69	28.75	90	37.50

Table 16 (Contd.)

Sl. No.	Particulars	Farmers alone		Farm women alone		Equally by both		Consulting with others	
		No.	%	No.	%	No.	%	No.	%
V.	**Sericulture**								
1.	Plant protection in mulberry plants	86	35.83	-	-	49	20.41	105	43.75
2.	Pest and disease management in silkworm larvae	89	37.08	-	-	77	32.08	74	30.83
VI.	**Mushroom cultivation**								
1.	Preparation of mushroom bed	-	-	73	30.41	54	22.50	113	47.08
2.	Maintenance of mushroom bed	-	-	82	34.16	63	26.25	95	39.58
3.	Maintenance of mushroom shed	-	-	87	36.25	69	28.75	84	35.00

Equally by both = Equal contribution by husband and wife in decision making
Consulting with others = Consulting with father, mother and brother

The probable reasons for the above finding may be that some of the specific agricultural activities such as mainfield preparation, and fertilizer application were somewhat strenuous jobs and women found it difficult to perform the above activities, and moreover proved to be arduous and hence decision making was also done by farmers, both farmers and farm women and consulting with father, mother, brother and others and not by women alone.

But decision making regarding weeding, transplanting, harvesting etc., were done by women alone and by both, and by consultation with father, mother and brother and not by men alone.

This is due to the fact that these activities were done by women, and the contribution by men alone was nil in these aspects, and as a head of the family it was substantiated by the table data in the column of "equally by both" and "consultation with others".

Suguna (1994) also concluded that the decision making by female gender was relatively more in weeding, transplanting and harvesting.

Apart from agriculture there were innumerable women specialised operations attended by the farm women under the

broad field of animal husbandry, where livestock raising and management related activities still continued to be predominantly farm women's responsibility and domain. The following table 16 furnished, the pattern of gender responsibility in dairy activities.

An immaculate conception that could be spontaneously drawn from table 16 was that with respect to animal husbandry almost all the activities were dominated by women whereas the contribution by men was least in all aspects. Hence in decision making women's contribution was more (i.e.,) "farm women alone" and men were substantiated by the table data in the column of "equally by both" and "consulting with others".

The reason for overwhelming percentage contribution of women in animal husbandry when compared to men was, that animal husbandry enterprise was practically easy and a domestic enterprise and involves less physical strain when compared to agricultural activities.

It was conspicuous from Table 16 that the poultry activities like 'feed ratio for broilers', 'feed ratio for layers', 'disease management', and 'selling of eggs/broilers' were predominantly women based tasks. Hence

in decision making pattern also women's contribution was more (i.e.,) "farm women alone" and as men were the heads of the families, they were substantiated by "equally by both" and "consulting with others". The probable reasons might be that poultry keeping was not a strenuous enterprise and hence the women involved themselves more in this enterprise. Hence in decision making also they played a dominant role.

The findings were in agreement with the findings of Savarimuthu (1981) and Suguna (1994).

Regarding decision making in fodder crops and sericulture, "time of planting" and "pest and disease management" were decided by "farmers alone", "equally by both" and "consulting with others" and "not by women alone".

The probable reasons for the above finding might be that "planting" and "pest and disease management" are somewhat strenuous jobs and women find it difficult to perform the above tasks. Hence in decision making also they were predominated by "farmers alone" and women were substantiated by "equally by both" and "consulting with others."

Balaji (1990) have found that more than 50 per cent of farmers took decision making in planting, pest and disease management in forage crops and sericulture.

Regarding mushroom cultivation, decision making in "preparation of mushroom bed" and "maintenance of mushroom shed" were done by most of the farm women and men were substantiated by "equally by both" and "consultation with others".

The probable reasons for the above finding might be that mushroom cultivation was practically easy and domestic enterprise and involved less physical strain. Hence in decision making also they played a dominant role.

This finding is in line with the findings of Suguna (1994) that decision making in mushroom cultivation was done by women and not by men.

Section C

KNOWLEDGE LEVEL AND EXTENT OF ADOPTION OF FARMERS AND FARM WOMEN IN DIFFERENT FARMING SYSTEMS

One of the objectives of the study is to examine the knowledge level and extent of adoption in different farming systems by farmers.

The extent of knowledge, a respondent possessed in the subject matter, might reveal that the respondent possessed sufficient knowledge in the subject matter or not. Keeping this in view, a knowledge test was used to assess

the knowledge level of respondents in different farming systems.

Distribution of knowledge level scores of respondents in different farming systems

The knowledge scores obtained by the respondents are presented in Table 17.

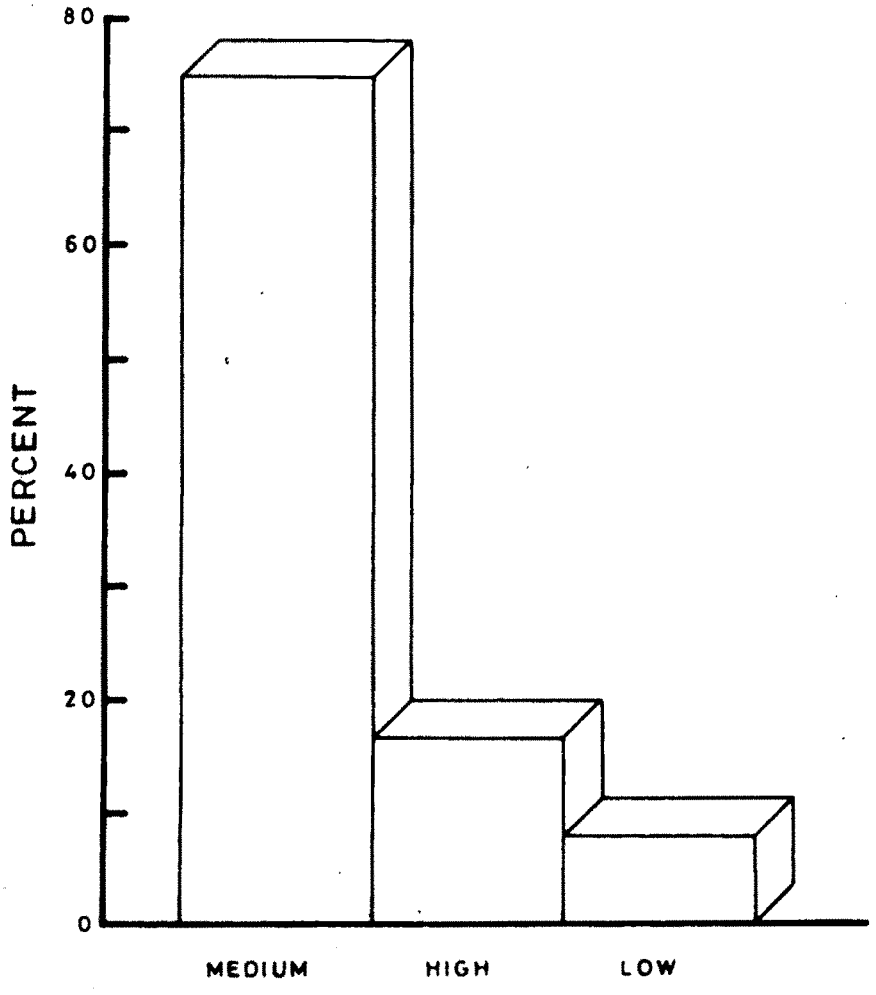
Table 17. Knowledge level scores of respondents in different farming systems

(n=240)

Knowledge score	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
2	2	1.66	2	1.66
3	6	5.00	4	3.33
4	5	4.16	4	3.33
5	6	5.00	8	6.67
6	9	7.50	8	6.67
7	22	18.34	16	13.35
8	17	14.17	20	16.66
9	22	18.34	18	15.00
10	17	14.17	20	16.66
11	8	6.67	16	13.35
12	2	1.66	2	1.66
13	4	3.33	2	1.66
Total	120	100.00	120	100.00

A big majority of farmers and farm women obtained a score between 7 and 10. It implies that they possessed medium knowledge in different farming systems.

Fig.4. KNOWLEDGE LEVEL OF RESPONDENTS IN DIFFERENT FARMING SYSTEMS



Extent of knowledge in different farming systems

Based on the knowledge scores obtained, the respondents were classified into three categories namely low, medium and high. The results on knowledge level of respondents are presented in Table 18 (Fig.4).

Table 18. Knowledge level of farmer and farm women in different farming systems

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	10	8.33	19	15.83
Medium	90	75.00	83	69.17
High	20	16.67	18	15.00
Total	120	100.00	120	100.00

Table 18 revealed that 75 per cent of farmers and 69.17 per cent of farm women possessed medium level of knowledge and only a few respondents possessed high and low level of knowledge.

A majority of the respondents had medium level of knowledge, followed by high knowledge level. This might be due to the reason that majority of the respondents were literates. Such a higher literacy level of the respondents would have contributed to the medium and high level of knowledge. This finding is in accordance with Madivanane (1990) who reported that majority of the respondents (51.92 per cent) possessed medium level of knowledge.

The data in Table 19 revealed that a majority of the farmers and farm women possessed high knowledge on application of herbicides (90 per cent) followed by nitrogenous fertilizer for paddy and top dressing (86.67 per cent) respectively in the case of farmers and (75 per cent) and (73.38 per cent) in the case of farm women in agriculture.

Application of herbicides, spraying pesticides and top dressing scored high ranks because of the reason of the fear over yield loss, that might occur due to pest and disease attack. This finding is in line with the findings of Helen (1990).

Regarding animal husbandry activities, feed ratio for cows (84.66 per cent) and (78 per cent) ranked first followed by feed ratio for calves (83.33 per cent) and (76.66 per cent) in the case of farmers and farm women respectively. This might be due to the intention of getting more milk and to maintain the health of the cows.

With respect to poultry, feed ratio for broilers (80 per cent) and (81.66 per cent) ranked first followed by feed ratio for layers (78.33 per cent) each among the respondents. This might be due to intention of getting more eggs and more price for broilers. This finding is in accordance with Malathi (1991).

of farmers and farm women

Table 19. Knowledge level in different farming systems

(n=240)

Sl. No.	Particulars	Farmers		Farm women	
		Percentage of correct amswers	Rank	Percentage of correct answers	Rank
	I. Agriculture				
a)	Most suitable high yielding paddy variety	73.33	3	70.00	4
b)	Application of herbicides	90.00	1	90.00	1
c)	Nitrogenous fertilizer for paddy	86.67	2	75.00	2
d)	Top dressing	86.67	2	73.33	3
	II. Animal husbandry				
a)	Breed which gives more milk yield	75.00	4	73.33	4
b)	Feed ratio for cows	84.66	1	78.00	1
c)	Feed ratio for calves	83.33	2	76.66	2
c)	Disease management	80.00	3	72.00	3
	III. Poultry				
a)	Layer which gives more eggs	70.00	5	73.33	4
b)	Feed ratio for broilers	80.00	1	81.66	1
b)	Feed ratio for layers	78.33	2	78.33	2
d)	Debeaking	76.66	3	75.00	3
e)	Disease management	75.00	4	75.00	4
	IV. Fodder/Cultivation				
a)	Fodder variety to get more yield	71.66	3	70.00	3
b)	Planting	76.66	1	75.00	1
c)	Pest and disease management	75.00	2	70.00	2
	V. Sericulture				
a)	Plant protection in mulberry plants	76.66	1	78.00	1
b)	Feeding the larvae	73.33	2	74.66	2
c)	Pest and disease management	71.66	3	75.00	3
	VI. Mushroom cultivation				
a)	Size of mushroom bed	88.00	1	75.00	1
b)	Watering the mushroom bed	81.66	2	72.00	2
c)	Maintenance of shed	81.66	2	70.00	3
d)	Harvesting of mushroom	78.33	3	70.00	3
e)	Seed rate of mushroom	78.33	3	70.00	3
f)	Variety which gives more yield	81.66	2		

With respect to poultry, feed ratio for broilers (80 per cent) and (81.66 per cent) ranked first followed by feed ratio for layers (78.33 per cent) each among the respondents. This might be due to intention of getting more eggs and more price for broilers. This finding is in accordance with Malatni (1991).

With respect to fodder crops planting and pest and disease management ranked first and second respectively among the respondents (76.66 per cent) and (75 per cent) among farmers regarding planting (75 per cent) and (70 per cent) among farm women with respect to pest and disease management. This might be due to the reason that for getting more yield (i.e.) vegetative growth planting and pest and disease management played important roles.

Regarding sericulture, plant protection in mulberry plants (76.66 per cent) and (78 per cent) ranked first in the case of farmers and farm women respectively. Feeding the larvae (73.33 per cent) and (74.66 per cent) ranked second in the case of farmers and farm women. Pest and disease management (71.66 per cent) and (75 per cent) ranked third in the case of farmers and farm women.

Plant protection in mulberry plants feeding the larvae and pest and disease management scored high ranks

With respect to mushroom cultivation, preparation of mushroom bed ranked first (88 per cent) and (75 per cent) respectively in the case of farmers and farm women followed by watering the mushroom bed and maintenance of shed (81.66 per cent) respectively by farmers and (72 per cent) and (70 per cent) respectively by farm women.

Preparation of mushroom bed, watering the mushroom bed and maintenance of shed scored high ranks, because these factors played important roles for getting more yield.

Farming systems - practices - adoption index

Adoption index developed by Nanjaiyan (1985) was slightly modified to suit the study. The procedure followed in developing this index had already been discussed in Chapter III. In the present investigation the operational measure of the adoption behaviour is the aggregate adoption score for different farming systems and it will hereafter be referred as adoption score. The total adoption scores ranged from 0.80 to 1.58, with a mean of 0.98 and 0.96 and the standard deviation 0.19 and 0.17. The respondents with different levels of adoption behaviour were categorised into low, medium and high based on the mean score with plus or minus of one standard deviation. Table 20 revealed that 75 per cent of farmers and 60 per cent of farm women had medium level of adoption in different farming systems. More than 16 per cent of farmers and 25 per cent of farm women had

high adoption behaviour in different farming systems. This finding is in line with the findings of Sridaran (1981) who reported that majority of the sericulturists (60.83 per cent) were medium in their overall extent of adoption.

Table 20. Distribution of respondents on farming system - practices - adoption index

(n=240)

Category	Male farmers (n=120)		Farm women (n=120)	
	No.	Per cent	No.	Per cent
Low	10	8.33	18	15.00
Medium	90	75.00	72	60.00
High	20	16.67	30	25.00
Total	120	100.00	120	100.00
	$\bar{X}$ = 0.98		$\bar{X}$ = 0.96	
	S = 0.19		S = 0.17	

Table 21. Reasons for non-adoption of improved practices

(n=240)

Reasons	Number	Per cent
1. High cost of inputs	80	33.33
2. More expenditure on labour	88	36.66
3. Lack of finance	92	38.33
4. Lack of irrigation water	96	40.00

Table 21 indicated that the reasons for non-adoption, high cost of inputs (33.33 per cent), more expenditure on

labour (36.66 per cent), lack of finance (38.33 per cent) and lack of irrigation water (40.00 per cent) were some of the main reasons expressed by the respondents for non-adoption of improved practices in different farming systems.

Section D.

ROLE PERFORMANCE OF MALE AND FEMALE FARMERS IN DIFFERENT FARMING SYSTEMS

One of the study objectives is to examine the role performance of male and female farmers in different farming systems.

Perusal of the above table 22 revealed that 70 per cent of farmers selected the seeds by self doing, and a meagre per cent of farmers (16.66 per cent) and (13.33 per cent) by supervising and assisting respectively, and 65.00 per cent of farm women by self doing and a meagre per cent of farm women (28.33 per cent) and (6.66 per cent) by supervising and assisting. Regarding plant protection in nursery, 75 per cent of farmers done the work by self doing followed by 25 per cent by supervising.

For getting more yield and for healthy plants selection of seeds, seed treatment and plant protection played important roles. Thus these practices were carried out by most of the farmers and farm women by themselves.

Table 22. Role performance by the respondents

(n=240)

Sl. No.	Role performance	Self doing				Supervising				Assisting			
		Farmer		Farm women		Farmer		Farm women		Farmer		Farm women	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	I. Nursery preparation												
a)	Selection of seeds	84	70.00	78	65.00	20	16.66	34	28.33	16	13.33	8	6.66
b)	Seed treatment	88	73.33	80	66.66	20	16.66	24	20.00	12	10.00	16	13.33
c)	Sowing the seeds	80	66.66	78	65.00	18	15.00	26	21.66	22	18.33	16	13.33
d)	Irrigating the nursery	84	70.00	78	65.00	20	16.66	34	28.33	16	33.33	8	6.66
e)	Plant protection in nursery	90	75.00	-	-	30	25.00	-	-	-	-	-	-
	II. Main field preparation												
a)	Ploughing, puddling and levelling	76	63.33	-	-	24	20.00	-	-	20	16.66	-	-
b)	Rectifying bunds	70	58.33	-	-	28	23.33	-	-	22	18.33	-	-
c)	Application of basal manure	80	66.66	-	-	20	16.66	-	-	20	16.66	-	-
	III. Transplanting												
a)	Pulling out the seedlings from the nursery	-	-	70	58.33	-	-	22	18.33	-	-	28	23.33
b)	Transporting the seedlings	76	63.33	-	-	24	20.00	-	-	20	16.66	-	-
c)	Transplanting the seedlings	-	-	70	58.33	-	-	20	16.66	-	-	30	25.00

70
22
28
120

Table 22. (Contd.)

Sl. No.	Role performance	Self doing				Supervising				Assisting			
		Farmer		Farm women		Farmer		Farm women		Farmer		Farm women	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	IV. After cultivation												
a)	Application of herbicides	84	70.00	-	-	26	21.66	-	-	10	8.33	-	-
b)	Hand weeding	-	-	70	58.33	-	-	20	16.66	-	-	30	25.00
c)	Top dressing	80	66.66	-	-	18	15.00	-	-	22	18.33	-	-
d)	Spraying pesticides	75	62.50	-	-	25	20.83	-	-	20	16.66	-	-
e)	Irrigation	78	65.00	-	-	22	18.33	-	-	20	16.66	-	-
	V. Harvesting												
a)	Draining water	72	60.06	-	-	30	25.00	-	-	18	15.00	-	-
b)	Harvesting	-	-	80	66.66	-	-	20	16.66	-	-	20	16.66
c)	Bundling	74	61.66	-	-	28	23.33	-	-	18	15.00	-	-
d)	Carrying to the yard	80	66.66	-	-	20	16.66	-	-	20	16.66	-	-
	VI. Post-harvest activities												
a)	Threshing	-	-	72	60.00	-	-	28	23.33	-	-	20	16.66
b)	Winnowing	-	-	80	66.66	-	-	22	18.33	-	-	18	15.00
c)	Drying	-	-	80	66.66	-	-	20	16.66	-	-	20	16.66
d)	Bagging	80	66.66	-	-	16	13.33	-	-	24	20.00	-	-
e)	Transporting	80	66.66	-	-	20	16.66	-	-	20	16.66	-	-
f)	Storage	-	-	72	60.00	28	23.33	-	-	20	16.66	-	-
	VII. Miscellaneous												
a)	Marketing	74	61.66	-	-	26	21.66	-	-	20	16.66	-	-
b)	Keeping accounts	78	65.00	-	-	22	18.33	-	-	20	16.66	-	-
c)	Disbursing wages	74	61.66	-	-	20	16.66	-	-	26	21.66	-	-

Table 22. (Contd.)

Sl. No.	Role performance	Self doing				Supervising				Assisting			
		Farmer		Farm women		Farmer		Farm women		Farmer		Farm women	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	VIII. Animal husbandry												
a)	Grazing the animals	33	56.90	42	66.66	12	20.69	15	23.81	13	22.42	6	9.52
b)	Feeding the animals	26	44.83	38	60.32	26	44.82	17	26.98	6	10.34	8	12.69
c)	Bathing the animals	33	56.90	44	69.85	22	37.94	13	20.63	3	5.17	6	9.52
d)	Cleaning the shed	31	53.45	46	73.02	21	36.21	11	17.46	6	10.34	6	9.52
e)	Milking	39	67.24	38	60.32	16	27.59	17	26.98	3	5.17	8	12.69
f)	Selling the milk	47	81.04	36	57.15	8	13.79	17	26.98	3	5.17	10	15.87
	IX. Poultry												
a)	Feeding the birds	-	-	10	71.43	-	-	2	14.29	-	-	2	14.29
b)	Cleaning the shed	-	-	8	57.15	-	-	3	21.42	-	-	3	21.42
c)	Debeaking the birds	-	-	-	-	-	-	12	85.72	-	-	2	14.29
d)	Selling the eggs/ broilers	12	92.30	10	71.43	1	7.69	2	14.29	-	-	2	14.29
	X. Sericulture												
a)	Planting of mulberry plants	3	60.00	-	-	1	20.00	-	-	1	20.00	-	-
b)	Plant protection in mulberry plants	2	40.00	-	-	2	40.00	-	-	1	20.00	-	-
c)	Feeding the larvae	-	-	4	66.66	-	-	1	16.66	-	-	1	16.66
d)	Cleaning the shed	3	60.00	3	50.00	1	20.00	2	33.33	1	20.00	1	16.66
e)	Selling the cocoons	3	60.00	3	50.00	1	20.00	2	33.33	1	20.00	1	16.66

Table 22. (Contd.)

Sl. No.	Role performance	Self doing				Supervising				Assisting			
		Farmer		Farm women		Farmer		Farm women		Farmer		Farm women	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
XI.	Mushroom cultivation												
a)	Preparation of mushroom bed	8	80.00	6	66.67	2	20.00	2	22.22	-	-	1	11.11
b)	Watering the mushroom bed	8	80.00	8	88.88	1	10.00	1	11.11	1	10.00	-	-
c)	Maintenance of shed	7	70.00	6	66.67	1	10.00	2	11.11	2	2.00	1	11.11
d)	Harvesting	7	70.00	7	77.77	1	10.00	1	11.11	2	2.00	1	11.11
e)	Selling mushroom	10	100.00	6	66.67	-	-	2	22.22	-	-	1	11.11

This finding is in accordance with Malathi (1990) who reported that plant protection and seed treatment were done by farmers.

Regarding main field preparation, 63.33 per cent of farmers done ploughing, puddling and levelling by self doing, 20.00 per cent and 16.66 per cent by supervising and assisting. Rectification of bunds was carried out by 58.33 per cent and application of basal manure by 66.66 per cent.

The reason for ploughing, puddling, levelling, rectifying bunds and application of basal manure by most of the farmers by self doing was due to the reason that 68 per cent of the respondents were agriculturists.

Regarding pulling out the seedlings from the nursery 58.33 per cent done by self doing, followed by 18.33 per cent by supervising and 23.33 per cent by assisting. With respect to transporting the seedlings, 63.33 per cent by self doing and only a meagre per cent (20.00 per cent) and (16.66 per cent) by supervising and assisting. With respect to transplanting 58.33 per cent of farm women by self doing, 16.66 per cent and 25.00 per cent by supervising and assisting respectively.

The reasons for most of the agricultural activities carried out by farmers and farm women by self doing rather

than supervising and assisting was due to the fact that most of the respondents were agriculturists and due to more expenditure on labour.

Regarding application of herbicides 70.00 per cent of farmers have done by self doing, followed by 21.66 per cent and 8.33 per cent by supervising and assisting respectively. Regarding hand weeding 58.33 per cent of farm women by self doing followed by 25.00 per cent by assisting and 16.66 per cent by supervising. With respect to top dressing, spraying of pesticides and irrigation 66.66 per cent, 62.50 per cent and 65.00 per cent done the work by self doing by the farmers.

The major factors responsible for getting more yield were application of herbicides, weeding, top dressing, spraying pesticides, irrigation etc. Thus these practices were carried out by self doing. Also the other reasons were labour problem and more expenditure on labour.

Regarding harvesting, draining water (60.66 per cent) of farmers were done by self doing, and during harvesting 66.66 per cent of farm women done it by self doing. Bundling and carrying to the yard were carried out by 61.66 per cent and 66.66 per cent of farmers respectively.

Regarding post harvest activities, thrashing, winnowing and drying were done by 60.00 per cent, 66.66 per cent of farm women respectively. With respect to bagging and transporting 66.66 per cent of farmers did the practices by self doing. Marketing, keeping accounts and disbursing wages were also done by 61.66 per cent, 65.00 per cent and 61.66 per cent of farmers respectively.

Most of the agricultural activities were carried out by the respondents because of the non-availability of labour, more expenditure on labour and most of them were agriculturists.

Regarding animal husbandry activities, 56.90 per cent of farmers and 66.66 per cent of farm women done grazing of animals by self doing. Regarding bathing of animals and cleaning the shed 69.85 per cent and 73.02 per cent of farm women by self doing. Regarding milking 67.24 per cent of farmers and 60.32 per cent of farm women done by self doing. Regarding selling the milk 81.04 per cent of farmers and 57.15 per cent of farm women done it by self doing.

The reasons for carrying out the animal husbandry activities by the respondents themselves were due to lack of labour, more expenditure on labour and most of the respondents were agriculturists. This finding is in

confirmation with Malathi (1990), who reported that bathing of animals and cleaning of shed were done by farm women.

Regarding poultry, 71.43 per cent of farm women fed the birds and 57.15 per cent cleaned the shed by self doing. With respect to selling the eggs and broilers 92.30 per cent of farmers and 71.43 per cent of farm women did the job by self doing.

With respect to poultry most of the activities were carried out by the respondents themselves due to lack of labour and more expenditure on labour.

Regarding sericulture, planting of mulberry plants and plant protection in mulberry plants were done by the farmers (60.00 per cent and 40.00 per cent respectively). Feeding the larvae and cleaning the shed were done by 66.66 per cent and 50.00 per cent of farm women respectively. Selling the cocoons were done by 60.00 per cent of farmers.

Regarding sericulture most of the activities like planting of mulberry plants, plant protection, feeding the larvae, cleaning the shed and selling the cocoons were done by the respondents. This might be due to the reasons like to get more yield, to overcome the labour problem and expenditure on labour.

With respect to mushroom cultivation, preparation of mushroom bed and watering the mushroom bed were done by 80.00 per cent of farmers and 66.67 per cent and 88.88 per cent of farm women respectively. Regarding maintenance of shed, 70.00 per cent of farmers and 66.67 per cent of farm women by self doing. Regarding harvesting 77.77 per cent of farm women by self doing. Regarding selling mushroom, 100.00 per cent of farmers by self doing.

With respect to mushroom cultivation most of the activities were carried out by the respondents. This might be due to lack of labour, more expenditure on labour etc.

Section E

Time utilisation pattern of the respondents in farm activities

One of the study objectives is to study the time utilisation pattern of the respondents in farm activities.

Table 23 Time utilisation pattern of respondents

(n=240)

Sl. No.	Particulars	More than 8 hours during peak season			
		Farmers		Farm women	
		No.	%	No.	%
1.	Farming activities	98	81.66	112	93.33
2.	Animal husbandry activities	54	93.11	60	95.24
3.	Poultry	10	76.93	12	85.72
4.	Fodder crops	10	83.33	8	80.00
5.	Sericulture	5	100.00	6	100.00
6.	Mushroom cultivation	7	70.00	9	100.00

From the table 23 it was obvious that 81.66 per cent of farmers and 93.33 per cent of farm women worked more than 8 hours in farming activities during peak season. With respect to animal husbandry activities 93.11 per cent of farmers and 95.24 per cent of farm women worked more than 8 hours during peak season. Regarding poultry 76.93 per cent of farmers and 85.72 per cent of farm women worked more than 8 hours.

With respect to fodder crops, sericulture and mushroom cultivation, 70.83 per cent and 73.33 per cent, 58.33 per cent and 66.66 per cent, 56.66 per cent and 70.83 per cent worked more than 8 hours in peak season in the case of farmers and farm women respectively.

Regarding sericulture 100.00 per cent of the respondents worked more than 8 hours in peak season. In mushroom also 100.00 per cent of farm women worked more than 8 hours in peak season.

The reason for more respondents worked more than 8 hours during peak season was that most of the activities on farming, animal husbandry, poultry, fodder crops, sericulture and mushroom cultivation were carried out by themselves. This finding is in accordance with Subhashini (1991) who reported that 70.00 per cent of respondents worked more than 8 hours during peak season.

Section F

Training needs perceived and farming constraints experienced by the respondents

One of the study objectives is to study the training needs perceived and farming constraints experienced by the respondents.

Table 24 revealed that 76.66 per cent of the farmers expressed training need in pest and disease management, followed by 75.00 per cent in irrigation management and storage respectively. Regarding transplanting 66.66 per cent and for seed treatment 65.00 per cent expressed training need.

Pest and disease management, for that matter to any crop is of vital importance which increases the yield. The specific areas namely irrigation management, storage, transplanting, seed treatment and fertilizer application also played important roles for getting more yield. Thus they would have perceived those areas as the foremost training requirement in farming activities.

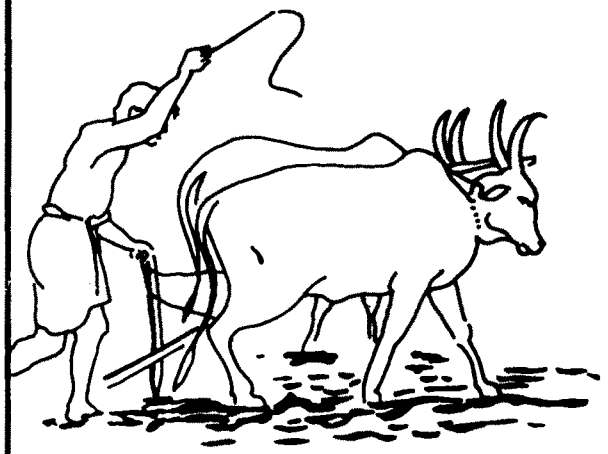
Table 24 revealed that 69.16 per cent of farm women expressed training need in storage, followed by weeding (66.66 per cent), transplanting (66.66 per cent), seed treatment (65.00 per cent) and nursery preparation (60.00 per cent).

Table 24. Training needs perceived in farming system

(n=240)

Sl. No.	Particulars	Farmers		Farm women	
		No.	%	No.	%
	I. Farming activities				
a)	Seed treatment	78	65.00	78	65.00
b)	Nursery preparation	88	73.33	72	60.00
c)	Fertilizer application	70	58.33	-	-
d)	Transplanting	80	66.66	80	66.66
e)	Weeding	-	-	80	66.66
f)	Pest and disease management	92	76.66	72	60.00
g)	Irrigation management	90	75.00	-	-
h)	Harvesting	-	-	80	66.66
i)	Storage	90	75.00	83	69.16
j)	Marketing	-	-	-	-
	II. Animal husbandry				
a)	Feed ratio for animals	54	93.10	60	95.24
b)	Disease management	58	100.00	58	92.07
c)	Foot and mouth disease	53	91.38	56	88.88
d)	Rinder pest disease	58	100.00	58	92.07
c)	Haemorrhage septicimia	50	86.21	62	98.41
	III. Poultry				
a)	Feed ratio for broilers/ layers	10	76.93	12	85.72
b)	Debeaking	8	61.54	7	50.00
c)	Disease management	12	92.31	12	85.72
	IV. Fodder crops				
	Pest and disease management	10	83.33	7	70.00
	V. Sericulture				
a)	Disease management in larvae	3	60.00	5	83.33
b)	Pest and disease management in mulberry plants	4	80.00	4	66.66
	VI. Mushroom cultivation				
a)	Disease management	8	80.00	9	100.00
b)	Maintenance of shed	7	70.00	6	66.67

Fig.5. TRAINING NEEDS UNDER FARMING ACTIVITIES



SEED TREATMENT

NURSERY PREPARATION

FERTILIZER APPLICATION

TRANSPLANTING

WEEDING

PEST AND DISEASE MANAGEMENT

IRRIGATION MANAGEMENT

HARVESTING

STORAGE

MARKETING

Fig.6. TRAINING NEEDS UNDER ANIMAL HUSBANDRY ACTIVITIES

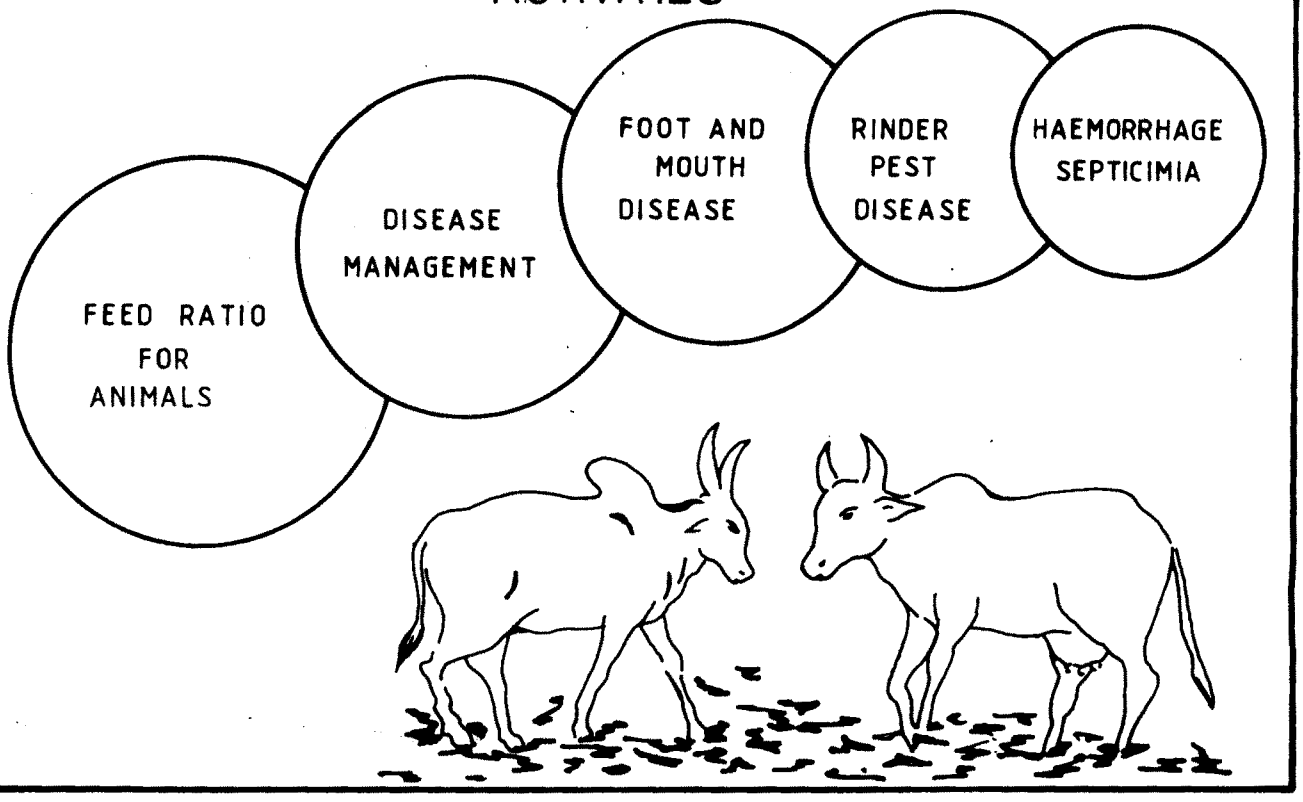
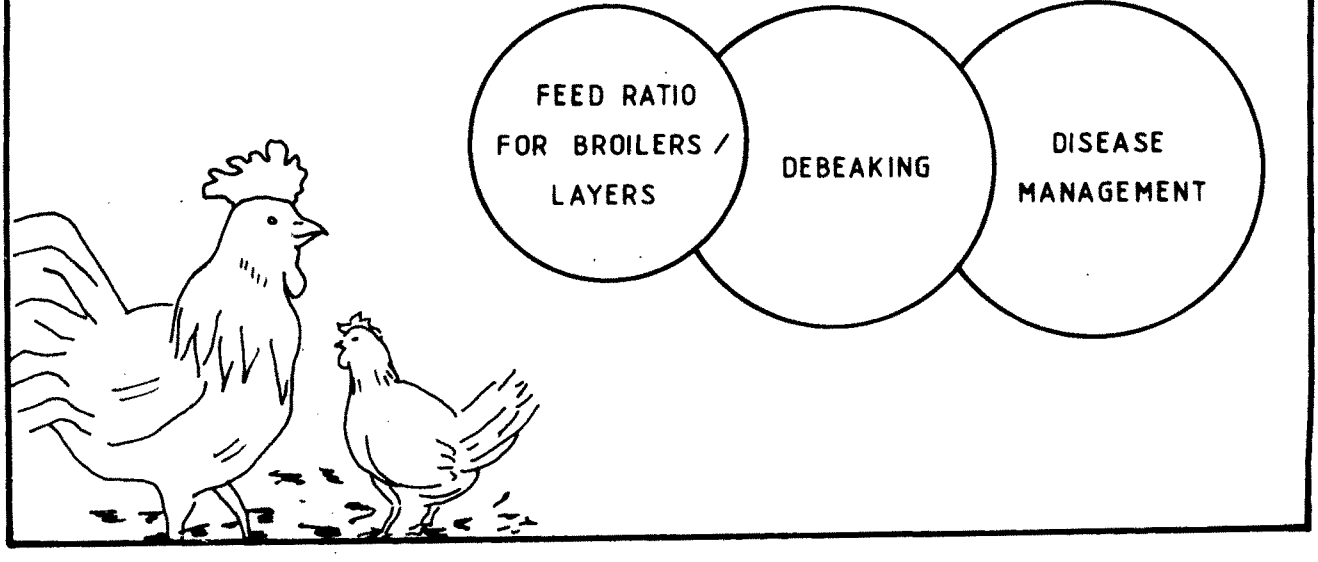


Fig.7. TRAINING NEEDS UNDER POULTRY



Storage, weeding, transplanting and seed treatment etc., played important roles for getting more profit. Hence the farm women would have perceived those areas as their foremost training requirement (Fig.5).

With respect to animal husbandry activities the remedial measure for disease management and Rinderpest disease (100.00 per cent) ranked first, followed by feed ratio for animals (93.10 per cent), foot and mouth disease (91.38 per cent) and for haemorrhage septicimia (86.21 per cent) expressed training requirement (Fig.6).

The remedial measure for hemorrhage septicemia, rinder pest disease, foot and mouth disease and disease management played important roles for getting more milk. Hence they would have perceived those areas as their foremost training requirements.

Regarding poultry, the training needs perceived by farmers were disease management (92.31 per cent), feed ratio for broilers/layers (76.93 per cent) and debeaking (61.54 per cent) (Fig.7).

Disease management and feed ratio for broilers/layers were the important practices for getting more eggs, and more profit in broilers. Hence they would have perceived those areas as their foremost training requirement.

Fig.8. TRAINING NEEDS UNDER FODDER CROPS AND SERICULTURE

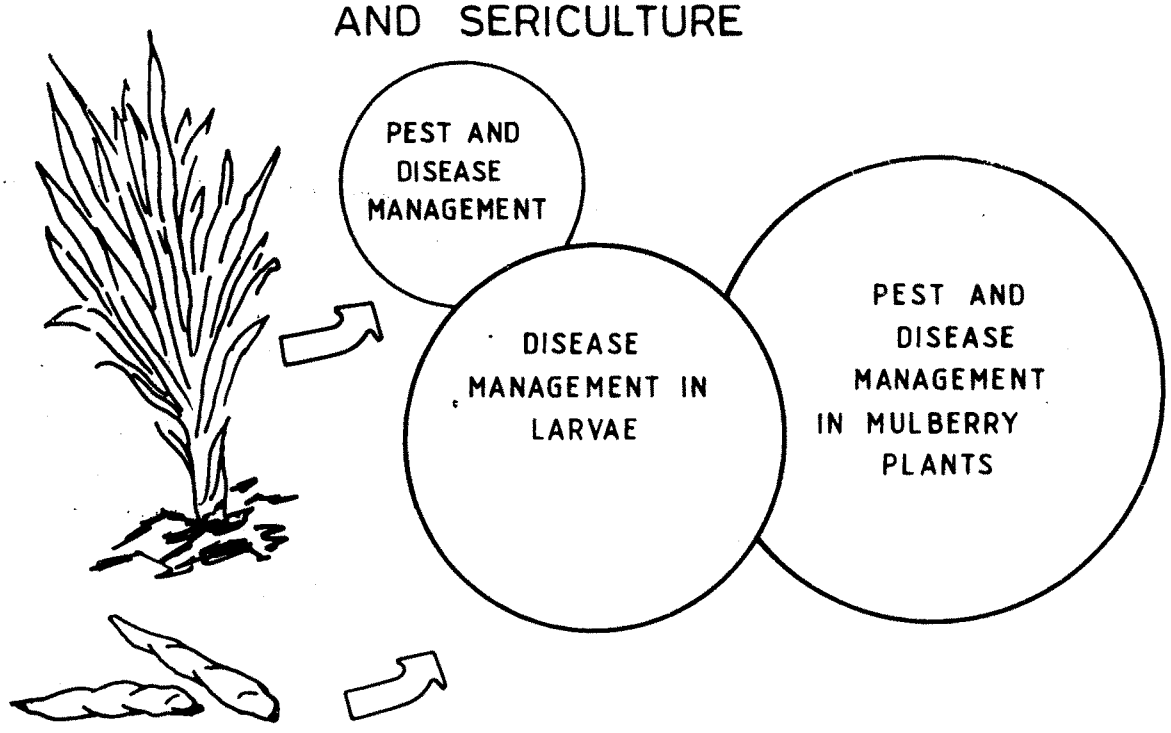
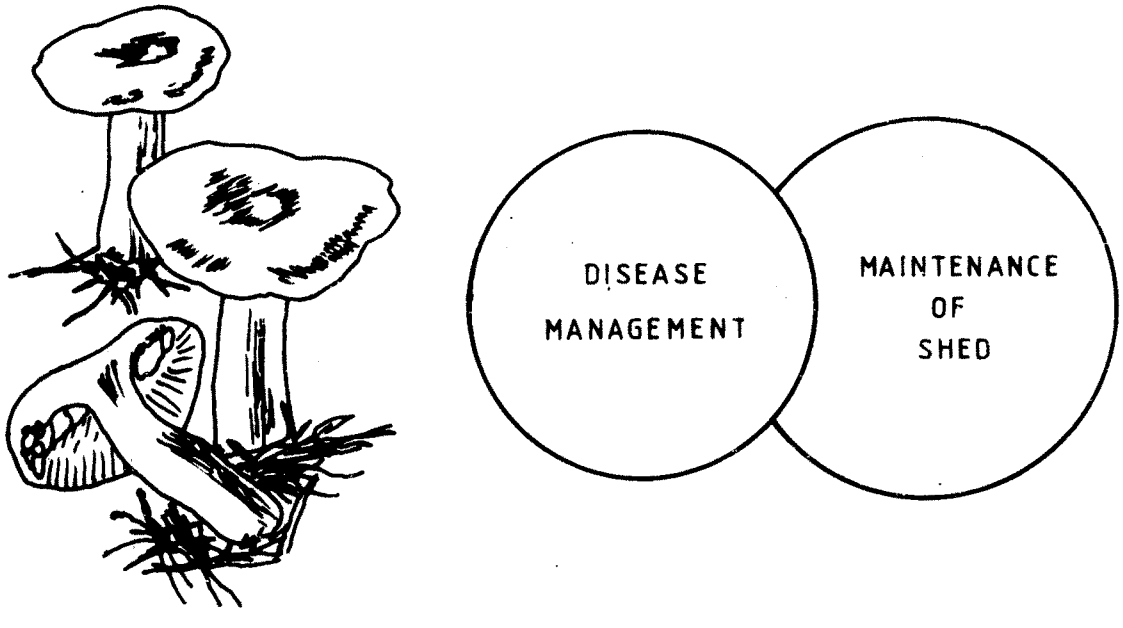


Fig.9. TRAINING NEEDS UNDER MUSHROOM CULTIVATION



Farm women also perceived feed ratio for broilers/ layers and disease management (85.72 per cent) respectively were the important training needs.

For getting more eggs/more profit in layers feed ratio and disease management played important roles. Thus they would have perceived those areas as their foremost training requirement.

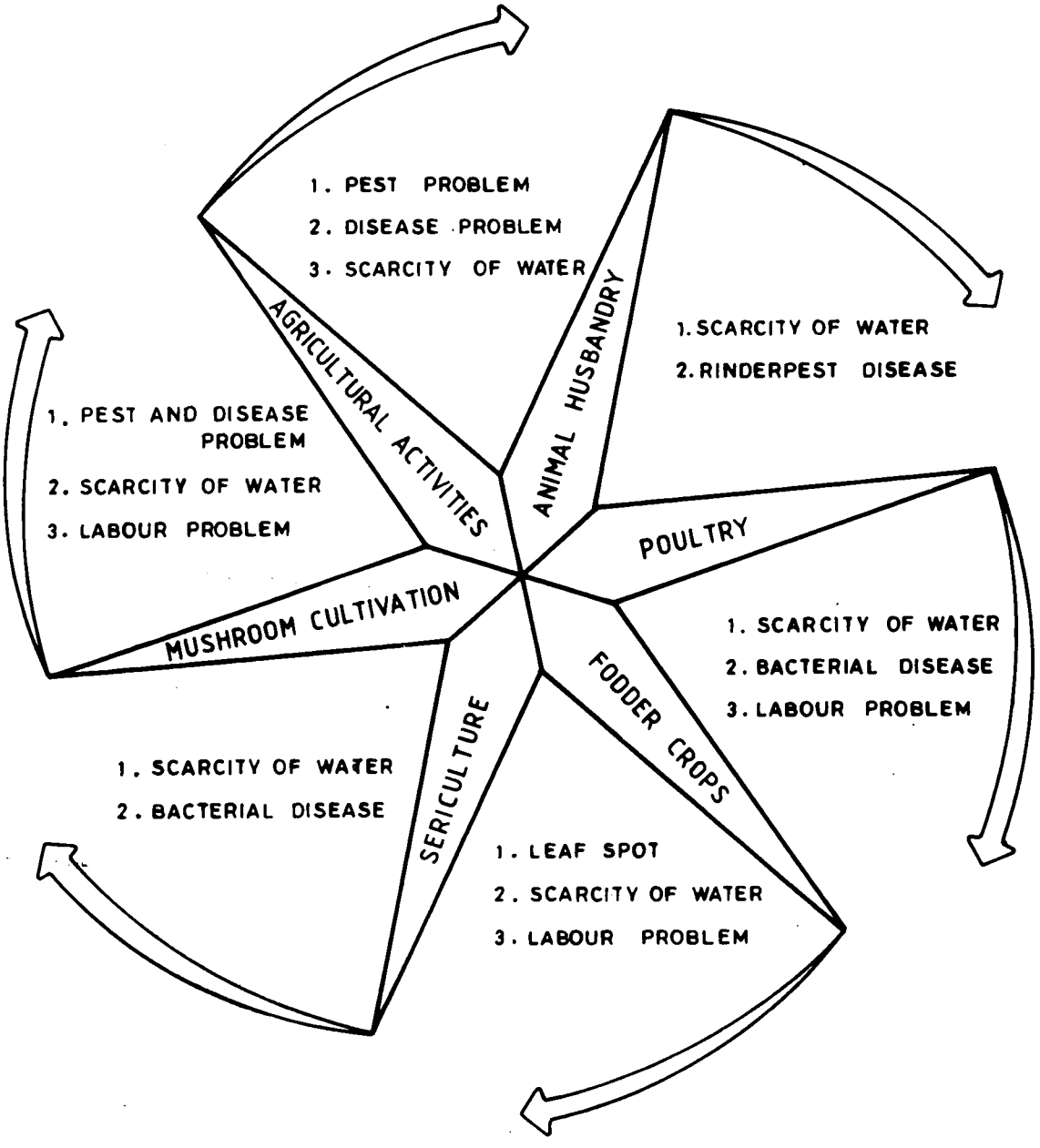
Regarding fodder crops, 83.33 per cent of farmers and 70.00 per cent of farm women perceived pest and disease management as their training need.

The reason was to get more fodder yield pest and disease management played a vital role.

With respect to sericulture, 60.00 per cent of farmers and 83.33 per cent of farm women expressed training need in disease management in larvae, followed by 80.00 per cent and 66.66 per cent in pest and disease management in mulberry plants (Fig.8).

For getting more cocoon yield disease management in larvae and pest and disease management in mulberry plants played vital roles. Thus they would have perceived those areas as their foremost training requirement.

Fig.10. FARMING CONSTRAINTS FACED BY THE RESPONDENTS



With respect to mushroom cultivation, 80.00 per cent of farmers and all the farm women expressed training need in disease management followed by 70.00 per cent of farmers and 66.67 per cent of farm women in maintenance of shed (Fig.9).

For getting more mushroom yield, disease management and maintenance of shed played vital roles. Thus they would have perceived those areas as their foremost training requirement.

Farming constraints faced by the respondents

Table 25 revealed that with respect to agricultural activities, farmers expressed pest problem (70.00 per cent), disease problem (93.33 per cent), scarcity of water (90.00 per cent) and lack of labour (87.50 per cent). The change agents should take efforts to solve their above mentioned constraints so as to make them adopt all the recommended practices (Fig.10).

Regarding farm women pest problem (85.00 per cent), disease problem (84.16 per cent), scarcity of water and lack of labour (81.66 per cent) respectively were the constraints in agriculture.

With respect to animal husbandry scarcity of water (89.66 per cent) and rinderpest disease (79.32 per cent) were the constraints expressed by farmers and the farm women expressed scarcity of water (90.48 per cent) and rinderpest disease (87.31 per cent) were the constraints.

Table 25. Farming constraints faced by the respondent

(n=240)

Sl. No.	Farming constraints	Farmers		Farm women	
		No.	%	No.	%
	I. Agricultural activities				
a)	Pest problem	84	70.00	102	85.00
b)	Disease problem	112	93.33	101	84.16
c)	Scarcity of water	108	90.00	98	81.66
d)	Lack of labour	105	87.50	98	81.66
	II. Animal husbandry				
a)	Scarcity of water	52	89.66	57	90.48
b)	Rinderpest disease	46	79.32	55	87.31
	III. Poultry				
a)	Scarcity of water	9	69.24	8	57.15
b)	Bacterial disease	7	53.85	6	42.86
c)	Labour problem	6	46.16	4	28.58
	IV. Fodder crops				
a)	Leaf spot	8	66.67	6	60.00
b)	Scarcity of water	6	50.00	4	40.00
c)	Labour problem	4	33.33	4	40.00
	V. Sericulture				
a)	Scarcity of water	3	60.00	4	66.66
b)	Bacterial disease	4	80.00	4	66.66
	VI. Mushroom cultivation				
a)	Pest and disease problem	8	80.00	7	77.78
b)	Scarcity of water	6	60.00	6	66.67
c)	Labour problem	7	70.00	5	55.56

Regarding poultry 69.24 per cent of farmers and 57.15 per cent of farm women expressed scarcity of water, disease problem (53.85 per cent) and (42.86 per cent), labour problem (46.16 per cent) and (28.58 per cent) were the constraints.

With respect to fodder crops, 66.67 per cent of farmers and 60.00 per cent of farm women expressed leaf spot problem, followed by scarcity of water (50.00 per cent) and (40.00 per cent) and labour problem (33.33 per cent) and (40.00 per cent).

Regarding sericulture, 60.00 per cent of farmers and 66.66 per cent of farm women expressed scarcity of water, disease problem (80.00 per cent) and (66.66 per cent) were the constraints.

With respect to mushroom cultivation, 80.00 per cent of farmers and 77.78 per cent of farm women expressed pest and disease problem followed by scarcity of water (60.00 per cent) and (66.67 per cent) and labour problem (70.00 per cent) and (55.56 per cent) were the constraints.

Section G

Different farming systems with respect to income generation

One of the study objectives is to analyse the different farming systems with respect to income generation.

Table 25. Different farming system with respect to income generation

(n=240)

Sl. No.	Different farming system	Income generation/ year Rs.	Farmer		Farm women	
			No.	%	No.	%
1.	Agriculture alone	50,000	57	47.50	51	42.50
2.	Agriculture + Animal husbandry	75,000	21	17.52	27	22.50
3.	Agriculture + Poultry + Animal husbandry	90,000	13	10.85	14	11.67
4.	Agriculture + Fodder crops + Animal husbandry	90,000	12	10.03	10	8.33
5.	Agriculture + Sericulture + Agro-forestry	90,000 - 1,00,000	5	4.16	6	5.00
6.	Agriculture + Agro-forestry + Sheep/ goat rearing	90,000 - 1,00,000	2	1.60	3	2.50
7.	Agriculture + Mushroom + Animal husbandry + fish culture	1,00,000	10	8.34	9	7.50

Fig.11. DIFFERENT FARMING SYSTEMS WITH RESPECT TO INCOME GENERATION

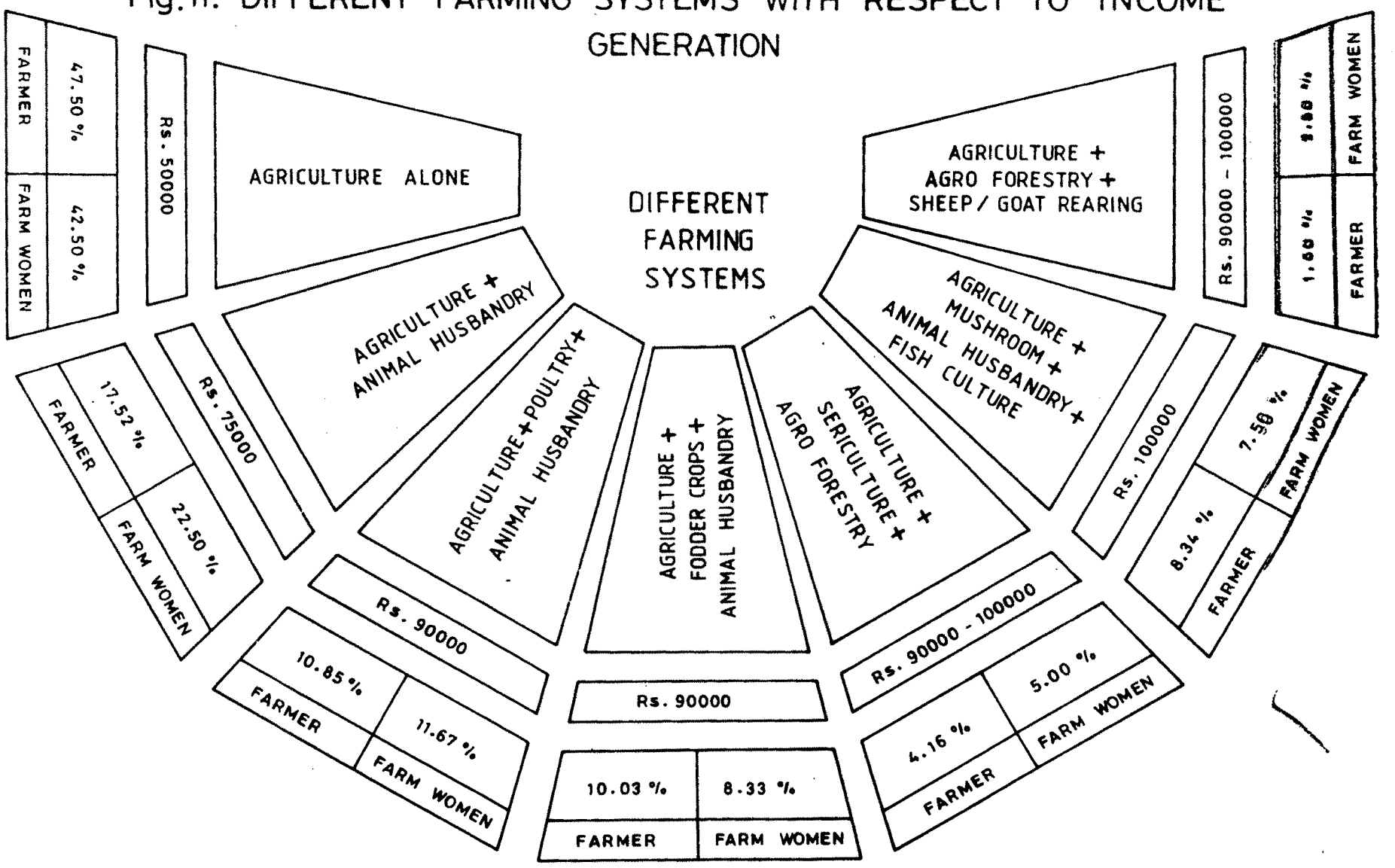


Table 26 revealed that with respect to income generation 47.50 per cent of farmers and 42.50 per cent of farm women expressed income generation/year was Rs.50,000/- for agriculture alone. For agriculture + animal husbandry 17.50 per cent of farmers and 22.50 per cent of farm women expressed income generation/year was Rs.75,000/- with respect to agriculture + poultry + animal husbandry, 10.83 per cent of farmers and 11.66 per cent of farm women expressed income generation/year was Rs.90,000/-. Regarding agriculture + fodder crops + animal husbandry 10.00 per cent of farmers and 8.33 per cent of farm women expressed income generation/year was Rs.90,000/- with respect to agriculture + sericulture + agroforestry 4.16 per cent of farmers and 5.00 per cent of farm women expressed income generation/year was Rs.90,000 - 1,00,000. Regarding agriculture + agro forestry + sheep/goat rearing 1.6 per cent of farmers and 2.50 per cent of farm women expressed income generation/year was Rs.90,000 - 1,00,000. In the case of agriculture + mushroom + animal husbandry + fish culture 8.33 per cent of farmers and 7.50 per cent of farm women expressed income generation/year was Rs.1,00,000 (Fig.11).

Relationship between the characteristics of farmers and the extent of adoption of different farming systems

To find out the type and intensity of relationship between the characteristics of different farmers and the

Table 27. Correlation coefficient of independent variables with extent of adoption by farmers

(n=120)

Sl.No.	Variables	Correlation coefficient (r)
1.	Age	.01321 NS
2.	Education	-.10568 NS
3.	Family type	-.11875 NS
4.	Family size	-.06176 NS
5.	Land holding	-.13815 NS
6.	Farming experience	-.04160 NS
7.	Livestock possession	-.09379 NS
8.	Material possession	.01036 NS
9.	Farm power	-.16507 NS
10.	Annual income	.02476 NS
11.	Social participation	.03176 NS
12.	Expenditure incurred	-.29293**
13.	Contact with extension agency	-.12379 NS
14.	Mass media participation	.01135 NS
15.	Migration habit	-.06055 NS
16.	Extent of employment	.02220 NS
17.	Job preference	.11466 NS
18.	Knowledge level	.08708 NS
19.	Credit orientation	-.00792 NS
20.	Economic motivation	-.05973 NS
21.	Scientific orientation	.08253 NS
22.	Risk orientation	.01996 NS

* - Significant at 0.05 level of probability
** - Significant at 0.01 level of probability
NS - Non-significant

extent of adoption of different farming systems, zero order correlation was computed and the results are presented in Table 27.

From Table 27 it could be observed that of the 22 independent variables studied, the variable expenditure incurred alone showed negative and significant association with extent of adoption. This would mean that farmers with more expenditure incurred might not have adopted different farming systems. The farmers with more expenditure incurred belonged to the high economic status, which was acquired through their earnings from their family business or services. They would rather concentrate their time and resources more on their business than that of farming.

Correlation coefficient of independent variables with training need by farmers

Table 28 indicated that out of 22 variables studied, education, family type, material possession, social participation, knowledge level and credit orientation showed positive and significant association with training need. This would mean that farmers with more education, family members, material possession, social participation, knowledge level and credit orientation might have acquired training need. The variables expenditure incurred, extent of employment and economic motivation showed negative and

Table 28. Correlation coefficient of independent variables with training need by farmers

(n=120)

Sl.No.	Variables	Correlation coefficient (r)
1.	Age	-.04216 NS
2.	Education	.19733*
3.	Family type	.21440*
4.	Family size	.10908 NS
5.	Land holding	.02450 NS
6.	Farming experience	.13621 NS
7.	Livestock possession	-.03553 NS
8.	Material possession	.19735*
9.	Farm power	.17412 NS
10.	Annual income	.07897 NS
11.	Social participation	.18293*
12.	Expenditure incurred	-.18250*
13.	Contact with extension agency	.04424 NS
14.	Mass media participation	.04903 NS
15.	Migration habit	-.07076 NS
16.	Extent of employment	-.18016*
17.	Job preference	-.09295 NS
18.	Knowledge level	.21397*
19.	Credit orientation	.25128*
20.	Economic motivation	-.19095*
21.	Scientific orientation	-.19815 NS
22.	Risk orientation	-.02510 NS

* - Significant at 0.05 level of probability
** - Significant at 0.01 level of probability
NS - Non-significant

significant association. This would mean that farmers with more expenditure incurred, employment and economic motivation belonged to high economic status, and they would rather concentrate their time and resources more on their business than that of training.

Correlation coefficient of independent variables with role performance in agriculture and allied activities by farmers

Table 29 expressed that out of 22 variables studied farming experience showed positive and significant association at 0.05 level of probability, and mass media participation showed positive and significant association at 0.01 level of probability, with role performance in agriculture and allied activities. This would mean that farmers with more farming experience and mass media participation might have performed significant roles in agriculture and allied activities. Social participation, job preference, and knowledge level showed negative and significant association with role performance in agriculture and allied activities. This would mean that farmers with more social participation, job preference and knowledge level have no time to perform agriculture and allied activities.

Table 29. Correlation coefficient of independent variables with role performance in agriculture and allied activities by farmers

(n=120)

Sl.No.	Variables	Correlation coefficient (r)
1.	Age	-.04075 NS
2.	Education	.01776 NS
3.	Family type	.03641 NS
4.	Family size	-.09098 NS
5.	Land holding	.09028 NS
6.	Farming experience	.19414*
7.	Livestock possession	-.06584 NS
8.	Material possession	.03336 NS
9.	Farm power	.10047 NS
10.	Annual income	.11545 NS
11.	Social participation	-.19340*
12.	Expenditure incurred	-.01681 NS
13.	Contact with extension agency	-.08065 NS
14.	Mass media participation	.24529**
15.	Migration habit	-.15753 NS
16.	Extent of employment	.09806 NS
17.	Job preference	-.19440*
18.	Knowledge level	-.25215*
19.	Credit orientation	-.02583 NS
20.	Economic motivation	-.02630 NS
21.	Scientific orientation	-.14199 NS
22.	Risk orientation	-.10407 NS

* - Significant at 0.05 level of probability
** - Significant at 0.01 level of probability
NS - Non-significant

Correlation coefficient of independent variables with extent of adoption by farm women

Table 30 revealed that out of 22 variables taken, farming experience, social participation and knowledge level showed positive and significant association with extent of adoption by farm women. This would mean that farm women with more farming experience, social participation and knowledge level adopted different farming systems. Family size, land holding and job preference showed negative and significant association with extent of adoption. This would mean that farm women with more family members, land holding and job preference belonged to high income status and they would rather concentrate their time and resources more on their business than that of farming.

Correlation coefficient of independent variables with training need by farm women

Table 31 expressed that out of 22 variables taken family size, land holding and knowledge level showed positive and significant association with training need by farm women. Farm women with more family members, land holding and knowledge level might have acquired training need. Livestock possession showed negative and significant association with training need. This would mean that farm women with more livestock possession had no training need because of insufficient time and they have to concentrate more time on animal husbandry activities.

Table 30. Correlation coefficient of independent variables with extent of adoption by farm women

(n=120)

Sl.No.	Variables	Correlation coefficient (r)
1.	Age	.09482 NS
2.	Education	.06017 NS
3.	Family type	.07540 NS
4.	Family size	-.21532*
5.	Land holding	-.25505*
6.	Farming experience	.25353*
7.	Livestock possession	.03665 NS
8.	Material possession	-.15700 NS
9.	Farm power	.10725 NS
10.	Annual income	-.14126 NS
11.	Social participation	.20107*
12.	Expenditure incurred	-.06569 NS
13.	Contact with extension agency	.00000 NS
14.	Mass media participation	.05809 NS
15.	Migration habit	-.12230 NS
16.	Extent of employment	-.02771 NS
17.	Job preference	-.19680*
18.	Knowledge level	.19197*
19.	Credit orientation	-.04749 NS
20.	Economic motivation	.03437 NS
21.	Scientific orientation	-.05209 NS
22.	Risk orientation	.00409 NS

* - Significant at 0.05 level of probability
** - Significant at 0.01 level of probability
NS - Non-significant

Table 31. Correlation coefficient of independent variables with training need by farm women

(n=120)

Sl.No.	Variables	Correlation coefficient (r)
1.	Age	-.16672 NS
2.	Education	-.10274 NS
3.	Family type	-.03903 NS
4.	Family size	.19903*
5.	Land holding	.19260*
6.	Farming experience	.02361 NS
7.	Livestock possession	-.19617*
8.	Material possession	-.00107 NS
9.	Farm power	-.12167 NS
10.	Annual income	.12360 NS
11.	Social participation	-.04060 NS
12.	Expenditure incurred	.06906 NS
13.	Contact with extension agency	-.02048 NS
14.	Mass media participation	-.09385 NS
15.	Migration habit	.02135 NS
16.	Extent of employment	-.10201 NS
17.	Job preference	.05986 NS
18.	Knowledge level	.19858*
19.	Credit orientation	.02185 NS
20.	Economic motivation	.08819 NS
21.	Scientific orientation	.05392 NS
22.	Risk orientation	-.06915 NS

* - Significant at 0.05 level of probability
** - Significant at 0.01 level of probability
NS - Non-significant

Correlation coefficient of independent variables with role performance in agriculture and allied activities

Table 32 indicated that out of 22 variables studied farming experience and knowledge level showed positive and significant association. This would mean that farm women with more farming experience and knowledge level mostly belonged to experienced category and they performed more roles in agriculture and allied activities. The variables annual income and risk orientation showed negative and significant association with role performance in agriculture and allied activities. This would mean that, farm women with more annual income and risk orientation mostly not performed any roles in agriculture and allied activities.

Linear multiple regression analysis of independent variables of farmers towards extent of adoption in different farming systems

Table 33 revealed that since R^2 = 0.44 and significant at 1 per cent level of probability, the independent variables viz., education, annual income, social participation, extension agency contact etc., together able to explain 44 per cent of the variation in the adoption behaviour of the farmers, also an increase by one unit in education, annual income, social participation, extension agency contact etc., **Ceteris paribus** would increase the extent of adoption by 0.98, 0.96, 0.48, 0.39 units

Table 32. Correlation coefficient of independent variables with role performance in agriculture and allied activities by farm women

(n=120)

Sl.No.	Variables	Correlation coefficient (r)
1.	Age	.12239 NS
2.	Education	-.12259 NS
3.	Family type	.14879 NS
4.	Family size	-.03083 NS
5.	Land holding	-.06827 NS
6.	Farming experience	.22598*
7.	Livestock possession	.17354 NS
8.	Material possession	.00431 NS
9.	Farm power	.01262 NS
10.	Annual income	-.19884*
11.	Social participation	-.02171 NS
12.	Expenditure incurred	.17439 NS
13.	Contact with extension agency	-.01423 NS
14.	Mass media participation	.10599 NS
15.	Migration habit	.02650 NS
16.	Extent of employment	-.14682 NS
17.	Job preference	-.05400 NS
18.	Knowledge level	.19500*
19.	Credit orientation	-.00566 NS
20.	Economic motivation	-.10990 NS
21.	Scientific orientation	-.03283 NS
22.	Risk orientation	-.19436*

* - Significant at 0.05 level of probability
** - Significant at 0.01 level of probability
NS - Non-significant

Table 33. Linear multiple regression analysis of independent variables of farmers towards extent of adoption in different farming systems

Sl. No.	Variables	Standardised regression coefficient	Standard error of b	t value
1.	Age	-0.1722	0.2341	-1.2986 NS
2.	Education	0.9872	3.0250	4.9541**
3.	Family type	-1.4440	0.2024	-4.8248**
4.	Family size	-1.4400	0.0199	-4.2872**
5.	Land holding	-1.5219	0.0272	-4.2228**
6.	Farming experience	0.2302	0.0232	0.6163 NS
7.	Livestock possession	-0.5102	0.0231	-1.0332 NS
8.	Material possession	0.5222	0.0221	0.8221 NS
9.	Farm power	-1.1510	0.0121	-0.2120 NS
10.	Annual income	0.9690	3.0224	5.4624**
11.	Social participation	0.4862	3.8441	4.2846**
12.	Expenditure incurred	-0.8750	0.1121	0.2112 NS
13.	Contact with extension agency	0.3862	0.0125	4.0241**
14.	Mass media participation	-0.6410	0.6411	-1.2872 NS
15.	Migration habit	-0.4901	3.2248	-4.5514**
16.	Extent of employment	0.0338	0.4664	1.4294 NS
17.	Job preference	0.9702	0.3796	0.6163 NS
18.	Knowledge level	0.4272	0.6421	1.2872 NS
19.	Credit orientation	-0.8230	2.5220	-1.1562 NS
20.	Economic motivation	1.1340	0.3027	1.1332 NS
21.	Scientific orientation	-1.6590	0.2341	-1.2986 NS
22.	Risk orientation	0.0540	0.0229	1.1231 NS

a_2 = 144.3221
R^2 = 0.4381
F = 9.5144**

** Significant at 0.01 level of probability
* Significant at 0.05 level of probability
NS - Non-significant

respectively. This means that the farmers who had more education, annual income, social participation and extension agency contact would be able to adopt more technologies in different farming systems. This finding is in confirmation with Sachidananthan (1980).

The variables family type, family size, land holding and migration habit showed negative and significant association with extent of adoption. This would mean that farmers with more family members, land holding and migration habit belonged to high economic status, which was acquired through their earnings from their family business or services. They would rather concentrate their time and resources more on their business than that of adoption of different farming systems.

The other variables age, farming experience, livestock possession, material possession, farm power, mass media participation, extent of employment, job preference, knowledge level, credit orientation, economic motivation, scientific orientation and risk orientation did not show significant effect on extent of adoption.

Linear multiple regression analysis of independent variables of farmers towards training need in different farming systems

From the table 34 it was obvious that the independent variables are able to explain 42 per cent of variation in Y

Table 34. Linear multiple regression analysis of independent variables of farmers towards training need in different farming systems

Sl. No.	Variables	Standardised regression coefficient	Standard error of b	t value
1.	Age	-0.9080	0.2341	-1.0735 NS
2.	Education	0.9880	0.3606	1.9948*
3.	Family type	0.7292	0.3808	1.2443 NS
4.	Family size	0.8280	0.6411	1.2872 NS
5.	Land holding	0.8230	2.5220	1.2112 NS
6.	Farming experience	0.9320	0.3027	1.1332 NS
7.	Livestock possession	-0.4370	0.3698	-1.1892 NS
8.	Material possession	0.9880	0.3801	1.9931*
9.	Farm power	0.6910	0.3027	1.1332 NS
10.	Annual income	0.9810	0.3907	1.9949*
11.	Social participation	0.8941	0.2341	1.0831 NS
12.	Expenditure incurred	-1.4790	0.2381	-1.9941*
13.	Contact with extension agency	0.8980	0.3141	1.0842 NS
14.	Mass media participation	-0.4391	0.3698	-0.5012 NS
15.	Migration habit	-0.1900	0.3027	-1.332 NS
16.	Extent of employment	-1.5101	0.2341	-1.9986*
17.	Job preference	0.4261	0.3698	0.5011 NS
18.	Knowledge level	-0.2380	0.2948	-0.2112 NS
19.	Credit orientation	-0.2321	0.2941	-0.2119 NS
20.	Economic motivation	-1.0043	0.2341	-1.9986*
21.	Scientific orientation	0.6272	0.3672	0.4927 NS
22.	Risk orientation	-1.5770	0.3843	-0.4829 NS

a = 121.3231
R^2 = 0.4231
F = 9.8731

** Significant at 0.01 level of probability
* Significant at 0.05 level of probability
NS - Non-significant

also an increase by one unit in education, material possession and annual income, **ceteris paribus** would increase the degree of training need by 0.98 units respectively. This means that farmers who have more education, material possession and annual income would have more training need. This finding is in accordance with Abraham (1981).

The variables expenditure incurred, extent of employment and economic motivation showed negative and significant association with training need. This would mean that farmers with more expenditure incurred, extent of employment and economic motivation belonged to high economic status and they would rather concentrate their time and resources more on their business than that of training need.

The other variables such as age, family type, family size, land holding, farming experience, livestock possession, farm power, social participation, mass media participation, migration habit, job preference, knowledge level, credit orientation, scientific orientation and risk orientation did not show significant effect on training need.

Linear multiple regression analysis of independent variables of farmers towards role performance in agriculture and allied activities

Table 35 revealed that all the independent variables are able to explain 45 per cent of the variation in Y also

Table 35. Linear multiple regression analysis of independent variables of farmers towards role performance in agriculture and allied activities

Sl. No.	Variables	Standardised regression coefficient	Standard error of b	t value
1.	Age	-0.0670	0.2341	-1.2980 NS
2.	Education	0.1230	1.4420	0.2121 NS
3.	Family type	0.0430	1.4291	0.0199 NS
4.	Family size	-0.5970	0.2648	-0.0010 NS
5.	Land holding	-0.8280	0.2144	0.3241 NS
6.	Farming experience	2.8230	3.9261	4.8124**
7.	Livestock possession	-1.1180	0.2421	-0.3812 NS
8.	Material possession	0.1560	0.2441	0.3912 NS
9.	Farm power	1.0120	0.3472	0.3912 NS
10.	Annual income	2.5440	3.9471	4.0248**
11.	Social participation	-0.1030	0.1722	-4.0341**
12.	Expenditure incurred	-0.0940	0.2341	-1.2910 NS
13.	Contact with extension agency	-0.8960	0.2200	-0.6120 NS
14.	Mass media participation	2.3790	3.9242	4.0268**
15.	Migration habit	0.5480	0.3820	0.4741 NS
16.	Extent of employment	2.2990	0.2341	1.2986 NS
17.	Job preference	-1.1280	0.2768	-4.0123**
18.	Knowledge level	2.6370	3.8432	4.4367**
19.	Credit orientation	-0.8760	0.2112	-1.0981 NS
20.	Economic motivation	-0.5990	0.2601	-1.0863 NS
21.	Scientific orientation	-0.4500	0.2232	-0.6732 NS
22.	Risk orientation	-0.0260	0.1742	-4.2732**

a_2 = 131.4621
R^2 = 0.4471
F = 9.8933

** Significant at 0.01 level of probability
* Significant at 0.05 level of probability
NS - Non-significant

an increase by one unit in farming experience, annual income, mass media participation, knowledge level **ceteris** paribus would increase the degree of role performance in agriculture and allied activities by 2.82, 2.54, 2.37 and 2.63 units. This means that the farmers who had more farming experience, annual income, mass media participation and knowledge level would perform different roles in agriculture and allied activities. This finding is in accordance with Prasad (1975).

The variables social participation, job preference and risk orientation showed negative and significant association with role performance. This would mean that farmers with more social participation, employment and risk orientation have no time to perform agriculture and allied activities.

The other variables such as age, education, family type, family size, land holding, livestock possession, material possession, farm power, expenditure incurred, contact with extension agency, migration habit, extent of employment, credit orientation, economic motivation and scientific orientation did not show significant effect on role performance in a griculture and allied activities.

Linear multiple regression analysis of independent variables of farm women towards extent of adoption in different farming systems

The table 36 revealed that all the independent variables are able to explain 45 per cent of variation in Y also an increase by one unit in farming experience, farm power and knowledge level **ceteris paribus** would increase the extent of adoption by 5.09, 1.98 and 1.98 units respectively. This means that the farm women who have more farm experience, farm power and knowledge level were experienced category and they would have more adoption in different farming systems. This finding is in accordance with Sachidanandan (1980).

Family size, land holding and job preference showed negative and significant association with extent of adoption. This would mean that farm women with more family members, land holding and job preference belonged to high income status and they would rather concentrate their time and resources more on their business than that of farming.

The other variables such as age, education, family type, livestock possession, material possession, annual income, social participation, expenditure incurred, contact with extension agency, mass media participation, migration habit, extent of employment, credit orientation, economic

Table 36. Linear multiple regression analysis of independent variables of farm women towards extent of adoption in different farming systems

Sl. No.	Variables	Standardised regression coefficient	Standard error of b	t value
1.	Age	0.6660	2.7155	1.2698 NS
2.	Education	0.4290	2.6144	1.2242 NS
3.	Family type	0.8970	0.3698	0.5012 NS
4.	Family size	-0.6951	0.2341	-4.2986**
5.	Land holding	-1.5682	0.422	-4.4294**
6.	Farming experience	5.0941	0.3962	4.4664**
7.	Livestock possession	0.4300	3.2248	0.5514 NS
8.	Material possession	-2.3110	0.2261	-1.2842 NS
9.	Farm power	1.9870	0.4123	4.5127**
10.	Annual income	-2.1870	2.5121	-1.2131 NS
11.	Social participation	0.6071	0.2424	1.0735 NS
12.	Expenditure incurred	-0.4851	0.3121	-1.1332 NS
13.	Contact with extension agency	0.3242	0.3672	0.4818 NS
14.	Mass media participation	0.0471	0.4022	1.3748 NS
15.	Migration habit	-0.7182	0.2241	-1.2431 NS
16.	Extent of employment	-0.1471	0.6411	-1.2733 NS
17.	Job preference	-0.9912	1.3547	-4.2228**
18.	Knowledge level	1.9852	0.4894	5.6631**
19.	Credit orientation	-0.2010	0.3797	-0.6163 NS
20.	Economic motivation	-0.8232	0.3473	-0.4912 NS
21.	Scientific orientation	0.7201	0.2218	1.2742 NS
22.	Risk orientation	0.0821	2.0312	0.8241 NS

a_2 = 131.2664
R^2 = 0.4461
F = 9.3687

** Significant at 0.01 level of probability
* Significant at 0.05 level of probability
NS - Non-significant

motivation, scientific orientation and risk orientation did not show significant effect on the extent of adoption in different farming systems.

Linear multiple regression analysis of independent variables of farm women towards training need in different farming systems

Table 37 revealed that all the independent variables are able to explain 48 per cent of variation in Y also an increase by one unit in family size and knowledge level **ceteris paribus** would increase the degree of training need by 4.35 and 2.02 units respectively. This means that farm women who have more family members and knowledge level would have aspired for more training need. This finding is in accordance with Suguna (1994).

The variables livestock possession, economic motivation and risk orientation showed negative and significant association with training need. This means that farm women with more livestock possession, economic motivation and risk orientation had no training need because of insufficient time due to multivarious responsibilities.

The other variables such as age, education, family type, land holding, farming experience, material possession, farm power, annual income, social participation, expenditure

Table 37. Linear multiple regression analysis of independent variables of farm women towards training need in different farming systems

Sl. No.	Variables	Standardised regression coefficient	Standard error of b	t value
1.	Age	-1.6040	0.0222	-0.4191 NS
2.	Education	-0.7760	0.5219	-0.3272 NS
3.	Family type	0.2200	0.0127	0.2431 NS
4.	Family size	4.3580	0.3027	3.7766**
5.	Land holding	0.1670	0.0272	1.2228*
6.	Farming experience	0.0510	0.0773	-1.0332 NS
7.	Livestock possession	-0.0900	0.0022	-1.8294*
8.	Material possession	-0.6740	0.0291	-1.0742 NS
9.	Farm power	-0.0330	0.0143	-1.0342 NS
10.	Annual income	1.0040	0.3698	0.5012 NS
11.	Social participation	-0.5220	0.3294	-0.4912 NS
12.	Expenditure incurred	0.3270	0.3173	0.4211 NS
13.	Contact with extension agency	-1.0090	0.0133	-1.2190 NS
14.	Mass media participation	-1.0140	0.4113	-1.1021 NS
15.	Migration habit	0.0340	0.0282	1.2108 NS
16.	Extent of employment	0.3400	0.0123	0.2421 NS
17.	Job preference	-0.4440	0.3492	-0.4927 NS
18.	Knowledge level	2.0280	3.3683	4.9541**
19.	Credit orientation	2.8860	0.3021	-1.1227 NS
20.	Economic motivation	-0.8470	0.3694	-1.4918*
21.	Scientific orientation	-0.0290	0.0022	1.2101 NS
22.	Risk orientation	-0.0530	0.0241	-1.4892*

a_2 = 129.1824
R^2 = 0.4786
F = 9.3842**

** Significant at 0.01 level of probability
* Significant at 0.05 level of probability
NS - Non-significant

incurred, contact with extension agency, mass media participation, migration habit, extent of employment, job preference, knowledge level and scientific orientation did not show significant effect on training need.

Linear multiple regression analysis of independent variables of farm women towards role performance in agriculture and allied activities

Table 38 revealed that all the independent variables are able to explain 44 per cent of variation in Y also an increase by one unit in farming experience and knowledge level, **ceteris paribus** would increase the degree of role performance in agriculture and alllied activities by 2.36 and 2.54 units. This means that the farm women who have more farming experience and knowledge level would perform different roles in agriculture and allied activities. This finding is in accordance with Krishnamoorthy (1987).

Migration habit, extent of employment and risk orientation showed negative and significant association with role performance. This would mean that farm women with migration habit, employment and risk orientation mostly not performed any roles in agriculture and allied activities.

The other variables such as age, education, family type, family size, land holding, livestock possession,

Table 39. Linear multiple regression analysis of independent variables of farm women towards role performance in agriculture and allied activities

Sl. No.	Variables	Standardised regression coefficient	Standard error of b	t value
1.	Age	1.6160	0.4011	1.4284 NS
2.	Education	-0.4250	0.3327	-0.4928 NS
3.	Family type	1.7220	0.2221	1.2641 NS
4.	Family size	-0.3170	0.4021	-1.3271 NS
5.	Land holding	-0.9870	0.3784	-0.6162 NS
6.	Farming experience	2.3680	0.2428	5.4624**
7.	Livestock possession	1.7380	0.2127	1.3121 NS
8.	Material possession	-0.1790	0.2628	-1.3323 NS
9.	Farm power	0.2620	0.2291	1.3121 NS
10.	Annual income	-0.5940	0.3684	-0.6162 NS
11.	Social participation	0.3260	0.4022	1.4294 NS
12.	Expenditure incurred	1.8090	0.3027	1.1332 NS
13.	Contact with extension agency	-0.3280	2.5220	-1.1562 NS
14.	Mass media participation	0.8190	0.2248	1.2761 NS
15.	Migration habit	-1.2850	0.3123	-4.3441**
16.	Extent of employment	-2.6940	3.0250	-4.9541**
17.	Job preference	-0.8380	0.2428	-3.4624 NS
18.	Knowledge level	2.5400	0.3227	5.8627**
19.	Credit orientation	-1.2450	0.3021	-1.1331 NS
20.	Economic motivation	0.6080	0.3698	0.5012 NS
21.	Scientific orientation	-1.0690	0.4022	-1.4293 NS
22.	Risk orientation	-1.5420	0.3796	-4.6163*

a_2 = 134.2418
R^2 = 0.4432
F = 9.5432

** Significant at 0.01 level of probability
* Significant at 0.05 level of probability
NS - Non-significant

material possession, farm power, annual income, social participation, expenditure incurred, contact with extension agency, mass media participation, job preference, credit orientation, economic motivation and scientific orientation did not show significant effect on role performance in agriculture and allied activities.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on adoption of different farming systems

The results of the path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on adoption of different farming systems reveals the following in Table 38. The direct effects of annual income, social participation, education, contact with extension agency and farming experience are the highest in the order (ie.) these variables have directly helped for adoption. Similarly the variables family size, family type, land holding and migration habit have maximum direct effects which are negative (ie.) these variables have not helped and they affected the adoption behaviour. These reasons are in confirmation with the results of multiple regression analysis.

Regarding the indirect effects, of the twenty two variables ten have routed their indirect effects through

Table 39. Path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on adoption of different farming system

Sl.No.	Variables	Direct effect	Indirect effect	Substantial indirect effects		
				I	II	III
1.	Age	-0.013153	0.02673	0.018364 (X_4)	0.014890 (X_2)	0.009710 (X_5)
2.	Education	0.062135	0.013565	0.014710 (X_2)	0.010668 (X_{19})	0.004302 (X_7)
3.	Family type	-0.148026	-0.029226	0.008483 (X_5)	0.007749 (X_9)	0.006484 (X_2)
4.	Family size	-0.157885	-0.096085	0.032467 (X_5)	0.012969 (X_9)	0.010463 (X_{19})
5.	Land holding	-0.145409	0.007209	0.008636 (X_2)	0.007719 (X_{19})	0.004883 (X_{13})
6.	Farming experience	0.055067	0.066667	0.047237 (X_{10})	0.030939 (X_5)	0.013776 (X_{19})
7.	Livestock possession	-0.047527	0.046273	0.010028 (X_5)	0.010060 (X_{19})	0.015067 (X_{13})
8.	Material possession	0.049725	0.039325	0.028336 (X_9)	0.015460 (X_{10})	0.010770 (X_{14})
9.	Farm power	-0.029983	0.135117	0.010567 (X_8)	0.011151 (X_{11})	0.007241 (X_{13})
10.	Annual income	0.085485	-0.019315	0.059007 (X_{10})	0.035420 (X_{11})	0.017980 (X_{14})
11.	Social participation	0.071359	-0.030441	0.054040 (X_{11})	0.048121 (X_{10})	0.044252 (X_{20})
12.	Expenditure incurred	0.017685	0.006385	0.731630 (X_{13})	0.173750 (X_{10})	0.134500 (X_6)
13.	Contact with extension agency	0.061398	0.122402	0.049146 (X_{10})	0.039268 (X_{13})	0.017157 (X_{20})
14.	Mass media participation	0.065330	0.358230	0.179800 (X_{10})	0.113090 (X_{12})	0.111390 (X_{14})
15.	Migration habit	-0.005970	-0.066470	0.093682 (X_{12})	0.086696 (X_{11})	0.015980 (X_{13})
16.	Extent of employment	0.001395	-0.020805	0.019411 (X_3)	0.017685 (X_{14})	0.015829 (X_2)
17.	Job preference	0.007669	-0.069131	0.030969 (X_4)	0.021923 (X_{12})	0.017322 (X_{20})
18.	Knowledge level	0.000147	-0.021853	0.042936 (X_{18})	0.022592 (X_{10})	0.013451 (X_2)
19.	Credit orientation	0.004691	0.052191	0.057137 (X_{12})	0.024751 (X_{11})	0.023055 (X_{10})
20.	Economic motivation	0.014915	-0.019485	0.161875 (X_2)	0.055270 (X_8)	0.014915 (X_{17})
21.	Scientific orientation	0.017691	0.069791	0.620985 (X_8)	0.032351 (X_{11})	0.031160 (X_{13})
22.	Risk orientation	0.011755	0.007655	0.051411 (X_9)	0.033164 (X_{10})	0.026220 (X_{14})

Residual effect = 0.8768

annual income (X_{10}), six variables each routed through social participation (X_{11}), education (X_2) and contact with extension agency (X_{13}). Five variables have routed through farming experience (X_6). Thus annual income has directly and indirectly helped for adoption. Hence annual income (X_{10}) can be taken as a crucial variable for adoption.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on training need in different farming systems

The results of the path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on training need in different farming systems reveals the following in Table 40. The direct effects of annual income, material possession, and education are the highest in the order (ie.) these variables have directly helped for training. Similarly the variables extent of employment, expenditure incurred, and economic motivation have maximum direct effects which are negative (ie.) these variables have not helped and they affected the training. These results are in confirmation with the results of multiple regression analysis.

Regarding the indirect effects, of the twenty two variables thirteen have routed their indirect effects through education (X_2), twelve routed through annual income

Table 40. Path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on training need in different farming systems

Sl.No.	Variables	Direct effect	Indirect effect	Substantial indirect effects		
				I	II	III
1.	Age	-0.084278	-0.042078	0.019195 (X_2)	0.016560 (X_{12})	0.014521 (X_6)
2.	Education	0.118671	0.041471	0.015722 (X_3)	0.014204 (X_{10})	0.013620 (X_1)
3.	Family type	0.022338	-0.192062	0.020925 (X_{16})	0.016135 (X_2)	0.014204 (X_6)
4.	Family size	0.089165	-0.027935	0.636142 (X_8)	0.021354 (X_2)	0.019292 (X_6)
5.	Land holding	0.086404	0.061904	0.018123 (X_{13})	0.013125 (X_{10})	0.012015 (X_2)
6.	Farming experience	0.093153	-0.043047	0.013934 (X_{13})	0.013137 (X_1)	0.012867 (X_2)
7.	Livestock possession	-0.037820	-0.002320	0.013598 (X_5)	0.010751 (X_2)	0.010334 (X_6)
8.	Material possession	0.118751	-0.038649	0.015361 (X_9)	0.013137 (X_6)	0.013098 (X_{12})
9.	Farm power	0.072289	-0.101811	0.011491 (X_{13})	0.011361 (X_8)	0.011491 (X_5)
10.	Annual income	0.137198	0.058198	0.025225 (X_{18})	0.023081 (X_{10})	0.012981 (X_5)
11.	Social participation	0.102649	-0.080251	0.012896 (X_{14})	0.012720 (X_5)	0.012398 (X_6)
12.	Expenditure incurred	-0.144137	0.038363	0.020407 (X_5)	0.018202 (X_{10})	0.016254 (X_{10})
13.	Contact with extension agency	0.022567	-0.021633	0.015744 (X_5)	0.012962 (X_{10})	0.012753 (X_{18})
14.	Mass media participation	-0.088335	-0.137335	0.013725 (X_{10})	0.013329 (X_2)	0.011619 (X_{13})
15.	Migration habit	-0.037986	0.032814	0.025278 (X_{17})	0.024711 (X_{13})	0.011221 (X_{10})
16.	Extent of employment	-0.159576	-0.019376	0.001321 (X_2)	0.001110 (X_8)	0.000100 (X_{10})
17.	Job preference	-0.038311	-0.021589	0.001151 (X_{10})	0.001101 (X_2)	0.001000 (X_8)
18.	Knowledge level	-0.020254	-0.043854	0.033431 (X_5)	0.032310 (X_8)	0.021310 (X_2)
19.	Credit orientation	0.013879	-0.007921	0.006831 (X_{10})	0.005731 (X_8)	0.004121 (X_1)
20.	Economic motivation	-0.102468	0.095732	0.084321 (X_1)	0.072310 (X_8)	0.063210 (X_{13})
21.	Scientific orientation	0.063851	0.009951	0.008421 (X_{10})	0.007321 (X_{13})	0.006321 (X_2)
22.	Risk orientation	-0.006754	0.062446	0.053210 (X_8)	0.043110 (X_2)	0.031420 (X_{10})

Residual effect = 0.8827

(X_{10}), eight routed through material possession (X_8), seven variables each routed through contact with extension agency (X_{13}) and land holding (X_5) and six variables routed through farming experience. Thus education (X_2) has affects directly and indirectly helped for training need. Hence education (X_2) can be taken as a crucial variable for training.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on role performance in agriculture and allied activities in different farming systems

The results of the path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on role performance in agriculture and allied activities in different farming systems reveals the following in Table 41. The direct effects of annual income, mass media participation, farming experience and knowledge level are the highest in the order (ie.) these variables have directly helped for role performance in agriculture and allied activities. Similarly the variables risk orientation, social participation and job preference have maximum direct effects which are negative (ie.) these variables have not helped and they affected the role performance in agriculture and allied activities. These results are in confirmation with the results of multiple regression analysis.

Table 4f. Path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on role performance in agriculture and allied activities in different farming systems

Sl.No.	Variables	Direct effect	Indirect effect	Substantial indirect effects		
				I	II	III
1.	Age	0.036804	-0.003996	0.021810 (X_6)	0.012759 (X_{10})	0.010651 (X_{18})
2.	Education	-0.006238	0.011562	0.013016 (X_{14})	0.011562 (X_{12})	0.010016 (X_6)
3.	Family type	-0.036199	0.000201	0.031455 (X_{10})	0.006463 (X_{18})	0.004196 (X_5)
4.	Family size	0.024319	-0.066681	0.045040 (X_2)	0.032100 (X_{12})	0.022106 (X_{10})
5.	Land holding	-0.003510	0.086790	0.018780 (X_3)	0.017092 (X_{18})	0.011569 (X_{10})
6.	Farming experience	0.259393	0.083493	0.083493 (X_{10})	0.021528 (X_{14})	0.020946 (X_{18})
7.	Livestock possession	-0.042804	-0.108604	0.024433 (X_6)	0.013659 (X_2)	0.008339 (X_5)
8.	Material possession	-0.017918	0.015482	0.039482 (X_4)	0.017273 (X_3)	0.015482 (X_2)
9.	Farm power	-0.020511	0.121011	0.028137 (X_6)	0.017065 (X_{10})	0.015891 (X_{14})
10.	Annual income	0.282268	0.033232	0.012948 (X_{18})	0.008183 (X_{10})	0.006908 (X_{12})
11.	Social participation	-0.088881	0.012219	0.030675 (X_6)	0.022980 (X_{12})	0.011097 (X_{10})
12.	Expenditure incurred	0.010770	-0.006030	0.070165 (X_1)	0.022034 (X_3)	0.016722 (X_4)
13.	Contact with extension agency	-0.011849	-0.092549	0.020632 (X_3)	0.020313 (X_6)	0.011583 (X_{12})
14.	Mass media participation	0.263968	0.409268	0.037998 (X_{10})	0.016172 (X_{14})	0.015314 (X_{18})
15.	Migration habit	0.254347	0.096847	0.043549 (X_6)	0.010824 (X_{14})	0.010058 (X_{18})
16.	Extent of employment	0.046474	0.289874	0.064832 (X_1)	0.017583 (X_3)	0.014195 (X_5)
17.	Job preference	-0.058701	-0.112701	0.055611 (X_7)	0.013679 (X_9)	0.009512 (X_{10})
18.	Knowledge level	0.248944	0.023944	0.082820 (X_6)	0.020109 (X_5)	0.009763 (X_4)
19.	Credit orientation	-0.072613	-0.078313	0.084513 (X_6)	0.010876 (X_{10})	0.010400 (X_{18})
20.	Economic motivation	-0.012497	-0.065501	0.046923 (X_{14})	0.013151 (X_{12})	0.010192 (X_{10})
21.	Scientific orientation	-0.105218	-0.045297	0.026458 (X_{10})	0.011998 (X_{14})	0.010207 (X_6)
22.	Risk orientation	-0.105218	0.010818	0.096121 (X_7)	0.046654 (X_5)	0.020171 (X_4)

Residual effect = 0.8969

Regarding the indirect effects of twenty two variables, thirteen variables have routed their indirect effects through annual income (X_{10}), ten variables routed through farming experience (X_6), eight variables routed through knowledge level (X_{18}), seven variables routed through mass media participation (X_{14}), six variables routed through expenditure incurred (X_{12}) and five variables each routed through family type (X_3) and land holding (X_5). Thus annual income (X_{10}) though directly affected indirectly helped for role performance in agriculture and allied activities. Hence annual income (X_{10}) can be taken as a crucial variable for role performance in agriculture and allied activities.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on adoption of different farming systems

The results of the path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on adoption of different farming systems reveals the following in Table 42. The direct effects of farming experience, farm power and knowledge level are the highest in the order (ie.) these variables have directly helped for adoption. Similarly the variables family size, job preference and land holding have maximum

Table 42. Path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on adoption of different farming systems

Sl.No.	Variables	Direct effect	Indirect effect	Substantial indirect effects		
				I	II	III
1.	Age	0.678110	0.583910	0.067811 (X_6)	0.018545 (X_9)	0.012197 (X_{18})
2.	Education	0.464650	-0.013735	0.041465 (X_4)	0.013908 (X_{18})	0.013053 (X_3)
3.	Family type	0.088060	0.012660	0.020962 (X_2)	0.011030 (X_6)	0.009579 (X_{18})
4.	Family size	-0.070265	-0.045035	0.015541 (X_1)	0.012345 (X_7)	0.011030 (X_{18})
5.	Land holding	-0.000789	-0.310789	0.154115 (X_5)	0.016194 (X_{21})	0.013497 (X_{22})
6.	Farming experience	0.680000	0.053500	0.027500 (X_6)	0.019700 (X_9)	0.012130 (X_{18})
7.	Livestock possession	0.001788	-0.034912	0.018635 (X_3)	0.014455 (X_2)	0.013179 (X_1)
8.	Material possession	-0.007490	-0.149510	0.123554 (X_{18})	0.020577 (X_2)	0.010715 (X_{15})
9.	Farm power	0.677492	0.099808	0.043401 (X_6)	0.010331 (X_9)	0.008502 (X_{18})
10.	Annual income	0.000697	0.140603	0.061587 (X_6)	0.021496 (X_7)	0.020322 (X_9)
11.	Social participation	-0.002885	0.092785	0.047874 (X_{12})	0.016660 (X_{14})	0.013482 (X_{16})
12.	Expenditure incurred	-0.007438	-0.058262	0.023012 (X_6)	0.018335 (X_9)	0.012755 (X_8)
13.	Contact with extension agency	-0.003235	-0.003235	0.017438 (X_{13})	0.010907 (X_{12})	0.009364 (X_6)
14.	Mass media participation	0.000339	-0.057761	0.073367 (X_9)	0.027714 (X_{18})	0.011497 (X_7)
15.	Migration habit	0.011398	0.110902	0.037649 (X_6)	0.036104 (X_8)	0.014825 (X_9)
16.	Extent of employment	0.000140	0.027840	0.015591 (X_6)	0.014544 (X_7)	0.011220 (X_9)
17.	Job preference	-0.010656	-0.104044	0.012948 (X_{10})	0.012795 (X_{11})	0.010656 (X_{14})
18.	Knowledge level	0.662580	0.089680	0.024606 (X_{12})	0.016287 (X_{14})	0.010946 (X_{18})
19.	Credit orientation	0.000738	0.008638	0.682387 (X_{21})	0.026267 (X_{20})	0.010521 (X_{17})
20.	Economic motivation	0.009970	0.069670	0.074164 (X_{10})	0.035050 (X_9)	0.033134 (X_5)
21.	Scientific orientation	0.008028	-0.082500	0.013658 (X_4)	0.010979 (X_{18})	0.000490 (X_1)
22.	Risk orientation	0.008499	-0.011501	0.074438 (X_2)	0.010907 (X_6)	0.009364 (X_4)

Residual effect = 0.9037

direct effects which are negative (ie.) these variables have not helped and they affected the adoption. These results are in confirmation with the results of multiple regression analysis.

Regarding the indirect effects of twenty two variables, eleven variables have routed their indirect effects through knowledge level (X_{18}), ten variables routed through farming experience (X_6), nine variables routed through farm power (X_9), and four variables routed through education (X_2). Three variables routed through age (X_1) and family size (X_4). Thus knowledge level (X_{18}) though directly affected it indirectly helped for adoption. Similarly farming experience (X_6) though not done directly anything it indirectly helped. Hence knowledge level (X_{18}) and farming experience (X_6) can be taken as crucial variables for adoption.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on training need in different farming systems

The results of the path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on training need in different farming systems reveals the following in Table 43. The direct effects of family size, land holding and knowledge

Table 43 Path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on training need in different farming system

Sl.No.	Variables	Direct effect	Indirect effect	Substantial indirect effects		
				I	II	III
1.	Age	-0.157232	0.090532	0.376690 (X_4)	0.0222010 (X_5)	0.155670 (X_{18})
2.	Education	-0.080332	0.077632	0.217930 (X_{12})	0.205010 (X_6)	0.193370 (X_{11})
3.	Family type	0.020600	0.099600	0.227520 (X_7)	0.216060 (X_3)	0.112790 (X_2)
4.	Family size	0.161303	0.022303	0.227520 (X_4)	0.216060 (X_3)	0.122790 (X_{18})
5.	Land holding	0.155377	0.012777	0.182760 (X_2)	0.153720 (X_5)	0.132790 (X_{18})
6.	Farming experience	0.005859	0.022259	0.340590 (X_1)	0.224890 (X_4)	0.132790 (X_{18})
7.	Livestock possession	-0.065413	0.009213	0.335170 (X_2)	0.216490 (X_5)	0.129050 (X_4)
8.	Material possession	0.059728	0.058628	0.215270 (X_3)	0.177950 (X_4)	0.018650 (X_{18})
9.	Farm power	-0.096654	-0.174954	0.369010 (X_{18})	0.098040 (X_5)	0.142840 (X_4)
10.	Annual income	0.094256	-0.170656	0.321640 (X_4)	0.301530 (X_5)	0.126840 (X_{18})
11.	Social participation	-0.015753	-0.005153	0.333140 (X_3)	0.168160 (X_1)	0.136210 (X_2)
12.	Expenditure incurred	-0.038534	0.009434	0.222570 (X_6)	0.216440 (X_7)	0.169600 (X_9)
13.	Contact with extension agency	0.078909	0.985094	0.159890 (X_4)	0.138400 (X_5)	0.115020 (X_{18})
14.	Mass media participation	-0.007826	0.093926	0.194960 (X_{20})	0.161890 (X_{21})	0.124430 (X_{22})
15.	Migration habit	0.011051	0.001751	0.323510 (X_5)	0.242190 (X_{18})	0.174210 (X_3)
16.	Extent of employment	0.108910	0.117940	0.562230 (X_{12})	0.425090 (X_{11})	0.334550 (X_{10})
17.	Job preference	0.049360	0.463630	0.436400 (X_9)	0.367180 (X_7)	0.215100 (X_6)
18.	Knowledge level	0.115794	0.001794	0.012490 (X_4)	0.004770 (X_5)	0.002600 (X_{18})
19.	Credit orientation	0.029142	0.018142	0.234080 (X_{18})	0.182510 (X_5)	0.170830 (X_4)
20.	Economic motivation	-0.093369	0.005169	0.211190 (X_{18})	0.150500 (X_4)	0.139270 (X_5)
21.	Scientific orientation	-0.039372	0.121172	0.321630 (X_{12})	0.298980 (X_4)	0.243570 (X_{11})
22.	Risk orientation	-0.089623	0.014523	0.457990 (X_{16})	0.222660 (X_{18})	0.209830 (X_{22})

Residual effect = 0.8655

level are the highest in the order (ie.) these variables have directly helped for training. Similarly the variables economic motivation, risk orientation and livestock possession have maximum direct effects which are negative (ie.) these variables have not helped and they affected the training. These results are in confirmation with the results of multiple regression analysis.

Regarding the indirect effects of twenty two variables, thirteen variables have routed their indirect effects through knowledge level (X_{18}), twelve variables have routed through family size (X_4), ten variables have routed through land holding (X_5), five variables have routed through family type (X_3) and four variables have routed through education (X_2). Thus knowledge level (X_{18}) has directly affected and indirectly helped for training. Hence knowledge level (X_{18}) can be taken as a crucial variable for training.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on role performance in agriculture and allied activities in different farming systems

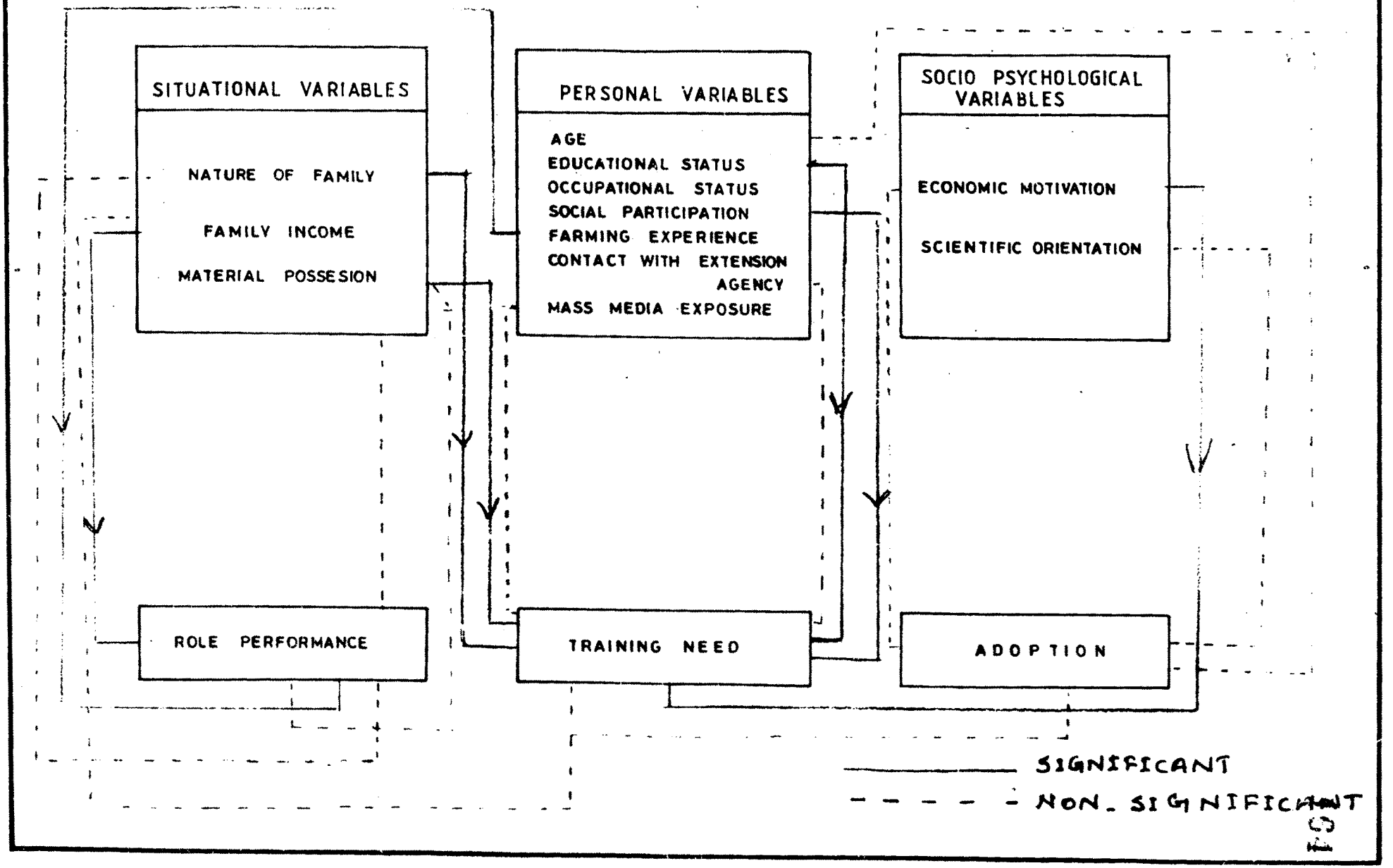
The results of the path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on role performance in agriculture

Table 44. Path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on role performance in agriculture and allied activities in differential farming systems

Sl.No.	Variables	Direct effect	Indirect effect	Substantial indirect effects		
				I	II	III
1.	Age	0.015368	-0.038912	0.034260 (X_6)	0.019612 (X_{18})	0.018913 (X_{12})
2.	Education	-0.141872	-0.164472	0.096796 (X_1)	0.023493 (X_3)	0.023330 (X_7)
3.	Family type	0.157391	0.008591	0.019176 (X_6)	0.015408 (X_7)	0.004208 (X_4)
4.	Family size	-0.028835	0.001965	0.026250 (X_2)	0.021506 (X_3)	0.010179 (x_6)
5.	Land holding	-0.090037	-0.158337	0.033731 (X_8)	0.021919 (X_{18})	0.020586 (X_6)
6.	Farming experience	0.22802	0.002302	0.020549 (X_8)	0.019875 (X_6)	0.017514 (X_{18})
7.	Livestock possession	0.160714	-0.012786	0.032762 (X_5)	0.018780 (X_4)	0.011125 (X_{18})
8.	Material possession	-0.016686	-0.020986	0.041836 (X_3)	0.027576 (X_2)	0.021316 (X_7)
9.	Farm power	9.923546	0.010946	0.023546 (X_7)	0.016423 (X_6)	0.012022 (X_{13})
10.	Annual income	-0.054129	0.024677	0.054129 (X_6)	0.017468 (X_{18})	0.013960 (X_{12})
11.	Social participation	0.035274	0.056974	0.013977 (X_4)	0.013334 (X_{32})	0.010265 (X_2)
12.	Expenditure incurred	0.168434	-0.005966	0.016279 (X_6)	0.013208 (X_{18})	0.012191 (X_2)
13.	Contact with extension agency	-0.031289	-0.017084	0.023489 (X_2)	0.020531 (X_{18})	0.018668 (X_3)
14.	Mass media participation	-0.079922	-0.026775	0.050471 (x_1)	0.028081 (X_2)	0.022568 (x_{18})
15.	Migration habit	-0.121886	-0.148386	0.039685 (X_4)	0.020549 (X_2)	0.017029 (X_{17})
16.	Extent of employment	-0.255457	-0.108657	0.061018 (X_{19})	0.018935 (X_{21})	0.018365 (X_{20})
17.	Job preference	-0.093330	0.350670	0.021706 (X_8)	0.021344 (X_9)	0.020752 (X_{10})
18.	Knowledge level	0.240807	0.088607	0.064730 (X_6)	0.033958 (X_{18})	0.023143 (X_{11})
19.	Credit orientation	-0.117659	-0.091859	0.038722 (X_{12})	0.014207 (X_{18})	0.012057 (X_6)
20.	Economic motivation	0.057540	0.083840	0.027563 (X_9)	0.017925 (X_{10})	0.015072 (X_6)
21.	Scientific orientation	-0.103251	0.038749	0.630161 (X_4)	0.024169 (X_{18})	0.015908 (X_{11})
22.	Risk orientation	-0.146960	-0.042860	0.055643 (X_6)	0.030876 (X_7)	0.020510 (X_{18})

Residual effect = 0.8408

Fig. 12. EMPIRICAL MODEL



and allied activities in different farming systems reveals the following in Table 44. The direct effects of farm power, knowledge level and farming experience are the highest in the order (ie.) these variables have directly helped for role performance in agriculture and allied activities. Similarly extent of employment, migration habit and risk orientation have maximum direct effects which are negative (ie.) these variables have not helped and they affected the adoption. These results are in confirmation with the results of multiple regression analysis.

Regarding the indirect effects of twenty two variables, twelve variables have routed their indirect effects through knowledge level (X_{18}) and farming experience (X_6), seven variables have routed through education (X_2), five variables have routed through family type (X_3), family size (X_4) and livestock possession (X_7). Thus knowledge level (X_{18}) has directly and indirectly helped for role performance in agriculture and allied activities. Hence knowledge level (X_{18}) can be taken as a crucial variable for role performance in agriculture and allied activities.

An empirical model showing situational, personal and socio-psychological factors that affect extent of adoption, training need and role performance in agriculture and allied activities of the respondents is presented in Fig.12.

SUMMARY AND CONCLUSION

CHAPTER V

SUMMARY AND CONCLUSION

Recent trend of farming is to venture into a diversified pattern of farm life which is supposed to yield anticipated life means, through well balanced agriculture and related farm enterprises. Such components in a farming system need a constant manoeure and effective participation in each so as to expect steady income round the year, overcoming the uncertainity involved in farming.

Considering the above discussed facts, the present study entitled, "Gender Analysis in Different Farming Systems" was conducted in Western region of Tamil Nadu viz., Coimbatore and Periyar districts of Tamil Nadu. A sample of 120 farmers and 120 farm women were randomly selected, constituted the sample size.

The data were collected with the help of a well structured and pre-tested interview schedule. The salient findings of this study are as follows:

Situational, personal and socio-psychological characteristics of respondents

Situational characters

Most of the respondents (53.33 per cent and 50.00 per cent) belonged to medium size family. Fifty per cent of

farmers and 48.33 per cent of farm women belonged to low income group whereas 41.67 per cent and 35.00 per cent of respondents belonged to medium income groups. More than half of the respondents belonged to low and medium level category for material possession.

Personal characteristics

Of them, 48.33 per cent and 45.00 per cent belonged to medium age group, 30.00 per cent and 31.67 per cent belonged to low age group category. Most of them were educated upto middle school level. Most of them were agriculturists. Regarding social participation, more than half of them belonged to low social participation and 51.67 per cent and 41.67 per cent of them had high farming experience, 40.00 per cent and 46.66 per cent of them had medium farming experience. Most of the farmers ~~and~~ had medium level of contact with extension agency and only 17.00 per cent of them had high level of contact with extension agency. Most of the farmers had medium level of mass media exposure and most of the farm women had low level of mass media exposure.

Socio-psychological characteristics

Most of the respondents had medium level of economic motivation and 48.33 per cent and 31.67 per cent of them had medium level of scientific orientation.

Gender variation in decision-making pattern

Decision making regarding mainfield preparation, and fertilizer application were done by farmers, both farmers and farm women and consulting with father, mother, brother and others and not by women alone.

Regarding decision making in animal husbandry, women's contribution by men was least in all respects and decision making in women was more (ie.) "farm women alone" and men were substantiated by "equally by both" and "consulting with others".

Regarding decision making in poultry, women's contribution was more and as men were the heads of the families, they were substantiated by "equally by both" and "consulting with others".

Regarding decision making in fodder crops and sericulture, "time of planting" and "pest and disease management" were decided by "farmers alone", "equally by both" and "consulting with others" and "not by women alone".

Regarding mushroom cultivation, decision making in "preparation of mushroom bed" and "maintenance of mushroom shed" were done by most of the farm women and men were substantiated by "equally by both" and "consultation with others".

Knowledge level and extent of adoption in different farming systems

Majority of the respondents (75.00 per cent) of farmers and (69.17 per cent) of farm women possessed medium level of knowledge and only a few respondents possessed high and low level of knowledge.

Majority of the respondents (75.00 per cent) of farmers and (60.00 per cent) of farm women had medium level of adoption.

Role performance of male and female farmers in different farming systems

Most of the farmers (70.00 per cent) selected the seedlings by self doing. With respect to application of herbicides, 70.00 per cent of the farmers have done by self doing. Regarding post harvest activities, threshing,

winnowing and drying were done by 60.00 per cent and 66.66 per cent of farm women respectively.

With respect to animal husbandry activities, 73.02 per cent of farm women attended the work of bathing of animals and 69.85 per cent involved in cleaning the shed.

Regarding sericulture, feeding the larvae and cleaning the shed were done by 66.66 per cent and 50.00 per cent of farm women.

In the case of mushroom cultivation, majority of the respondents (80.00 per cent) of farmers and (66.67 per cent) of farm women prepared mushroom bed.

Time utilisation pattern of the respondents in farm activities

Majority of the respondents (81.66 per cent) of farmers and (93.33 per cent) of farm women worked more than 8 hours in farming activities during peak season.

Regarding animal husbandry activities, majority of the respondents (93.11 per cent) of farmers and (95.24 per cent) of farm women worked more than 8 hours during peak season. In the case of sericulture all the respondents worked more than 8 hours in peak season.

Training needs perceived and farming constraints experienced by the respondents

Majority of the farmers (76.66 per cent) expressed training need in pest and disease management and majority of the farm women (69.16 per cent) expressed training need in storage, followed by weeding and transplanting (66.66 per cent), respectively.

Majority of the respondents expressed training need in disease management in animal husbandry, poultry, fodder crops, sericulture and mushroom.

With respect to agriculture, pest problem (70.00 per cent), disease problem (93.33 per cent), scarcity of water (90.00 per cent) and lack of labour (87.50 per cent).

Pest and disease problem, scarcity of water and lack of labour were the constraints expressed by the respondents in agriculture, animal husbandry, poultry, fodder crops, sericulture and mushroom.

Different farming systems with respect to income generation

With respect to income generation (47.50 per cent) of farmers and (42.50 per cent) of farm women expressed income generation/year was Rs.50,000/- for agriculture alone and for agriculture + animal husbandry it was Rs.75,000/- when poultry also included with the above combination it was

Rs.90,000/-. For a combination of sericulture, mushroom cultivation etc., it was Rs.90,000 - 1,00,000/-.

Relationship between the characteristics of farmers and the extent of adoption of different farming systems

The variable expenditure incurred alone showed negative and significant association with extent of adoption.

Correlation coefficient of independent variables with training need by farmers

Education, family type, material possession, social participation, knowledge level and credit orientation showed positive and significant association with training need. The variable expenditure incurred, extent of employment and economic motivation showed negative and significant association.

Correlation coefficient of independent variables with role performance in agriculture and allied activities by farmers

Farming experience and mass media participation showed positive and significant association, with role performance in agriculture and allied activities. Social participation, job preference and knowledge level showed negative and significant association with role performance in agriculture and allied activities.

Correlation coefficient of independent variables with extent of adoption by farm women

Farming experience, social participation and knowledge level showed positive and significant association with extent of adoption by farm women and family size, land holding and job preference showed negative and significant association with extent of adoption.

Correlation coefficient of independent variables with training need by farm women

Family size, land holding and knowledge level showed positive and significant association and livestock possession showed negative and significant association with training need by farm women.

Correlation coefficient of independent variables with role performance in agriculture and allied activities by farm women

Farming experience and knowledge level showed positive and significant association and the variables annual income and risk orientation showed negative and significant association with role performance in agriculture and allied activities.

Linear multiple regression analysis of independent variables of farmers towards extent of adoption in different farming systems

Education, annual income, social participation and extension agency contact had contributed much for adoption. An increase in these variables had resulted in an increase of extent of adoption of farmers.

Linear multiple regression of independent variables of farmers towards training need in different farming systems

Education, material possession and annual income had contributed much for training need. An increase in these variables had resulted in an increase of training need of farmers.

Linear multiple regression analysis of independent variables of farmers towards role performance in agriculture and allied activities

Farming experience, annual income, mass media participation and knowledge level had contributed much for role performance in agriculture and allied activities. An increase in these variables had resulted in an increase of role performance in agriculture and allied activities by the farmers.

Linear multiple regression analysis of independent variables of farm women towards extent of adoption in different farming systems

Farming experience, farm power and knowledge level had contributed much for adoption. An increase in these variables had resulted in an increase of extent of adoption of farm women.

Linear multiple regression analysis of independent variables of farm women towards training need in different farming systems

Farm size and knowledge level had contributed much for training. An increase in these variables had resulted in an increase of training need of farm women.

Linear multiple regression analysis of independent variables of farm women towards role performance in agriculture and allied activities

Farming experience and knowledge level had contributed much for role performance in agriculture and allied activities. An increase in these variables had resulted in an increase of role performance in agriculture and allied activities of farm women.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on adoption of different farming systems

The variables annual income, social participation, education, contact with extension agency and farming experience have directly helped for adoption and the variables family size, family type, land holding and migration habit have affected the adoption behaviour.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on training need in different farming systems

The variables annual income, material possession and education have directly helped for training, and the variables extent of employment, expenditure incurred and economic motivation have affected training.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farmers on role performance in agriculture and allied activities in different farming systems

The variables annual income, mass media participation, farming experience and knowledge level have directly helped for role performance and the variables risk orientation, social participation and job preference affected role performance in agriculture and allied activities.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on adoption of different farming systems

The variables farming experience, farm power and knowledge level have directly helped for adoption and the variables family size, job preference and land holding affected adoption.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on training need in different farming systems

The variables family size, land holding and knowledge level have directly helped for training and the variables economic motivation, risk orientation and livestock possession affected the training.

Path analysis showing direct, indirect and substantial indirect effects of independent variables of farm women on role performance in agriculture and allied activities in different farming systems

The variables farm power, knowledge level and farming experience have directly helped for role performance in agriculture and allied activities, and the variables extent of employment, migration habit and risk orientation affected the role performance in agriculture and allied activities.

Implications

Planning efforts need to be made to integrate the farm with crops and related enterprises as well as to concentrate on stable off-farm employment, resulting in stable income.

Farming techniques such as use of implements, collecting run off and recycling water, storing water in situ, preparation and use of enriched farm yard manure, using bio-fertilizers, seed hardening, integrated weed management, raising shelter belts, mid-term correction and integrated pest and disease management were not practiced by majority of the respondents. This implies that the extension functionaries should take special efforts in educating the farm families on the advantages of these farming techniques.

Initial capital investment should be given on credit basis so as to start the desired enterprise after giving training in the particular enterprise in which the farm families need training.

Poultry was practised as a backyard enterprise on a small scale. To practice on a large scale, viable poultry units should be started and bank should come forward to provide financial assistance. Also awareness about the latest exotic breeds and new technologies related to

vaccination and debeaking should be made through various extension methods like mass media, conducting campaigns and providing training facilities.

Entrepreneurial skills are found to be least in the study area and to enhance the entrepreneurship, proper steps like entrepreneurial awareness, motivation programmes, guidance and counselling should be taken up. The District Industrial Centres and District Rural Development Agency (DRDA) should provide their assistance in conducting Entrepreneurship Development Programmes (EDP) in the rural areas.

Most of the respondents had medium level of knowledge on different farming systems. The extension personnel should take concerted efforts to improve their knowledge through various extension methods like method demonstration, group discussion, making use of various audio-visual aids and distributing relevant literatures.

It is felt necessary that special emphasis should be given in imparting training in the areas viz., pest and disease management, irrigation management and storage of agricultural products.

Modernisation of agricultural sector had led to mass retrenchment of farm women and accentuating of inequalities.

So the thrust areas for technology generation should be identified and women should be exposed to trainings and demonstrations in using seed drill/row seeders, manual transplanters, winnowers, dryers, rice threshers, hand safe plant protection equipments, weeders and rotary hoes. Encouragement should be given from the government side through various development departments and banking institutions by providing the above equipments under subsidy to farm women.

Suggestion for future research

Extension studies can be conducted on farming system to obtain more number of viable combination of farm enterprises applicable to different localities.

There is a need for replication to substantiate the generalizations made. The study was done in only six villages. On this basis, conclusions were made. How valid they are with respect to other areas have to be addressed by a bigger study.

The study was conducted on a limited scale confining to a particular agro-physical and socio-cultural condition. With a view to generalise the findings in a larger context, it may be necessary to repeat this study, under varying socio-cultural environment.

The regional needs and problems should be surveyed and documented, so that future research could be based on the felt needs of specific gender.

Since the present study is only confined to gender responsibility in agriculture and allied activities, a similar study relating to gender responsibility in horticulture can be taken as a research problem in future.

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* Originals not seen

APPENDICES

APPENDIX I

Details showing the knowledge checklist different farming systems

S. No.	Questions	Answers	Difficulty index	Discrimination index
1.	Mention the nursery area for planting an acre of paddy	a) 15 cents b) 8 cents c) 12 cents	0.099	0.09
2.	*Mention one most suitable high yielding paddy variety for an acre	a) TKM 9 b) IR 20 c) ADT 36	0.166	0.20
3.	*Top dressing of paddy crop should be based on	a) Own experience b) Soil testing analysis c) Recommendation given by neighbours	0.172	0.29
4.	Mention the seed rate for medium duration paddy variety for an acre	a) 16 kg b) 20 kg c) 24 kg	0.033	0.10
5.	What is the water level to be maintained during puddling	a) 2-3 cm b) 1-2 cm c) 2-5 cm	0.800	0.10
6.	Mention the normal age of the seedlings for transplantation	a) 25-30 days b) 18-22 days c) 35-40 days	0.200	0.00
7.	Mention the depth of seedlings to be planted in the paddy field	a) 3 cm b) 4 cm c) 1 cm	0.000	0.00
8.	The number of hills to be planted for medium duration paddy variety	a) 33 hills/sq.m. b) 40 hills/sq.m. c) 50 hills/sq.m.	0.366	0.80

S. No.	Questions	Answers	Difficulty index	Discrimination index
9.	Fertilizer application to paddy crop should be based on	a) Own experience b) Soil testing analysis c) Recommendation given by neighbours	0.133	0.10
10.*	Feed ratio for cows	a) 2 kg green fodder + 2 kg roughages b) 5 kg green fodder + 2 kg roughages c) 8 kg green fodder + 2 kg roughages	0.466	0.40
11.*	Feed ratio for calves	a) 1/2 kg green fodder + 1/2 kg roughages b) 2 kg green fodder + 1/2 kg roughages c) 3 kg green fodder + 1/2 kg roughages	0.166	0.27
12.*	Watering the the mushroom bed	a) Dairy b) Twice daily c) Thrice daily	0.933	0.29
13.*	For foot and mouth disease, the remedial measure is	a) Bactrim b) Penicillin c) Imol	0.166	0.27
14.	For Rinderpest disease, the remedial measure is	a) Bactrim b) Nacl solution c) Sugar solution	0.133	0.10
15.*	For haemorrhage septicimia	a) Imol b) NaoH solution c) Papain	0.933	0.29
16.*	Feed ratio for broilers	a) 1 kg rice bran + pulses (any) b) 1/2 kg rice bran + pulses c) 2 kg rice bran + pulses	0.933	0.29

S. No.	Questions	Answers	Difficulty index	Discrimination index
17.	*Feed ratio for layers	a) 1 kg rice bran + pulses (any) b) 1/2 kg rice bran + pulses c) 2 kg rice bran + pulses	0.433	0.26
18.	*Debeaking should be done during	a) 18th day b) 20th day c) 25th day	0.366	0.30
19.	*For pest management in fodder crops use	a) BHC 10% b) Sevin dust c) Carbendazim	0.133	0.02
20.	For disease management in fodder crops use	a) DDT 10% b) BHC 10% c) Furadan granules	0.333	0.09
21.	*To control the pests & diseases in silk worm larvae use	a) Dettol b) BHC 10% c) Sevin	0.400	0.24
22.	For disease management in mulberry plants use	a) BHC 10% b) Furadan c) Carbendazim	0.165	0.02
23.	*For pest & disease management in mulberry plants use	a) BHC 10% b) Furadan c) Carbendazim	0.400	0.24
24.	Silkworm cocoon should be harvested during	a) 30th day b) 28th day c) 20th day	0.000	0.00
25.	*Planting of fodder crops should be at a depth of	a) 2 cm b) 4 cm c) 4.6 cm d) 10 cm	0.366	0.30
26.	The hay should be cut for a length of cm for preparing mushroom bed	a) 1 cm b) 1/2 cm c) $1\frac{1}{2}$ cm	0.200	0.02

S. No.	Questions	Answers	Difficulty index	Discrimination index
27.	*The size of the mushroom bed	a) 1/2 metre b) 1/4 metre c) 60 cm	0.700	0.40
28.	Open the bag and make cutting in the sides during	a) 20th day b) 18th day c) 15th day	0.000	0.00
29.	*The room temperature maintained for mushroom cultivation is	a) 10°Cday b) 8°C c) 20°C	0.433	0.40
30.	*Name one nitrogenous fertilizer for paddy crop	a) Azolla b) Azotobacter c) Rhizobium	0.433	0.70
31.	*Harvesting mushroom (I harvest)	a) during 21 daygae b) 40th day c) 50th day	0.943	0.32
32.	The effective herbicide for weed management in paddy is	a) Butachlor b) Nitrogen c) Atrazine	0.066	0.02
33.	Name the fungicide for paddy seed treatment to control seed borne diseases	a) Rogor b) Thiram c) Dithane	0.000	0.00
34.	*Name one cultivated variety of mushroom which gives more yield	a) Oyster mushroom b) Sheil mushroom c) Sprigid mushroom	0.933	0.30
35.	*Mention the seed rate of mushroom for getting 1 kg of yield	a) 1/4 kg b) 100 gm c) 15 gm	0.233	0.20
36.	For feeding the larvae use	a) Tender leaves b) Matured leaves c) Disease free leaves	0.000	0.00

S. No.	Questions	Answers	Difficulty index	Discrimination index
37.	*Name one fodder variety which gives more yield	a) Subapul b) Agathi c) Sesbania	0.400	0.20
38.	*Name one breed which gives more milk yield	a) Sindhi b) Yuvaski c) Jersi	0.633	0.40
39.	For pest management in silkworm larvae use	a) BHC 10% b) Furadan c) Carbendazim	0.284	0.29
40.	*Name one layer variety which gives more eggs	a) Country birds b) White leghorn c) Rode island	0.266	0.30

* Selected questions for knowledge test

APPENDIX II

Judges opinion to decide the weights to the practices of different farming systems and weights assigned.

Dr.K.Nanjaihan, Ph.D.,
Professor and Head,
Department of Agricultural
Extension and Rural Sociology,

TNAU, Coimbatore.
Dated:

Dear Dr./Shri.

This is in connection with a Doctoral research project of Tmt.J.Jane Sujatha, one of my Ph.D. scholars. This study requires to find out the relative weightage of each of the practices recommended in different farming systems.

A list of 10 practices recommended for different farming systems is enclosed. We are interested to know the relative weightage of each of these practices according to their degree of importance in terms of their utility to the farmers and farm women.

I therefore request you to please indicate the degree of importance of each of these practices on the five point continuum given against each practice.

After completing the rating please return this material at your earliest convenience.

With kind regards,

Yours sincerely,

Sd./-
(K.Nanjaiyan)

Encl: A list of practices

To
Dr./Shri.

For rating of the practices of different farming systems for the degree of importance for adoption by the farmers, a tick mark (✓) may be put in the relevant column. While checking the practice, do not consider factors like economic conditions of the farmers and facilities available to them.

Sl. No.	Practices	Most important 5	More important 4	Important 3	Less important 2	Least important 1	Weights assigned
1.	Use of certified seeds						7
2.	Recommended dosage of feeding (for animals)						6
3.	Recommended dosage of feeding (for birds)						3
4.	Preparation of mushroom bed						4
5.	Application of fertilizer for mulberry plants						2
6.	Recommended leaves for feeding silk worm larvae						5
7.	Recommended feed for fish						1
8.	Disease management for animals						8
9.	Disease management for birds						9
10.	Seed rate for fodder crops						10

APPENDIX III

GENDER ANALYSIS IN DIFFERENT FARMING SYSTEMS

Interview Schedule

PART-I

Respondent No.

1. Name :

2. Father's Name & Address :

3. Age : Young (upto 35)
Middle (36-45)
Old (above 45)

4. Education : Illiterate / Primary / Middle / Higher Secondary / Collegiate

5. Occupation : Artisan / Business / Trade service / Agriculture

6. Nature of family

6a. Family type : Joint / Nuclear

6b. Family size : Upto 5 members / Above 5 members

7. Land holding : 2.5 acres / 2.51 - 5.00 acres / 5.01 - 10.00 acres / 10.01 acres

8. Farming experience : 0 - 10 years (Low)
11 - 20 years (Medium)
21 and above (High)

9 a) Livestock possession : 1-2 milch animals
3-4 milch animals
5-8 milch animals
9 milch animals and above .

b) Poultry : 1 - 5 birds / 5 birds

10. Material possession :

(i) Ordinary items :
Normal household items viz., cycle, radio, electric fan, chair, table

(ii) (a) Prestige items :
Improved household items, tape recorder, scooter, motor cycle

(b) High prestige items:
TV, washing machine, refrigerator, video, car, phone, etc.

11. Farm power
Please specify how many numbers you possess.

1. Tractor
2. Oil engine
3. Electric motor
4. Pumpset
5. Sprayer
6. Duster
7. Green manure trampler

12. Annual income

1. 25,000 Rupees
2. 25,000 - 50,000 Rs.
3. 50,001 - 1 lakh Rs.
4. Above 1 lakh - 2 lakh Rs.
5. Above 2 lakh - 3 lakh Rs.
6. 3 lakh Rs. and above

13 Social participation

Non member
Member in one organisation
Member in more than one organisation
Office bearer in one organisation
Office bearer in more than one organisation

14. Expenditure incurred:

1. 25,000 Rupees
2. 25,000 - 50,000 Rs.
3. 50,001 - 1 lakh Rs.
4. Above 1 lakh - 2 lakh Rs.
5. Above 2 lakh - 3 lakh Rs.
6. 3 lakh Rs. and above

15. Contact with extension agency:

a) Not aware about extension agents
b) Aware about extension agents
c) Frequency of contact
Rarely / Sometime / Often

d) Purpose of contact

Casual
Non-agriculture
To avail input assistance
Subsidies and agricultural implements
Technical guidance

16. Mass media exposure:

Read newspaper / listened to newspaper reading
No / Yes

Subscribed to newspapers No / Yes

Frequency of reading newspapers
Occasionally / Frequently / Daily

Listening radio - No / Yes

Frequency of listening radio
Occasionally / Often / Daily

Viewing TV - No / Yes

Frequency of viewing TV
Occasionally / Often / Daily

Type of programme -

Agriculture
Never / Occasionally / Often / Regular

Non-Agriculture
Never / Occasionally / Often / Regular

Participation in training - No / Yes

17. Migration habit: No / Yes

18. Extent of employment:

No. of days worked during I season
II season
III season

19. Job preference :

Self doing / Assisting / Supervising

20. Credit orientation:

Sl.No.	Question	Response
1.	Do you think that a farmer like you should borrow money for agricultural purpose?	Yes No
2.	In your opinion how difficult it is to secure credit for agricultural purposes?	Very easy Easy Difficult Very difficult
3.	How a farmer is treated when he goes to secure credit?	Very fairly Fairly Badly Very badly
4.	There is nothing wrong in taking credit from institutional sources for increasing farm production	Strongly agree Agree Disagree Strongly disagree
5.	Did you use credit in the last two years for cultivation?	Yes No

21. Economic motivation:

Sl. No.	Statements	SA	A	UD	DA	SDA
1.	Money alone does not give entire satisfaction in a farmer's/farm women's life					
2.	A farmer/farm women should adopt an innovation to get more money					
3.	The community give due importance to the rich farmers/farm women					
4.	A farmer/farm women should give importance to social recognition rather than monetary recognition					

Sl. No.	Statements	SA	A	UD	DA	SDA
5.	Standard of living is more important than profit for the success of farm					
6.	To meet the goals of life money plays an important role					

22. Scientific orientation:

Please give your degree of agreement or disagreement, to these statements as strongly agree, agree, undecided, disagree and strongly disagree.

Sl. No.	Statements	SA	A	UD	DA	SDA
1.	New methods of farming give better results to a farmer/ farm women than the old methods					
2.	Even a farmer/farm women with lot of experience should use new methods of farming					

23. Risk orientation:

Here the statements that explain your orientation towards risks and uncertainities. Kindly indicate your degree of agreement or disagreement to these statements (strongly agree, agree, undecided, disagree and strongly disagree).

Sl. No.	Statements	SA	A	UD	DA	SDA
1.	A farmer/farm women should grow larger number of crops to avoid greater risks involved in growing one or two crops					

Decision making pattern in farm families

Particulars	Farmers alone		Farm women alone		Equally by both		Consulting with others	
	No.	%	No.	%	No.	%	No.	%
Agriculture								
. Selection of seeds								
. Nursery preparation								
. Transplanting								
. Mainfield preparation								
. Fertilizer application								
. Weeding								
. Harvesting								
. Storage								
. **Animal Husbandry**								
. Feed ratio for cows								
. Feed ratio for calves								
. Disease management								
. Selling milk								
I. **Poultry**								
. Feed ratio for broilers								
. Feed ratio for layers								
. Disease management								
. Selling eggs/broilers								
. **Fodder crops**								
. Time of planting								
. Pest and disease management								

Particulars	Farmers alone		Farm women alone		Equally by both		Consulting with others	
	No.	%	No.	%	No.	%	No.	%
Sericulture								
. Plant protection in mulberry plants								
. Pest and disease management in silkworm larvae								
. **Mushroom cultivation**								
. Preparation of mushroom bed								
. Maintenance of mushroom bed								
. Maintenance of mushroom shed								

ually by both = Equal contribution by husband and wife in decision making
nsulting with others = Consulting with father, mother and brother

PART-III

Knowledge Test

1. Mention one most suitable high yielding paddy variety for an acre	(a) TKM 9 (b) IR 20 (c) ADT 36	Correct/Incorrect
2. Top dressing of paddy crop should be based on	a) Own experience b) Soil testing analysis c) Recommendation given by neighbours	Correct/Incorrect
3. The effective herbicide for weed management in paddy is	a) Butachlor b) Nitrogen c) Atrazine	Correct/Incorrect
4. Name one nitrogenous fertilizer for paddy crop	a) Azolla b) Azotobacter c) Rhizobium	Correct/Incorrect
5. Name one breed which gives more milk yield	a) Sindhi b) Yuvaski c) Jersi	Correct/Incorrect
6. Feed ratio for cows	a) 2 kg green fodder + 2 kg roughages b) 6 kg green fodder + 2 kg roughages c) 8 kg green fodder + 2 kg roughages	Correct/Incorrect
7. Feed ratio for calves	a) 1/2 kg green fodder + 1/2 kg roughages b) 2 kg green fodder + 1/2 kg roughages c) 3 kg green fodder + 1/2 kg roughages	Correct/Incorrect
8. For foot and mouth disease, the remedial measure is	a) Bactrim b) Fenicillin c) Imol	Correct/Incorrect
9. Name one layer variety which gives more eggs	a) Country birds b) White leghorn c) Rode island	Correct/Incorrect

10. Feed ratio for broilers	a) 1 kg rice bran + pulses (any)	
11. Feed ratio for layers	a) 1 kg rice bran + pulses (any) b) 1/2 kg rice bran + pulses c) 2 kg rice bran + pulses	Correct/Incorrect
12. Debeaking should be done during	a) 18th day b) 20th day c) 25th day	Correct/Incorrect
13. For haemorrhage septicimia use	a) Imol b) NaoH solution c) Papain	Correct/Incorrect
14. Name one fodder which gives more yield	a) Subapul b) Agathi c) Sesbania	Correct/Incorrect
15. Planting of fodder crops should be at a depth of	a) 2 cm b) 4 cm c) 4.6 cm d) 10 cm	Correct/Incorrect
16. For pest management in fodder crops use	a) BHC 10% b) Sevin dust c) Fudadan granules	Correct/Incorrect
17. For pest and disease management in mulberry plants use	a) BHC 10% b) Furadan c) Carbendazim	Correct/Incorrect
18. For feeding the larvae use	a) Tender leaves b) Matured leaves c) Disease free leaves	Correct/Incorrect
19. For pest management in silkworm larvae use	a) BHC 10% b) Furadan c) Carbendazim	Correct/Incorrect
20. The size of the mushroom bed	a) 1/2 metre b) 1/4 metre c) 60 cm	Correct/Incorrect

21. Watering the mushroom bed	a) Daily b) Twice daily c) Thrice daily	Correct/Incorrect
22. The room temperature maintained for mushroom cultivation is	a) 18°C day b) 8°C c) 20°C	Correct/Incorrect
23. Harvesting mushroom (I harvest)	a) during 21 day b) 40th day c) 50th day	Correct/Incorrect
24. Name one cultivated variety of mushroom which gives more yield	a) Oyster mushroom b) Shell mushroom c) Sprigid mushroom	Correct/Incorrect
25. Mention the seed rate of mushroom for getting 1 kg of yield	a) 1/4 kg b) 100 gm c) 15 gm	Correct/Incorrect

PART-IV

*Extent of adoption:

Sl. No.	Practice	Recommended/ acre		Actual adoption/ acre		Reason
		Quantity	Area	Quantity	Area	
1.	Use of certified seeds Yes / No Quantity					
2.	Recommended dosage of feeding (for animals)					
3.	Recommended dosage of feeding (for birds)					
4.	Preparation of mushroom bed					
5.	Application of fertilizer for mulberry plants					
6.	Recommended leaves for feeding silk worm larvae					
7.	Recommended feed for fish					
8.	Disease management for animals					
9.	Disease management for birds					
10.	Seed rate for fodder crops					

* Please give the above details with reference to your adoption of the recommended practices for different farming systems.

PART-V

Role performance involved by the respondents:

Role performance	Self doing Farmer	Farm women	Supervising Farmer	Farm women	Assisti Farmer	Fa wo
Nursery preparation						
1. Selection of seeds						
2. Seed treatment						
3. Sowing the seeds						
4. Irrigating the nursery						
5. Plant protection in nursery						
Mainfield preparation						
1. Ploughing, puddling and levelling						
2. Rectifying bunds						
3. Application of basal manure						
Transplanting						
1. Pulling out the seedlings from the nursery						
2. Transporting the seedlings						
3. Transplanting the seedlings						
After cultivation						
1. Application of herbicides						
2. Hand weeding						
3. Top dressing						
4. Spraying pesticides						
5. Irrigation						
Harvesting						
1. Draining water						
2. Harvesting						
3. Bundling						
4. Carrying to the yard						

Role performance	Self doing		Supervising		Assisting	
	Farmer	Farm women	Farmer	Farm women	Farmer	Farm wome
Post-harvest activities						
1. Threshing						
2. Winnowing						
3. Drying						
4. Bagging						
5. Transporting						
6. Storage						
Miscellaneous						
1. Marketing						
2. Keeping accounts						
3. Disbursing wages						
Animal husbandry						
1. Grazing the animals						
2. Feeding the animals						
3. Bathing the animals						
4. Cleaning the shed						
5. Milking						
6. Selling the milk						
Poultry						
1. Feeding the birds						
2. Cleaning the shed						
3. Debeaking the birds						
4. Selling the eggs/broilers						
Sericulture						
1. Planting of mulberry plants						
2. Plant protection in mulberry plants						
3. Feeding the larvae						
4. Cleaning the shed						
5. Selling the cocoons						
Mushroom cultivation						
1. Preparation of mushroom bed						
2. Watering the mushroom bed						
3. Maintenance of shed (Temp, RH)						
4. Harvesting						
5. Selling						

PART-VI

Time utilisation pattern of respondents:

Please furnish the time spent in a day for the following activities. (hrs/day)

Sl.No.	Particulars	Peak season	Slack season
1.	Farming activities		
2.	Animal husbandry activities		
3.	Poultry		
4.	Fodder crops		
5.	Sericulture		
6.	Mushroom cultivation		

PART-VII

Training needs perceived in different farming systems:

Sl.No.	Particulars	Yes / No
	Farm activities	
1.	Seed treatment	
2.	Nursery preparation	
3.	Fertilizer application	
4.	Transplanting	
5.	Weeding	
6.	Pest and disease management	
7.	Irrigation management	
8.	Harvesting	
9.	Storage	
10.	Marketing	
	Animal husbandry	
1.	Feed ratio for animals	
2.	Disease management	
	- Foot and mouth disease	
	- Rinderpest disease	
	- Hemorrhage septicimia	

Sl.No.	Particulars	Yes / No
	Poultry	
1.	Feed ratio for broilers/layers	
2.	Debeaking	
3.	Disease management	
	Fodder crops	
1.	Pest and disease management	
	Sericulture	
1.	Disease management in larvae	
2.	Pest and disease management in mulberry plants	
	Mushroom cultivation	
1.	Disease management	
2.	Maintenance of shed	

PART-VIII

Farming constraints faced by the respondents:

Sl.No.	Farming constraints	Yes / No
	Agricultural activities	
1.	Pest problem	
2.	Disease problem	
3.	Scarcity of water	
4.	Lack of labour	
	Animal husbandry	
1.	Scarcity of water	
2.	Rinder pest disease	
	Poultry	
1.	Scarcity of water	
2.	Bacterial disease	
3.	Labour problem	
	Fodder crops	
1.	Leaf spot	
2.	Scarcity of water	
3.	Labour problem	
	Sericulture	
1.	Scarcity of water	
2.	Bacterial disease	
	Mushroom cultivation	
1.	Pest and disease problem	
2.	Scarcity of water	
3.	Labour problem	

PART-IX

Different farming systems with respect to income generation:

Sl. No.	Different farming system	Income generation/y
1.	Agriculture alone	
2.	Agriculture + Animal husbandry	
3.	Agriculture + Poultry + Animal husbandry	
4.	Agriculture + Fodder crops + Animal husbandry	
5.	Agriculture + Sericulture + Agro-forestry	
6.	Agriculture + Agroforestry + Sheep/goat rearing	
7.	Agriculture + Mushroom + Animal husbandry + Fish culture	

APPENDIX IV

Number of respondents practicing different farming systems

(n=240)

Sl. No.	Different farming systems	Farmer No.	Farm women No.
1.	Agriculture alone	120	120
2.	Agriculture + Animal Husbandry	58	63
3.	Agriculture + Poultry + Animal Husbandry	13	14
4.	Agriculture + Fodder crops + Animal Husbandry	12	10
5.	Agriculture + Sericulture + Agro-forestry	5	6
6.	Agriculture + Agro-forestry + Sheep/goat rearing	2	3
7.	Agriculture + mushroom + Animal Husbandry + Fish culture	10	9

APPENDIX V

Judges opinion to decide the weights to the practices of farming systems and weights assigned.

Dr.K.Nanjaiyan, Ph.D.,
Professor and Head
Department of Agrl. Extension
and Rural Sociology

Tamil Nadu Agrl.
University,
Coimbatore-3.
Dated: 10-12-94.

Dear Dr./Shri.

This is in connection with a Doctoral research project of Tmt.J.Jane Sujatha, one of my Ph.D. scholars. This study requires to find out the relative weightage of each of the practices recommended in different farming systems.

A list of 10 practices recommended for different farming systems is enclosed. We are interested to know the relative weightage of each of these practices according to their degree of importance in terms of their utility to farming community.

I therefore request you to please indicate the degree of importance of each of these practices on the five point continuum given against each practice.

After completing the rating, please return this material at your earliest convenience.

Thank you very much,

With kind regards,

Yours sincerely,

Sd/- K.Nanjaiyan

Encl: A list of practices

For rating the practices for different farming systems for the degree of importance for adoption by farming community, a tick mark (✓) may be put in the relevant column. While checking the practice, do not consider factors like economic conditions of the farming community and facilities available to them.

S. No.	Practices	Most important	More important	Important	Less important	Least important	Weights assigned
1.	Use of certified seeds						7
2.	Recommended dosage of feeding (for animals)						6
3.	Recommended dosage of feeding (for birds)						3
4.	Preparation of mushroom bed						4
5.	Application of fertilizer for mulberry plants						2
6.	Recommended leaves for feeding silkworm larvae						10
7.	Recommended feed for fish						1
8.	Disease management for animals						8
9.	Disease management for birds						9
10.	Seed rate for fodder crops						5