

TRAINING STRATEGY FOR THE FARMERS OF KASARAGOD DISTRICT

**BY
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THESIS
*submitted in partial fulfilment of the
requirement for the degree*
MASTER OF SCIENCE IN AGRICULTURE
Faculty of Agriculture
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Vellayani, Trivandrum.**

1990

DECLARATION

I hereby declare that this thesis entitled
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is a bonafide work of research work done by me during
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I hereby declare that this thesis entitled "Training Strategy for the farmers of Kasaragod District is a bonafide record of research work done by me during the course of research, and that the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title of any other University or Society.



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CERTIFICATE

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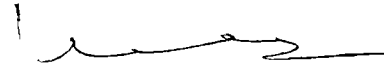
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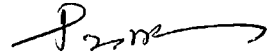


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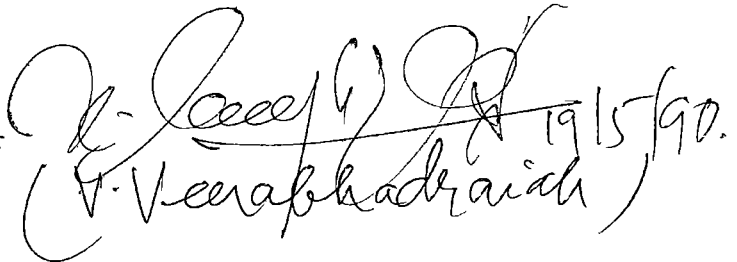
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INTRODUCTION

INTRODUCTION

India has made remarkable achievements in the field of agriculture since its independence. These achievements have been made possible due to significant contribution of research scientists, extension workers and farmers. Despite such achievements, a wide gap exists between technological innovations developed at the research centres and their actual use by the farmers. Experiences of research stations and national demonstrations have clearly indicated that our present level of crop yields can be increased by five to six times. If these levels of crop yields are to be attained results of research have to reach the target clientele.

With the fast growing and changing agricultural technology coupled with equally changing agrarian structure and extension strategy a farmer has to know more and more about the improved techniques of crop production. Farmers' training programme has been recognised as an important activity in the transfer of technology in agriculture. In India farmers' training programme was initiated during sixties with the starting of a centrally sponsored scheme of Farmers' Training and Education in High Yielding Varieties Programme.

One of the pre-requisites to organise a systematic training programme for farmers is to take into account the needs of the target farmers as perceived by them. Farmers' preferences regarding the type, duration, venue, season, methodology and frequency of training programme are also important factors. Besides these, the view points of agricultural scientists and extension personnel about some attributes of farmers' training such as subject matter to be included, selection of trainees and trainers, evaluation and follow-up are also needs to be considered. Hence to avoid wastage of resources and efforts in farmers' training programme and to ensure that the programme is designed to meet the needs of the farmers, scientific studies have to be taken up to throw light on these aspects.

This study is aimed at formulating a training strategy for the farmers of Kasaragod district. Kasaragod district was formed on 24-5-1984 and it is the fourteenth and the northernmost district of the State. A profile of agricultural scene in Kasaragod district is discussed below.

The mainstay of the people of the district is agriculture. It has got a cropped area of 1,41,626 hectares. Major crops of the area are rice, coconut, arecanut, pepper, cashew, rubber, tobacco etc. Kasaragod district receives on an average 3400 mm rainfall annually, mostly from southwest monsoon. The distribution of rainfall is quite uneven.

South-west monsoon season, that is May-June to August, provides heavy rainfall, but other periods of the year remain mostly dry. The soil found in the district is classified into three types, viz., sandy, laterite and forest loam soil. The average yield of major crops of the district such as paddy and coconut is below the State average (Appendix I).

Need for the study

Kasaragod is an agriculturally backward district of Kerala. The performance of the various crops grown in the district is not at satisfactory level, especially that of rice and coconut. Lack of sufficient knowledge on improved cultivation practices of crops on the part of farmers can be one of the many probable reasons that can be attributed to this dismal situation. Though the State Department of Agriculture and Kerala Agricultural University are implementing many extension educational programmes, no systematic study has been so far conducted to analyse the needs and preferences of farmers of this region about training programmes. It will also be useful if the perception of agricultural scientists and extension personnel of the region regarding the various aspects of farmers training is also analysed. Hence, the present study was taken up with the following specific objectives.

1. To analyse the knowledge of the farmers of Kasaragod district about the improved cultivation practices of major crops of the area.
2. To study the association between selected socio-personal characteristics of farmers and their knowledge about the improved cultivation practices of major crops of the area.
3. To analyse the training needs of the farmers of Kasaragod district about the improved cultivation practices of major crops of the area.
4. To study the preferences of the farmers of Kasaragod district about type, duration, season, venue, methodology and frequency of training programmes to be organised.
5. To study the perception of extension personnel and agricultural scientists about the subject matter, selection of trainees, selection of trainers, evaluation and follow-up of the training programmes to be organised for the farmers of Kasaragod district.
6. To develop a training strategy for the farmers of Kasaragod district.

Scope of the study

This study aims at analysing the training needs of

farmers of Kasaragod district, and their preferences about various aspects of agricultural training such as type, duration, venue, season, methodology and frequency. Besides, the views of the agricultural scientists and extension personnel about the selection of trainees and trainers and evaluation and follow-up of farmers training programme are also analysed. Based on these, a strategy for the training of farmers of Kasaragod district could be developed and translated into action.

Limitations of the study

The present study had the limitation of time and other resources, as it was undertaken as part of the requirements for the M.Sc.(Ag.) degree programme. Hence, it was not possible for the researcher to explore the area in greater depth and in a more comprehensive manner. The knowledge of the farmers and their training needs with respect to improved cultivation practices were analysed only with respect to the two major crops of the area viz., rice and coconut. Hence, the findings in this regard cannot be generalised to other crops of the area.

Presentation of the study

The remaining chapters of the thesis are presented as follows.

Chapter II deals with the theoretical orientation
Chapter III covers the methodology followed for the study, which includes the locale of the study, selection of the respondents, selection of the variables and their measurement, procedure followed for data collection and statistical tools used.

Results and discussions are presented in Chapter IV.

Chapter V deals with summary of the research work emphasising the salient findings.

The references and appendices are given at the end.

THEORETICAL ORIENTATION

CHAPTER II

THEORETICAL ORIENTATION

The objective of this chapter is to discuss the conceptual framework of the study. This will serve as a basis for deciding the kind of variables to be included, the data to be collected and in summarising what is already known regarding the problem under investigation.

In accordance with the specific objectives set for the study, the review of past studies has been presented under the following sub-heads:

- 2.1. Concept of training and farmers' training
- 2.2. Importance of farmers' training
- 2.3. Knowledge of farmers about improved cultivation practices of crops
- 2.4. Association between socio-personal characteristics of farmers and their knowledge about improved cultivation practices
- 2.5. Training needs of farmers
- 2.6. Preference of farmers regarding the type, duration, season, venue, methodology and frequency of training
- 2.7. Perception of agricultural scientists and extension personnel about the subject matter, selection of trainees, selection of trainers, evaluation and follow-up of farmers' training

2.8. Training strategy for farmers

2.1. Concepts of 'training' and 'farmers training'

2.1.1. Training

The term 'training' has been defined by different authors in connection with various fields of activities.

According to Charles and Charles (1938), training becomes that part of the experience of an individual whereby he learns successfully to carry on any gainful occupation.

According to Lynton and Pareek (1967) training is primarily concerned with preparing the participants for certain lines of action which are delineated by technology and the organisation in which he works. The main focus in training is on internalising the skills for action by giving opportunities to participants, to practice the new skills in situations resembling the complexities of real life.

Bennis (1969) conceived training for organisation development as a small group effort designed to make its participants more aware of themselves and of the group process. The group works under the guidance of a professionally competent behavioural scientist and explores group processes and development through focussing attention on the experienced behaviour of its members.

Littlefield et al. (1971) remarked that training is the continuous, systematic development among all levels of employees of that knowledge and those skills and attitudes which contribute to their welfare and that of the company.

Peter (1972) observed that training is a socialization process by which the individual acquires knowledge, attitudes and skills to meet the expectation of those who influence his behaviour.

Dahama (1973) stated that training is a means to educate a person so as to be fitted, qualified and made proficient in doing some jobs.

Coombs and Ahamed (1974) opined that training emphasises a more systematic and deeper learning of specific skills and related knowledge.

According to Sharma (1974), scope of training is narrower and more specific than that of education. Education includes complete upbringing of individual from childhood, formation of habits and manners. Training is rather specific and occasional, intended to increase the person's skill in some particular kind of work, while education is general and aims at broadening of mind.

Rao (1975) defined training as a kind of learning process where a selected group of individuals undergo

learning experiences to internalise the skills, resulting in modification of behaviour towards job performance.

According to Aslam (1979), training for skill-development tries to bridge the gap between the existing skills and the new technology on the one side and develops skills amongst the unskilled on the other side.

Bhatnagar (1987) remarked that in training the focus is on learning by an individual the new ways of doing things, that is better performance and secondly, the transfer of learning in the work situation directed to greater organisational effectiveness.

2.1.2. Farmers' training

Mathur (1972) explained farmers' training as a process of providing instructions to the primary producers in a specific field as part of the production process, covering the whole range of agricultural technology embracing the use of new skills, new machinery and new inputs.

Rao (1975) explained farmers' training as an intensive learning activity for a group of selected farmers, assisted by competent trainers to understand and practice the skills required to adopt new agricultural technology, at a place where appropriate facilities exist, and at the time and duration considered suitable by the farmers.

Prasad (1983) reported that there can be various patterns for farmers' training in several institutions or agencies. In a vast country like ours no one training design can be recommended uniformly. All institutions must contribute to the massive need of training for the farmers in their own respective specializations or institutions.

Vashistha (1987) explained that the concept of farmers' training programme was to educate and train farm families in their own environment and to equip them to meet the emerging problems of farming. He further elaborated the essence of farmers' training programme as the attempt to expose the farmers to new technologies and to create new hopes in him on the possibilities of improving the production potential within the means available with him and methods as well as techniques known to him.

The aforesaid observations clearly point out to the significant role of training in improving the efficiency of work situations in all the fields like industry, agriculture, business etc.

2.2. Importance of farmers' training

Charles and Charles (1938) explained the importance of farmers' training in their 'Hand book on teaching vocational Agriculture' thus: "Agriculture is thought of in a

much different way at the present time than it was formerly. In the past, people thought anybody could farm eventhough they had no education. That day has passed and people now look upon the farm as a business. They realise that the farmers must use good judgement and careful management if he is going to compete with his neighbours and also make a profit. In almost any phase of farming, there is a wide gap between the best that is known and what is done on the farm. Consequently farmers' training is more essential than ever before which can play an important part in rural life".

Phipps (1954) emphasised the importance of training farmers by stating that farmers attend training course because they desire to gain knowledge and to develop new abilities that will be useful in their farming. They welcome educational opportunities and enroll in large numbers if they feel the instructions will meet their needs. They were appreciative of any training provided and were often highly motivated by economic conditions.

Fay (1962) stated that training to cultivators in the scientific methods of crop production, if universally employed can double the current level of yields.

Barooah (1964) emphasised that taking scientific knowledge to the doors of sixty million farm families in

India is possible only through intensive training of farmers both in the package of practices and in specialized techniques of production.

Johnson (1967) reported that farmers participated in training programmes to learn something about why and how things happen, to know the basic principles of fertilizer application, feeding animals etc. He further noted that majority of the farmers were enthusiastic in participating repeatedly in the training programmes. According to Sohal and Bhatti (1967), there is always a vast scope in the proper and more efficient use of the available inputs, and this can only be realised, if there is a systematic and comprehensive programme for training and educating the farmers on a mass scale.

Mathur (1972) opined that the fast pace of agricultural technology not only makes the training of the producer imperative but also requires constant alertness and awareness of new methods, on the part of those responsible for training.

Solon (1973) stated that poor and often illiterate peasants and farm workers have to be trained to make rational management decisions and to use modern agricultural techniques.

Patel and Pandya (1975) observed that acquiring new knowledge and improving farming were the two main purposes for which farmers joined the training classes.

The joint FAO/UNESCO/ILO Advisory Committee on Agricultural Education, Science and Education (1977) reported that all the participants in a training programme considered training as a very important input in rural development as a whole, and as a means of curbing rural exodus, promoting settlement, increasing productivity and raising living standards.

Nikahetiya (1977), while analysing the effectiveness of agricultural extension methodology, concluded that while demonstrations and field days were effective for transmitting simple messages, training classes were better for informing farmers of more complex innovations.

Gagni (1978) emphasised the importance of farmers' training as an educational means for changing the thinking and behaviour of people in such ways that enable them to help themselves attain economic and social improvements.

Sreenivas and Mukunda (1980) stressed the importance of conducting short-term training programmes in the agricultural research farms to some selected representatives and to farmers living in the vicinity of the farms.

Vashistha (1987) reported that the institutional courses of the Farmers' Training Centres in India significantly increased the adoption of crop production techniques among participating farmers. He further noted that training had some diffused effects also as reflected by the higher adoption scores of the non-participating farmers in the villages of participating farmers than the non-participating farmers from the villages from which no farmer participated in any institutional course.

The above studies reiterate that farmers' training has got a significant role in augmenting agricultural production and rural development of a developing country like India.

2.3. Knowledge of farmers about improved cultivation practices

One major task of Farmers' Training Programmes is to sharpen the knowledge of farmers on the improved cultivation practices and to impart new knowledge on farming technologies. English and English (1958) defined knowledge as 'the body of understood information possessed by an individual or by a culture. Knowledge is knowing what to do next; skill is knowing how to do it and virtue is doing it'.

Knowledge level of farmers on the various cultivation practices of crops will have a bearing on the type and extent of training they require. Many studies have been reported linking the knowledge level of farmers and farmers' training. Pal (1970) made a critical study of the Farmers' Training and Education Programme in relation to the changes in the behavioural components of farmers. He concluded that the farmers who participated in the programme differed significantly with regard to the gain in knowledge related to new practices and change in attitude towards farming practices.

Trignayat (1971), in his study 'Impact of radio on Farmers' Training and Education Programme in UP', found that there was significant difference in knowledge level between trained and untrained farmers.

Kamalsen (1971) found in his study in Kerala that there was significant increase in knowledge, change in attitude and adoption of high yielding varieties due to one day farmers' training camp.

Sukumaran (1972) in a study conducted in Trichur District of Kerala reported that the lowest, highest and also the average knowledge scores of the trained group of farmers were significantly higher than those of the matched untrained farmers.

Menon and Basha (1973) while studying the role of Farmers' Training Centre in developing leadership in rural areas in Tamil Nadu, concluded that there was a definite enhancement of knowledge about the improved package of practices of crops due to the training imparted to the conveners of the Farmers' Discussion Groups by the Farmers' Training Centre.

Singh (1974) observed that knowledge of farmers participating in institutional training was significantly higher than the untrained farmers.

Katteppa (1975) after studying the impact of 'Charcha Mandal' on the member farmers in Karnataka concluded that majority (52%) of the member farmers had higher level of knowledge, while only 20 per cent of non-members had high level of knowledge.

Govindappa (1975) reported that small farmers' knowledge about ~~the~~ farm practices was low when compared to large farmers. The knowledge level relating to vegetable crop practices, plant nutrients in common fertilizers, and plant protection chemicals was low among both the categories of farmers.

Menon (1976) found that majority of farmers did not know the purpose and advantages of soil testing, improved implements and multiple cropping.

Singh (1976) indicated that the small farmers had least knowledge about High Yielding Varieties of paddy.

Singh et al. (1976) highlighted that small farmers demanded intensive training in plant protection and fertilizer application techniques.

Anantharaman (1977) observed that the knowledge level of small farmers on high yielding varieties of jowar did not differ significantly from that of marginal farmers.

Singh (1977) pointed out that trained farmers possessed significantly higher knowledge about modern agricultural practices than untrained farmers.

Singh and Sagar (1977), while studying the effectiveness of training of youth leaders, observed that the knowledge gained as a result of five days training programme was highly appreciable.

Ahamed (1981) observed that the farmers' training programme enhances the level of the knowledge of the participants which might help in rational decision making on the part of the farmers.

Chandrasekharan (1981) found that untrained tea growers had only medium level of knowledge. He also concluded that the untrained small tea growers lacked knowledge

in major subject matter areas such as plant protection followed by pruning and care of young plants.

Arumugam (1983) concluded that there was significant difference in the knowledge level of small and large farmers.

Alexander (1985) stated that majority (63.64%) of small rubber growers were found to have medium level of knowledge while 22.72 per cent and 13.64 per cent of the small rubber growers had high and low level of knowledge respectively. He further noted that there was significant difference in the knowledge level of trained and untrained farmers.

From the foregoing reviews, it could be surmised that, in general, the level of knowledge of the farmers about improved cultivation practices for the major crops was rather low and that factors such as farm size had a telling effect on the knowledge level of the farmers. It could also be inferred that training programmes organised for the benefit of the farmers had helped in enhancing the knowledge of the farmers about improved cultivation practices.

2.4. Association between socio-personal characteristics of farmers and their knowledge about improved cultivation practices

1. Age

Bhaskaram and Mahajan (1968) reported that young and

middle aged farmers were superior to the old age group in the matter of retention of knowledge about cultivation practices.

Behera and Sahoo (1975) reported that young farmers had better knowledge and information about the National Demonstration Scheme than other farmers.

Kaleel (1978), while studying the impact of Intensive Paddy Development units in Kerala, found that age had no significant relationship with the knowledge gained by farmers about the subject matter.

Ravindra (1980) found that there was no association of poultry farmers' knowledge with their age.

Ahamed (1981) reported that age of rice farmers was not associated with their level of knowledge on improved cultivation practices.

Kamarudeen (1981) also reported a similar finding. From the foregoing reviews it could be observed that there is no consensus in opinion regarding the association of knowledge of farmers and their age. However, most of the studies revealed a positive association between them.

2. Education

Supe and Salode (1975) reported that formal education was significantly related to the level of knowledge of

farmers on the demonstrated practice.

Kaleel (1978) reported a positive and significant relationship between educational status of farmers and their knowledge on improved cultivation practices.

Ahamed (1981), Haraprasad (1982), Vijayakumar (1983) and Viju (1985) also came out with similar findings where they all reported that level of education of farmers was positively and significantly associated with their knowledge on improved cultivation practices of crops.

The above studies indicate that the educational status of farmers greatly influence their knowledge on improved cultivation practices of crops.

3. Farming experience

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

Arumugam (1983) stated that experience in Agriculture had significant association with the knowledge of small farmers.

4. Farm size

Many researchers have studied the importance of farm size in influencing the knowledge of farmers.

Supe and Salode (1975) reported that farm size was not related to knowledge of farmers in the selected practices of jowar under National Demonstration Scheme.

Rao and Reddy (1979) also reported that farm size of farmers was not associated with their level of knowledge on scientific cultivation practices.

Ahamed (1981) concluded that there was positive and significant relationship between the farm size and the level of knowledge of trained and untrained farmers.

Haraprasad (1982) and Vijayakumar (1983) also reported similar findings. Though there is difference of opinion about the relationship between knowledge of farmers and their farm size, in most of the cases, it was revealed that there exists a positive association between them.

5. Social participation

Copp et al. (1969) reported that participation of farmers in formal organisations improved social interaction which in turn helped in increasing the level of knowledge about new farm practices.

Singh and Prasad (1974) reported that social participation was positively related to the knowledge of communication sources of young farmers.

Kaleel (1978) found positive and significant relationship between social participation and gain in knowledge of farmers of Intensive Paddy Development areas.

Kantharaj (1980) found that knowledge of sunflower growers was positively and significantly related to social participation.

Haraprasad (1982) also concluded that there was positive and significant association between social participation of farmers and their knowledge about improved cultivation practices.

The above studies reveal that social participation of farmers influence their knowledge about improved cultivation practices.

6. Contact with and knowledge about extension agencies

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

Somasundaram and Singh (1978) and Kaleel (1978) found positive and significant relationship between contact with extension agencies and gain in knowledge.

Haraprasad (1982) revealed positive and significant association between farmers' contact with extension agencies

and their level of knowledge. The above studies indicate that the extent of contact with various extension agencies influence the knowledge of farmers.

7. Mass media exposure

Rogers and Svenning (1969) reported that mass media channels are no more important than interpersonal channels (a) in increasing knowledge on new agricultural technologies or (b) for relatively earlier adopters of innovations than for later adopters.

Sohal and Tyagi (1978) stated that mass media exposure was significantly related to the knowledge of the dairy farmers.

Sripal (1978) established positive relationship between knowledge gain and mass media exposure.

Haraprasad (1982) reported that mass media exposure was positively and significantly associated with the level of knowledge of farmers on the improved cultivation practices.

The aforesaid results indicate that knowledge of farmers is influenced by their exposure to the various mass media. Among the various educational activities designed to enhance the knowledge of farmers about improved cultivation practices of crops, utilizing the mass media

secures an important place.

2.5. Training needs of farmers

A good number of research studies have been undertaken to analyse the training needs of farmers.

Gopal (1974) studied the training needs of cotton growers and found that the two topics, namely, plant protection measures and use of chemical fertilizers were frequently cited as most important for inclusion in the farmers' training programme.

Pandey and Singh (1976) reported that small farmers of both irrigated and unirrigated tracts identified the subjects such as HYVs of wheat, plant protection and fertilizer application as most needed for training. They further reported that the small farmers of irrigated tract cultivating wheat perceived water management also as most needed while the farmers of non-irrigated tract considered it to be least needed.

Sandhu and Sharma (1976) found that farm women perceived trainings in plant protection measures, seed selection and treatment, grading, storage and marketing of food grains, fertilizer use and improved agricultural tools, as highly important in the order of their importance.

Sinha and Verma (1976) found that a high percentage of small and marginal farmers demanded intensive training in plant protection, manures and manuring, management during adverse climatic conditions and fertilizer application techniques, while a moderate level of training was demanded on care and management of agricultural implements and for method of sowing.

Anantharaman (1977), in his study on training needs of small and marginal farmers, inferred that the farmers required training in the subject matter areas of plant protection, manures and manuring, soil conservation and soil reclamation and seeds and sowing, in the order of their importance.

Mathiazhagan (1978) concluded that the banana growers mostly needed training in main areas such as manures and fertilizers, propagation, desuckering, protection, improved varieties and storage. The sub-areas of training needs were harvesting, irrigation, intercultural operations, time of planting, spacing, crop rotation, intercropping and marketing.

Gangaram (1979) concluded that some of the important sub-areas in which farmers needed training included knowledge about high yielding varieties, implements used in land preparation, techniques of seed treatment, time of

sowing, preparation of nursery beds, seed rate, age of seedlings at transplanting, time of application of nitrogenous fertilizers, methods of drainage, use of weedicides, preparation of spray solution for the control of pests and diseases, and implements used in harvesting and threshing of grains.

The results of study conducted by Mayani and Kumar (1980) revealed that farmers needed training in the subject matter areas: plant protection measures, manurial practices and agronomic practices in the descending order of their importance.

Ahamed (1981) observed that farmers needed training in the following subject matter areas: plant protection, agricultural implements, agricultural credit and manures and fertilizers in the order of their preference.

Chandrasekharan (1981) reported that tea growers needed skill-oriented training in areas such as plant protection, pruning, care of young plants, soil conservation, manures and manuring, after cultivation and planting.

Gangaram and Mathur (1981) reported that in the case of small farmers training needs were maximum for weeds and weed control, while treatment of wheat and storage of grains had been the main areas of training needs of big

and medium farmers.

Savarimuthu (1981) found that farm women needed intensive training on the method of sowing followed by transplanting, weeding, manuring, nutrition and livestock keeping in their order of importance.

Singh and Singh (1981) observed that the subject matter areas of HYV, construction of channels, seed treatment and fertilizer application were perceived as most needed by the farmers.

Gupta (1982), in his study of the training needs of farmers in Himachal Pradesh, reported that farmers perceived crop husbandry as highly important area of training followed by poultry and dairying. The next in order was fruit growing and fruit and vegetable preservation. Farmers had shown least interest for piggery and fishery.

Kokate and Tyagi (1982) observed that a comparison between trained and untrained farmers with respect to their perceived training needs in dairy farming revealed that in all areas, training need was higher in the case of untrained farmers than trained farmers. Both groups had low training needs in the area of health care of animals.

Singh and Gill (1982) observed that training needs of farmers in all aspects of wheat cultivation, potato

cultivation and farm machinery were very high. High training needs were also observed in these areas which were complicated in nature and required the understanding of basic concept of the subject matter.

Alexander (1985) concluded that small rubber growers preferred to undergo training in plant protection, soil and leaf sampling, and planting and maintenance of rubber plants, in the descending order of preference.

Ramamurthy et al. (1987) revealed that training needs of small farmers in order of preference were plant protection, manures and manuring, Animal husbandry, seeds and sowing, credit, Horticulture, and soil conservation. A similar preference pattern was expressed by marginal farmers also.

Kanagasabapathi (1988) found that the training needs in agriculture of the Irulas of Attappady in the order of importance were plant protection, intercultural operations, manuring, seeds and sowing and land preparation.

From the foregoing reviews it could be summarised that subject matter areas such as improved varieties, plant protection and manurial practices were frequently cited by farmers as important for undergoing training. High training needs were perceived in those subject matter areas

which were complicated in nature.

2.6. Preference of farmers regarding type, duration, season, venue, methodology and frequency of training

1) Type of training

Vidyarthi (1969) opined that peripatetic team should conduct training camps to which farmers within walking and cycling distance could attend without difficulty.

Sohan and Singh (1969) recommended organization of general courses (institutional) dealing with crop husbandry twice a year for farmers.

Sathyanarayana and Bhaskaram (1971) stated that majority of adult farmers and young farmers indicated preference for non-institutional (peripatetic) training. Similar results were reported by Gopal (1974) and Sabarathnam (1976).

Anantharaman (1977) found that small and marginal farmers gave top priority to peripatetic training and least preference to correspondence course. Institutional training programme and Farm School on AIR were placed as second and third respectively.

Gopalakrishnan (1978) studied the comparative effectiveness of Farmers' Training Programmes in Andhra Pradesh

and observed that peripatetic training were more effective than institutional training courses for imparting knowledge and influencing their adoption behaviour.

Chandrasekharan (1981) reported that more than half of the trained small tea growers (53.12%) preferred to have peripatetic training. Savarimuthu (1981) also reported similar result.

Alexander (1985) reported that over 80 per cent of small rubber growers preferred peripatetic or on farm training while 19.09 per cent of the rubber grower preferred institutional training.

Kanagasabapathi (1988) observed that Irula farmers of Attappady preferred peripatetic training (preference index (PI) 0.94) followed by institutional training by ITDP, Attappady (PI 0.92), institutional training by KVK, Pattambi (PI 0.74), Farm school on AIR (0.40) and correspondence course by KAU (PI 0.39).

In general, farmers preferred peripatetic training to the institutional training as revealed by the above studies.

11) Duration of the training

Sathyannarayana and Bhaskaram (1971) stated that adult farmers preferred one or two days training while

young farmers preferred seven to 10 days as optimum for institutional training. In respect of non-institutional training, majority of the adult and young farmers and farm women preferred one or two days of training.

Roy (1972) reported that while one day training camps were preferred by the farmer-trainees, the trainers preferred two-day training camps.

Jha (1974) conformed Roy's report and stated that most of the small farmers preferred only one or two days of training.

Pandey and Singh (1976) reported that most of the small farmers preferred to undergo two or three days training.

Sabarathnam (1976) found that the small farmers favoured a week-long training programme. Similar result was reported by Vashista (1978) in his study on the training needs of orchardists.

Anantharaman (1977) reported that small and marginal farmers preferred two days' peripatetic training. As regards to the institutional training nearly half of the small and marginal farmers suggested four days' duration and nearly one-sixth of them opted for seven-days' training programme.

Chandrasekharan (1981) stated that nearly 50 per cent of trained small tea growers preferred to have 15-20 days of training followed by 20-25 days of training by 28.22 per cent of the trained small tea growers.

According to Savarimuthu (1981), majority of the farm women (70.83%) preferred 2-3 days' training programme. Similar result was reported by Alexander (1985) also.

Kanagasabapathi (1988) observed that majority of Irulas of Attappady preferred a training programme of two days' duration.

The above studies revealed that farmers mostly favoured short term training than training for longer durations.

iii) Season of the training

Sanders (1967) recommended that training must be fitted into times when farmers are not too busy, that is during off season. Similar findings were reported by Singh (1967), Sasthry (1970), Gill (1970) and Sabarathnam (1976).

Sohal and Bhatti (1967) suggested that the months of January-February-March and August-September were suitable for holding classes in general agriculture.

According to Srivastava (1968) April-May and September-October were the best period for training for Kharif and rabi crops respectively.

Rao (1969) found that majority of the farmers preferred training before the onset of the sowing season, generally in the months of April, May, June, September, October and November.

Sathyanarayana and Bhaskaram (1971) stated that the period April-May and December-January were the most preferred and convenient time for any training. October-November was the least preferred period.

Sohal and Yanakal (1970) stated that training should be organised in the months of January, February and March. Mathiazhagan (1978) also reported similar result.

Roy (1972) concluded that the training before the commencement of every cropping season was highly preferred by the farmers. Similar results were reported by Jha (1974), Pandey and Singh (1976) and Anantharaman (1977).

Shashikumar and Bhave (1978) reported that there was unanimous agreement among farmers in conducting training during summer months (January-May).

Chandrasekharan (1981) reported that one fourth (26.50%) of trained small tea growers preferred April as

the best suited month for training followed by March, May and December.

Savarimuthu (1981) also came out with a similar finding.

Alexander (1985) found that January and February were the months preferred by the small rubber growers for training.

Kanagasabapathi (1988) reported that April and May were the months preferred by the Irulas of Attappady for institutional training and September-October period for peripatetic training.

iv) Venue of the training

Gill (1970) emphasised that most of the farmers in Punjab preferred the Agricultural University Campus as the venue of training.

Sabarathnam (1976) concluded that majority of small and marginal farmers were of the view that training courses should be organised in villages rather than at Farmers' Training Centre or at Panchayat Union Office.

Mathiazhagan (1978) reported that the relative preference for venues of training as expressed by banana growers in the order of preference were: village, Block Headquarters,

demonstration centre and Agricultural College.

Shete (1978) observed that tribal farmers preferred to have training classes in their own villages rather than in agricultural college or research farm.

Ahamed (1981), Savarimuthu (1981), Arumugam (1983) and Alexander (1985) reported that farmers preferred to attend training programmes in their own villages.

Ramakrishna (1980) stated that all the trained farmers liked the trainings conducted at the Krishi Vigyan Kendra.

Kanagasabapathi (1988) reported that ITDP Headquarters at Agali was the most preferred venue for training in agriculture by the Irulas of Attappady.

v) Methodology of training

Batten (1962) stated that there are several methods of training and it is important to recognize that no one method is inherently better than other. A method or combination of methods found suitable for training purpose in one place may not be suitable in another.

Rao (1969) found that trained farmers and experts greatly agreed in assigning high rank to field trips, discussion and demonstrations.

Sasthry (1970) recommended group discussion and the use of audio-visual aids in institutional training and use of films and exhibitions in peripatetic training camps.

Roy (1972) stated that training methods formed the key to effective communication with the participant in any training situation. Demonstration, field trip and discussion were preferred by majority of the respondents.

Gopal (1974) stated that from farmers' point of view the training methods such as demonstrations, exhibitions and field trips were found to be effective.

Sinha and Verma (1976) opined that farmers' training programme could be made effective if the field trials were shown to the trainees. They further reported that the training should be made skill-oriented rather than knowledge-oriented alone. They also observed that small and marginal farmers desired lecture followed by demonstrations to be given by a combined team of both experts and progressive farmers.

Mathiazhagan (1978) reported that the appropriate methods selected by the respondents were demonstration, field trips, discussion and lecture in the order of preference.

Shete (1978) observed that out of the four methods of training such as demonstration, film shows, group

discussion and lecture, demonstration emerged as the most important method, followed by film shows.

Chandrasekharan (1981) reported that majority of the trained small tea growers felt that demonstration was the best suited training method followed by discussion and lectures.

Ramakrishna (1980) who studied the impact of training at KVK and Alexander (1985) who studied the training needs of small rubber growers also reported similarly.

Savarimuthu (1981) concluded that training imparted through group discussion was most preferred by farm women. The second method preferred was training through demonstration.

According to Arumugam (1983), in the combination of training methods, group discussion plus demonstration, and group discussion plus field trip were considered most important by the sericulturists.

Kanagasabapathi (1988) reported that the various training methods ranked by the Irulas of Attappady in the order of preference were film shows, exhibition, field trip, demonstration, study tour, group discussion, lecture and campaign.

From the foregoing review of studies it was revealed that training methodologies such as demonstration, discussion and field trip were preferred by farmers to other methodologies.

v1) Frequency of the training

The frequency of the training programmes has much to do with the effectiveness of the training programme as well as the participation by farmers. Though many studies have not been conducted in this line, it is highly essential to see that the farmers are having regular contacts with the training agencies, so that the farmers can be exposed to the latest developments in agriculture.

Sathyanarayana and Bhaskaram (1970), in their study on the training needs of farmers in Hyderabad district (AP), stated that farmers preferred to have training once in a year.

Kanagasabapathi (1988) reported that Irulas of Attappady preferred the training programmes in agriculture to be conducted once in a year.

2.7. Perception of agricultural scientists and extension personnel about the subject matter content, selection of trainees and trainers, evaluation and follow-up of farmers' training

1) Subject matter content

The training needs of farmers as perceived by the

scientists and extension personnel also to be taken into consideration because they are also actively involved in the conduct of the farmers training programme.

Sidhu and Patel (1968) reported that training needs of farmers as perceived by trainers were improved seeds, irrigation, plant protection measures and manures and fertilizers in the order of their importance. But they pointed out that farmers gave top priority for plant protection measures followed by improved seeds, manures and fertilizers and irrigation.

Gangaram and Mathur (1981) observed that extension workers were of the opinion that wheat growers needed more training on high yielding varieties of wheat, sowing and use of manures and fertilizers. According to them the least priority areas were harvesting and threshing, land preparation and water management. Perception of farmers and extension workers did not synchronise, the results indicated.

The results of the study conducted by Singh and Singh (1981) had shown that there was significant agreement between the farmers and trainers in assigning ranks to major subject matter areas for farmers' training. The farmers and trainers considered the areas of high yielding varieties, construction of channels, seed treatment and fertilizer application as most needed.

11) Selection of trainees

Sidhu and Patel (1968) observed that farmers with average size of holding, farmers from whom others seek guidance, and farmers who have enough resources to adopt new agricultural technologies were the important criteria to be given for selection of farmers for training.

Proposing a model for farmers' training, Rao (1975) opined that selection of participants is an important event in the pre-training phase. He listed the advantages of selection of farmers based on certain criteria as follows:

1. Selection of farmers helps in reducing the heterogeneity of farmers in training groups
2. Selection encourages phasing of trainees for training sessions in view of the continuity of the training programme to meet the demand of the fast changing technology
3. Selection of participants is also important because of the different types of training offered
4. Selection puts a ceiling on the number in the group and prevents unmanageable number in the group

Singh and Gill (1985) suggested that while selection of participants for a farmers' training programme is done, care is to be taken to see that farmers with varying levels

of education and farm size are not to be grouped together in the same course. Different sections or groups of the trainees may be made on the basis of these characteristics, he further opined.

11) Selection of trainers

Rao (1975) while discussing on the proposed model of farmers' training listed different types of trainers to impart training to farmers. They included subject matter specialists, administrators, extension workers, research personnel, staff of the educational and training institutions and progressive farmers in addition to the staff of Farmers' Training Centres. He also opined that the selection of trainers depends much upon the type of participants, duration of training, and subject matter content of training.

Somasundaram (1987) suggested that selection of trainer, being an important activity in the pre-training phase, should be done with utmost care. He suggested to select the trainers competent to impart effective training by 'specialization-experience-aptitude' criteria.

Vashista (1987) reported that of all the factors that have a bearing on the effectiveness of a training programme, none was equal to the staff competence. The findings of his study also revealed that staff competence

was a determining factor for the effectiveness of discussion groups, increasing the comprehensiveness and making the programme more efficient. Competent staff are also necessary to enhance the importance of training programme in general and attract the needy farmers to participate in it. He further recommended that for the successful implementation of 'Farmers' Training and Education Programme' people of commitment and devotion should be selected. Competence of the staff should be the most important consideration while recruiting staff and transferring staff to a Farmers' Training Centre, he concluded.

111) Evaluation of training

Lynton and Pareek (1967) proposed that while evaluating a training programme the important aspects to be considered are

1. Training programme itself - to assess to what extent did the programme achieve what it set out to achieve. This could be assessed based on the gain in knowledge, skill, and understanding by the trainees.
2. Evaluating the training objective - assessment of training needs of participants of the important activity.
3. Evaluating the participants - will form a basis for reviewing the criteria by which participants are selected for training programme.

Westermarck (1985) opined that evaluation of a programme can be justified on a number of compelling grounds such as to improve programme effectiveness, need for financial accountability of each programme and to facilitate resource allocation decisions. He further noted that identifying important evaluation issues that are useful in improving or establishing the effectiveness of a programme is important in evaluation.

Murthy (1987) opined that evaluation with respect to training means making judgements about training activities that are organised and completed. He further noted that a combination of three types of evaluation viz. concurrent, terminal and delayed evaluation is beneficial to make the training programmes purposeful.

iv) Follow-up of training

Follow-up is a component of post-training phase. It is necessary because no training institution can claim that the farmers trained by it will not face any problem in his practice. Moreover, the technologies are advancing at such a fast pace that a particular technology that a farmer had learnt only few years ago might have become outdated now.

Sidhu and Patel (1963) reported that the farmers and trainers gave the following suggestions for improving

- the follow-up activities in the order of their importance.
1. There should be frequent field visit by the Block staff.
 2. Taluk Development Officer and President of Taluk Samiti should contact the trained farmers on their visit to villages.
 3. VLW should contact the trained farmers four or five times in a season.
 4. Written instructions should be issued in advance regarding various farm operations.
 5. Farmers should be invited once in a season at Taluk Headquarters to clarify their doubts.

Rao (1975) defined follow-up of farmers' training as the continued contact with the participant to stabilise the transfer of training to the field situation. He further noted that follow-up may be of many types such as discussions, radio programmes, field visits, assistance at the time of crop cultivation and supply of literature.

Reddy and Rao (1980) reported that 79 per cent of trained farmers expressed that follow-up visits by Block and FTC staff needs to be improved.

Vashistha and Singh (1987) noted that follow-up of farmers' training programmes require more funds than the present allotment and the approach should be systematic

and at a large scale through different parallel channels approaching all the ex-trainees more frequently. They further listed some of the activities that should be considered while follow-up of farmers' training programmes. They included.

1. Keep the ex-trainees on mailing list for all types of relevant literature.
2. Inviting them to events like Kisan mela, field day etc.
3. Organising refresher courses
4. Visiting ex-trainees at their farm
5. Setting apart five to ten minutes in AIR farm broadcast for reply or answers to the problems raised by the ex-trainees.
6. Arranging inputs needed by ex-trainees

2.8. Training strategy for farmers

Lynton and Pareek opined that effective training calls for clarity of objectives and means to avert futility of programmes of training. They further elaborated on this topic by explaining that there are four questions to be answered for achieving an effective training, under two strategies, namely, 'external and internal strategies'. The external strategy included 1) establishing training goals and 11) defining training specifications such as

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kinds and durations of training for different people, sequences, follow-up services and contributions required from the organisation and other agencies. The 'internal strategy' included 1) organising the training inputs and 11) improving the training institution.

Jinks (1979) held the view that a systematic approach in planning a training programme should consider the factors such as duration, subject matter, financial resources, who is going to receive the training during the planned period, what type of training will meet the needs, what method of training will be most suitable, where will the training take place, and the follow-up procedures to and in evaluating how successful the training has been.

Patel and Suryavanshi (1987) opined that while planning the training programmes for field extension personnel the most important factor to be considered is the training requirements of extension workers. Other aspects such as subject matter, training methodology and duration of the course are also to be considered while evolving a training strategy for them.

Sannibabu (1987) reported that the training strategy for tobacco board functionaries was developed after considering their basic knowledge, academic qualifications and nature of position held in their organisation. The duration

of training adopted was on the basis of the degree of weightage of the subject matter, theory and practical. Objective of the training was to acquire knowledge and skills of scientific tobacco production technology.

Somasundaram (1987) while discussing the modern approaches for developing a training strategy for human resource development pointed out that a deliberate training programme designed for need reduction of the participants when executed with utmost care and efficiency could bring about remarkable changes in the behaviour of the participants. He described a paradigm on modern training approach which deals with three distinct phases of training with specific objectives, namely, pre-training, training and post-training. Different functions under each phase were also discussed. He opined that precise decisions about the duration for the training, batch strength, season, venue, training methods and training facilities are to be made in the pre-training phase.

Somasundaram et al. (1987) reported that short duration, peripatetic, on season, skill teaching, involving all the hybrid cotton seed growers were the aspects to be considered while formulating a training strategy for hybrid cotton seed growers.

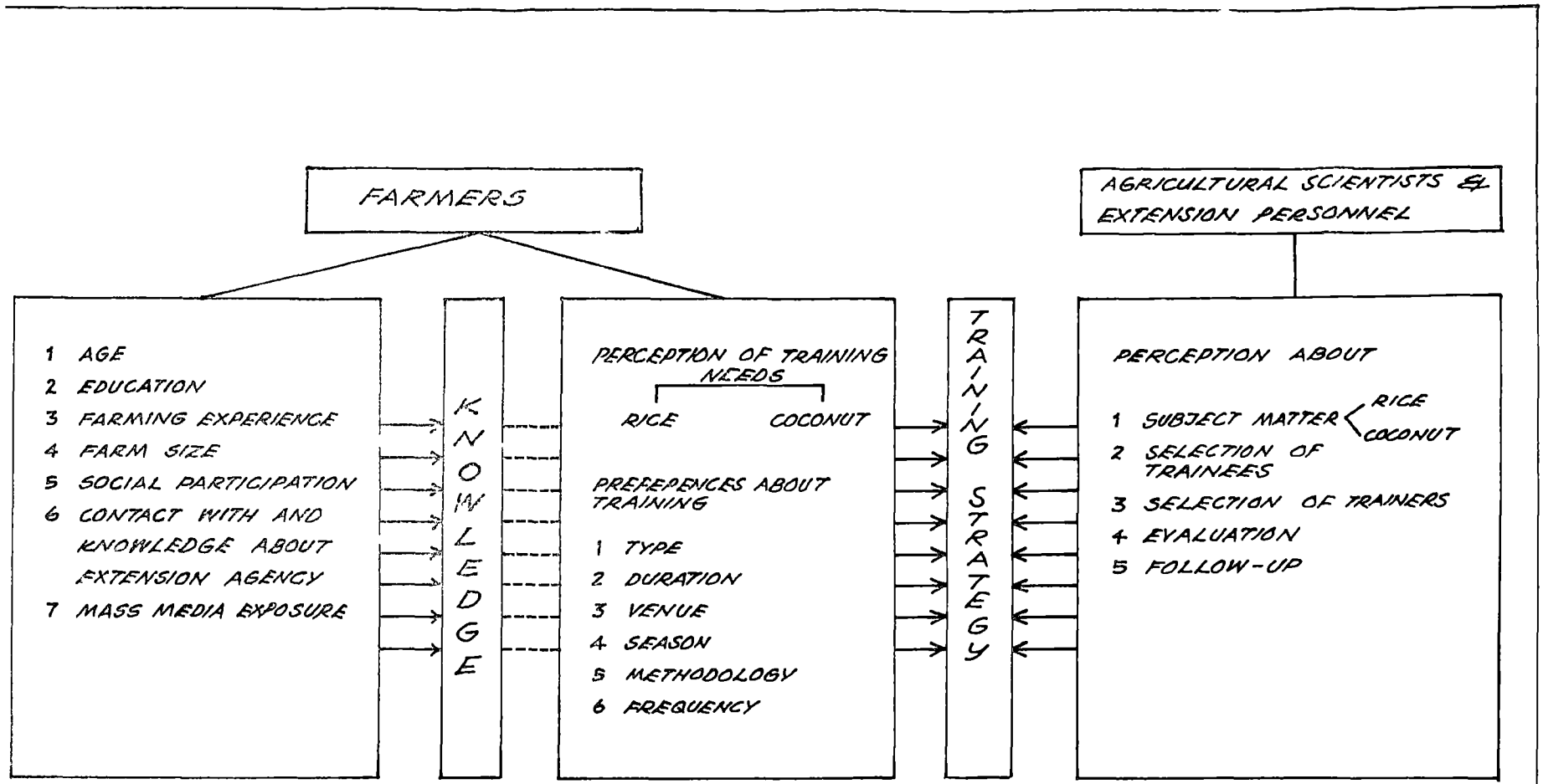


FIG 1 CONCEPTUAL FRAMEWORK OF THE STUDY

In the light of the above discussions, it is hoped to develop a suitable training strategy for the farmers of the Kasaragod district.

Conceptual Frame work of the study

Based on the literature reviewed, a conceptual frame work was developed and presented in Fig. 1.

METHODOLOGY

CHAPTER III

METHODOLOGY

This chapter deals with the methodology followed in the study which is presented under the following sub-heads:

- 3.1. Locale of the study
- 3.2. Selection of the respondents
- 3.3. Selection of the variables and their measurement
- 3.4. Procedure followed for data collection
- 3.5. Statistical tools used

3.1. Locale of the study

The study was confined to the Kasaragod district of Kerala. This district was purposively selected for the following reasons:

- 1) Kasaragod being a border district between Kerala and Karnataka, has the largest congregation of Kannada and Tulu speaking linguistic minority farmers.
- 11) The only Krishi Vigyan Kendra (KVK) established for the benefit of the linguistic minority farmers in Kerala is located at Manjeswar in this district.
- 111) This district has the advantage of having two prestigious agricultural research stations in the State, viz. Central Plantation Crops Research Institute (CPCRI) Kasaragod of the Indian Council of Agricultural Research

(ICAR) and Regional Agricultural Research Station (RAPS) Pilicode of the Kerala Agricultural University (KAU).

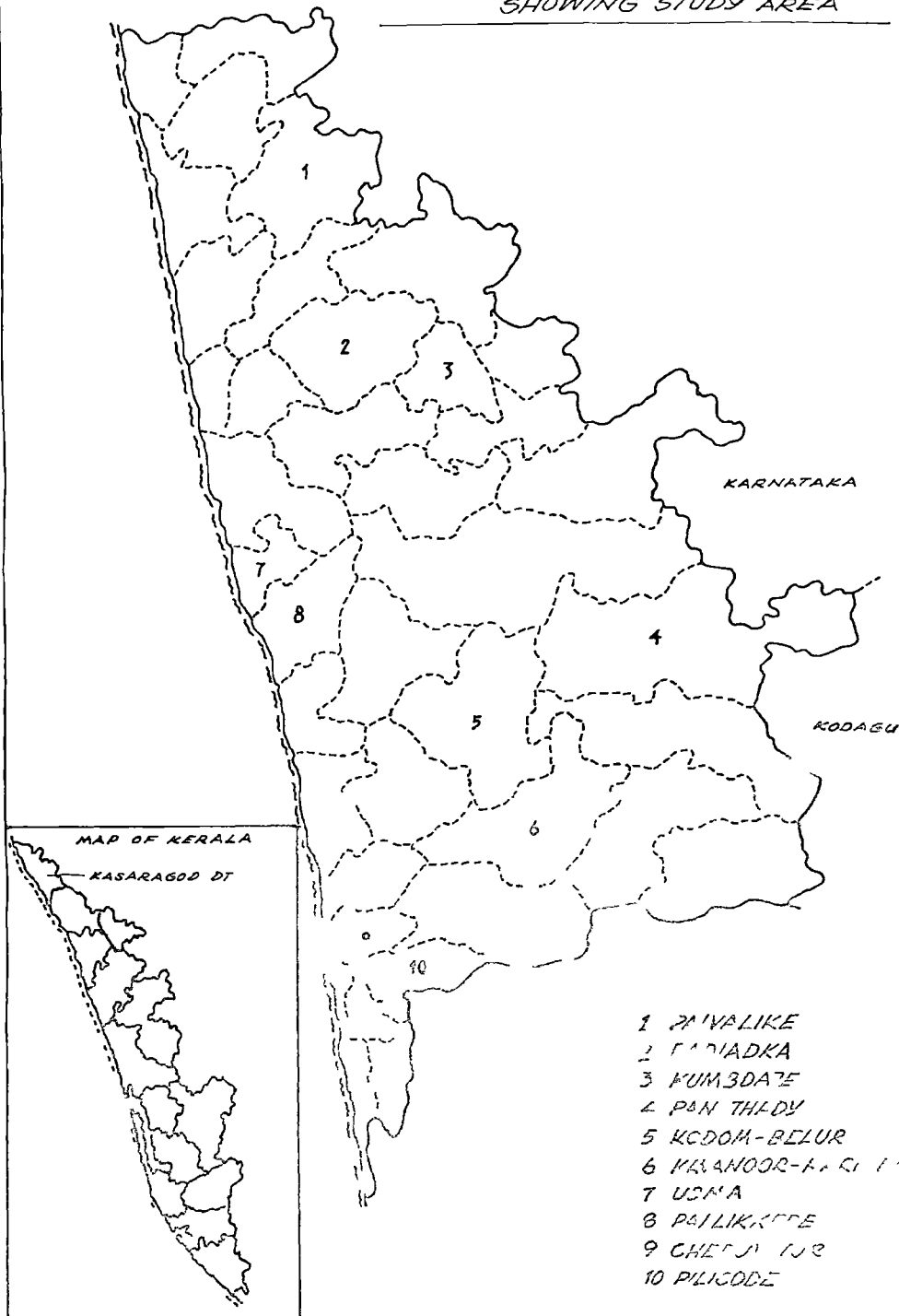
- iv) The Kasaragod district is an agriculturally backward district in Kerala with below state average yield levels registered in many of the important crops.
- v) The researcher, being a native of Kasaragod district, has the benefit of comprehensive knowledge on the farming systems and farmers of the district which would help to a great deal in objective data collection.

Kasaragod district comprises 37 panchayats. From the 37 panchayats, 10 panchayats were selected at random for the purpose of the study accounting to over 25 per cent of the total number of panchayats in the district. The list of selected panchayats is furnished in Table 1.

Table 1. List of panchayats selected for the study

Sl. No.	Name of panchayat
1.	Paivalike
2.	Badiadka
3.	Kumbdaje
4.	Panathady
5.	Kodom-Belur
6.	Kinanur-Karindalam
7.	Udma
8.	Pallikkere
9.	Cheruvathur
10.	Pilicode

FIG 2 MAP OF KASARAGOD DIST
SHOWING STUDY AREA



The locale of the study is depicted in Fig. 2.

3.2. Selection of the respondents

3.2.1. Selection of farmers

Farmers who cultivate rice and coconut were included in this study. These two crops were considered as the criteria for selection of the farmers because of the following reasons:

1. Coconut and paddy are two of the major crops of the district occupying first and third rank, respectively, as far as the area under cultivation is concerned (Appendix I).
2. The average yield of paddy and coconut in the district is below the State average (Appendix I).

The list of farmers cultivating both coconut and paddy was obtained from the respective 'Krishibhavan' (Agricultural Extension Office) of the 10 selected panchayats. From each panchayat 10 farmers were randomly selected, making the total sample size 100.

3.2.2. Selection of agricultural scientists

The KVK Manjeswar is vested with the responsibility of organising need based training to the farmers of Kasaragod district. But, at present only one scientist is attached to the KVK. Hence the services of the scientists of CPCRI Kasaragod and RARS Piliicode are also being utilised

for imparting training to the farmers. Identification of training needs as perceived by the scientists being a part of one of the objectives, it was decided to include selected scientists of the two research stations. From the CPCRI Kasaragod and RARS Piliicode, all the scientists with specialization in Agronomy, Soil Science, Entomology, Plant Pathology, Horticulture and Agricultural Extension and the one scientist of KVK were selected as respondents of the study. Thus one scientist from KVK, 11 scientists from CPCRI, and 12 scientists from RARS were purposively selected, thereby making an aggregate of 24 respondents.

3.2.3. Selection of Extension personnel

As per the latest reorganisation of the State Department of Agriculture, one 'Krishibhavan' is established in every panchayats which functions as the nucleus for all the agricultural development activities of a panchayat. Each Krishibhavan is manned by an Agricultural Officer. In Kasaragod district there are 39 Krishibhavans and only 20 Agricultural Officers were in position at the time of data collection. All the 20 Agricultural Officers formed the respondents from the extension personnel.

Thus the total number of respondents for the study consisted of 100 farmers, 24 agricultural scientists and 20 extension personnel making a total of 144.

3.3. Selection of variables and their measurement

Based on the specific objectives of the study and review of the past studies, the following variables were selected for the present investigation.

3.3.1. Knowledge of farmers about improved cultivation practices of rice and coconut

In this study knowledge of farmers refers to the understanding of farmers about improved cultivation practices of rice and coconut.

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

Shankariah and Singh (1967) measured knowledge of respondents about improved methods of vegetable cultivation based on the teacher made knowledge test, as suggested by Anastasi (1961).

Jaiswal and Dave (1972) calculated the knowledge score as follows:

$$\text{Knowledge score} = \frac{\text{Number of correct answers}}{\text{Total raw score}} \times 100$$

Singh and Singh (1974) developed a knowledge test based on the response of farmers to questions on various aspects of wheat cultivation. The total score of each respondent was calculated by the formula,

$$\frac{x_1}{n} \times 100$$

where, x_1 = number of correct answers

n = total number of questions

Nair (1969) measured knowledge level of farmers on recommended package of practices of rice using teacher made knowledge test with multiple choice questions. Ahamed (1981) also followed the same procedure.

Singh and Prasad (1974) measured knowledge by using the formula,

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

Sivakumar (1983) also used the same formula to assess the knowledge of farmers.

In the present study, the knowledge of farmers was measured by developing a knowledge test as described below:

Developing a simple knowledge test

The knowledge test consisted of questions called

items. A large number of items with respect to the improved cultivation practices of rice and coconut were prepared in consultation with the Agricultural Scientists of the research stations and subject matter specialists and extension personnel of the area under study. While preparing the items, care was taken to see that all the major improved cultivation practices of coconut and rice, from seed selection to harvest, were included. Ambiguous and overlapping items were edited out. Finally 54 items were selected in which 28 items were on improved cultivation practices of rice and 26 items on improved cultivation practices of coconut.

The collected items were converted into multiple choice questions (Appendix III).

Scoring procedure

The questions were read out to each farmer respondent and asked to indicate the correct answer from among the choices provided. A score of one was given for correct answer and 'zero' for incorrect answer. The total knowledge score for each respondent was computed by adding his score for each item. The maximum possible score that could be secured by a respondent in this test was 54 and the minimum was zero. The knowledge index was worked out for individual farmer using the formula:

$$\text{Knowledge index} = \frac{\text{Total score secured by a respondent}}{\text{Maximum possible score}} \times 100$$

The knowledge scores of all the respondents were added together and mean and standard deviation were worked out. Based on the mean and standard deviation, the respondents were categorised into three groups, as far as knowledge is concerned as follows.

Low (Mean - 1 S.D.) = <20

Medium (Mean \pm 1 S.D.) = 20 to 40

High (Mean + 1 S.D.) = >40

Knowledge index for the two crops, i.e., rice and coconut was also worked out separately following the same procedure. Similarly, knowledge index was calculated for the major and sub-items of cultivation practices of the two crops. Based on the magnitude of the knowledge index the major items and sub-items of the improved cultivation practices of rice and coconut were ranked.

3.3.2. Training needs of farmers on improved cultivation practices of rice and coconut

In this study training needs of farmers refers to the perception of farmers about the extent to which they require training in various improved cultivation practices of rice and coconut.

Jinks (1979) defined training need as the 'gap between the knowledge, skills and attitudes that the job demands, and the knowledge, skills and attitudes already

possessed by the trainee.

Sharma and Singh (1970) measured the training needs of Animal Husbandry Extension Officers in Punjab using a Training Need Quotient (TNQ) specially developed for the study.

$$TNQ = \frac{OS_{1j}}{MS_{1j}} \times 100$$

where, OS_{1j} = Sum of observed scores of j^{th} individual

MS_{1j} = Maximum scores attributable to the item
rated by the j^{th} individual

Anantharaman (1977) measured the training needs of small and marginal farmers on each major subject matter area with the help of a three-point rating scale viz. much needed, somewhat needed and not at all needed. Scores were given at 2, 1 and 0 respectively. The frequencies of each response categories were found out and the respective frequencies were multiplied by the corresponding score. The scores were summed up and divided by the total weights so as to get weighted mean score for each subject matter area. Similar procedures were followed by Ahamed (1981), Chandrasekharan (1981), Savarimuthu (1981), Arumugam (1983) and Alexander (1985).

Miller (1979) had given a formula for the identification of training needs.

Miller's formula, $M-I = D$

where M = Mastery of all necessary behaviour

I = Inventory or common behaviour to both old and
new way

D = Deficiency or training need

Gill and Sandhu (1981) worked out the training needs of prospective poultry farmers of Punjab by using the following formula.

Training need score = $1 - \text{Average knowledge score}$

where Average Knowledge Score =

$$\frac{\text{Total knowledge score}}{\text{Number of questions} \times \text{Number of respondents}}$$

Singh and Gill (1982) measured the training needs of farmers by using the following formula.

Training need score = $1 - \text{obtained knowledge and skill score}$

Bhatnagar (1987) quoted two different procedures for measuring the training needs:

1. Choice scores - On the basis of the responses of the people, priorities based on the I, II and III choices are tabulated and identified as training needs. Following this, Total Choice Scores (TCS) and Average Choice Scores (ACS) can be worked out

$$ACS = \frac{(CI \times 3) + (CII \times 2) + (CIII)}{3}$$

where CI = First choice

CII = Second choice

CIII = Third choice

11. Index of consensus (Cq)

$$Cq = \frac{F - C F}{C(C-1)}$$

where Cq = Consensus index

F = Mean frequencies of persons preferring each category

C = Number of categories with frequencies exceeding F

F = Category frequency larger than F

The method followed in the present study for assessing the training needs of farmers on the improved cultivation practices is described below.

The improved cultivation practices of rice and coconut on which training needs were to be assessed were finalised in consultation with the subject matter specialists and extension personnel.

The training needs of farmers about the improved cultivation practices of rice and coconut were assessed with the help of a four-point rating scale with points 'very much needed', 'much needed', 'needed' and 'least needed' with corresponding scores of 4, 3, 2 and 1

respectively. The frequency of responses in each of the continuum for the rated items was found out and multiplied by the scale value.

Training need index

The training need index was worked out for rice and coconut employing the following formula:

$$\text{Training need index (TNI)} = \frac{\text{Total training need score obtained}}{\text{Maximum possible training need score}} \times 100$$

TNI for the crops was worked out by dividing the actual scores assigned for all the major items of a crop by all the respondents by the maximum possible scores that could be assigned for that crop by all the respondents, expressed as percentage.

Similarly training need index was calculated for the major items and sub-items in the cultivation of two crops. Major items and sub-items in rice and coconut were ranked based on the training need index.

The training need score for each respondent on both the crops including all the items was worked out. Based on the mean and standard deviation the respondents were categorised into low, medium and high training need groups as follows:

Low (Mean - 1 S.D.) = <126
 Medium (Mean \pm 1 S.D.) = 126 to 144
 High (Mean + 1 S.D.) = >144

Similarly training need scores of each respondent with respect to rice and coconut cultivation were worked out separately and respondents were categorised into low, medium and high training need groups as follows.

1) Rice

Low (Mean - 1 S.D.) = <62
 Medium (Mean \pm 1 S.D.) = 62 to 72
 High (Mean + 1 S.D.) = >72

1.1) Coconut

Low (Mean - 1 S.D.) = <62
 Medium (Mean \pm 1 S.D.) = 62 to 75
 High (Mean + 1 S.D.) = >75

3.3.3. Socio-personal characteristics of farmers

Based on the review of literature and discussions with the experts, the following socio-personal characteristics were selected for the study.

1) Age

Age was measured as the number of years the respondent has completed at the time of the interview.

ii) Education

The educational status of farmer respondents was measured adopting the scale developed by Trivedi (1963) as follows:

<u>Category</u>	<u>Score</u>
a. Illiterate	0
b. Can read only	1
c. Can read and write	2
d. Primary	3
e. Middle	4
f. High School	5
g. Collegiate and above	6

iii) Farming experience

It refers to the number of years of the respondent's experience in farming. One completed year of farming experience was assigned with one score.

iv) Farm size

It refers to the number of hectares cultivated land including both dry land and wet land possessed by the respondents.

v) Social participation

Social participation is defined operationally as

the extent of involvement of respondents in social organisation.

In measuring social participation, both membership and holding a position in the organisations and the frequency of attending meetings of the organisations were taken into consideration. The scoring procedure followed as shown below:

(1) Membership in organisation	Score
No membership in any organisation	0
Membership in one organisation	1
Office bearer in one organisation	2
(11) Frequency of attending meetings	
Not attending any of the meetings	0
Occasional	1
Regular	2

Summation of all the scores obtained by an individual will give his social participation score.

v1) Mass media exposure

According to Singh (1972) mass media exposure refers to the degree to which different mass media sources were utilized by a farmer for gathering information. In this study it is the exposure of farmers to radio, newspapers, magazines, films and field days or agricultural functions.

The scoring procedure developed by Anantharaman (1977) was followed here taking into account the frequency of exposure to each medium as shown below:

1) Radio

<u>Frequency</u>	<u>Score</u>
Daily	5
Two to six days a week	4
Once a week	3
Once a fortnight	2
Rarely	1
Never	0

11) Newspaper

<u>Frequency</u>	<u>Score</u>
Daily	5
Two to six days a week	4
Once a week	3
Once a fortnight	2
Rarely	1
Never	0

111) Magazines, leaflets and bulletins

<u>Frequency</u>	<u>Score</u>
Regularly	2
Occasionally	1
Never	0

iv) Films (seen during last year)

<u>Items</u>	<u>Score</u>
More than six times	3
Four to six times	2
Once to three times	1
None	0

v) Field days or Agricultural functions (attended during last year)

<u>Items</u>	<u>Score</u>
More than six	3
Four to six	2
One to three	1
None	0

The scores of individual items were aggregated to obtain the final mass media exposure score of each respondent.

vi) Contact with and knowledge of extension agency

This refers to the degree to which one has contact with or knows the various extension personnel (Knight, 1973). The two components considered for measurement were, the frequency with which contact was made and respondent's knowledge about extension personnel. The respondents were asked about their frequency of contact, if no contact was made his knowledge about extension personnel was measured.

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The scoring procedure adopted by Knight (1973) was followed with slight modifications.

<u>Frequency of contact</u>	<u>Score</u>
Often	4
Occasionally	3

Knowledge about extension personnel

Have seen	2
Have heard	1
Don't know	0

The scores were added together to obtain the final score of each respondent.

3.3.4. Preference of farmers about type, duration, season, venue, methodology and frequency of training

1) Type of training

This refers to the various types like institutional training, peripatetic training, correspondence course of KAU and Farm School on AIR.

Institutional training: Training given to farmers by subject matter specialists at the institutions such as KVK, CPCRI, RARS and Agricultural Offices.

Peripatetic training: Training given to farmers by subject matter specialists on farmers' fields.

Correspondence course: It refers to the distant education programme organised by the KAU for the benefit of the farmers who cannot attend the institutional training. In these correspondence courses, the course materials are divided into lessons and each lesson is sent by post to the participants at regular intervals along with few questions on the lessons. The answer papers are valued and sent back along with the next lesson.

Farm School on AIR: It refers to series of lessons by the experts on selected topics of farmers' interest broadcast through All India Radio Stations of the State.

In respect of above types of training respondents were asked to indicate their preference on a four-point continuum consisting of 'very much preferred', 'much preferred', 'preferred' and 'least preferred' with scores 4, 3, 2 and 1 respectively. Then, total score for each type of training was found out. Based on the total score preference index was worked out for each type as follows:

$$\text{Preference index} = \frac{\text{Total score obtained}}{\text{Maximum possible score}} \times 100$$

The preferences for different types of training were then ranked based on their preference index.

11) Duration of training:

Duration of training refers to the number of days of

training the farmers would like to undergo. One day, two days, 3 to 7 days, 2-3 weeks, one month and more than one month were the different durations posed to the farmers to indicate their preference on a four-point continuum; viz. 'very much preferred', 'much preferred', 'preferred' and 'least preferred' with scores 4, 3, 2 and 1 respectively. From the total scores obtained for each item, preference index was worked out. Based on the preference index the different durations were ranked.

iii) Season of training:

Season of training refers to the months in the year during which the farmers preferred to undergo training. The respondents were asked to indicate which month of the calendar year would be most suitable for undergoing training. The frequency of preference for each month was added and percentages worked out. Based on the percentage, preference for season for training was interpreted.

iv) Venue of training:

Venue of training refers to the locations where the farmers' training can be conducted. In this study the venues suggested were farm/residence of a progressive farmers, nearest Krishibhavan, RARS, Pilicode, CPCRI, Kasaragod, KVF, Manjeswar and nearest farmers' Co-operative society. Farmers were requested to indicate their response

to each of the above items on a four point continuum; viz. 'very much preferred', 'much preferred', 'preferred' and 'least preferred' with score 4, 3, 2 and 1 respectively. From the total scores obtained for each item preference index was calculated. Based on the preference index the result was interpreted.

v) Methodology of training:

Methodology of training refers to the teaching methodology such as lecture, discussion etc. In this study the suggested methodologies were lecture, discussion, field trip, demonstration, campaign, film show and exhibition. Farmers were requested to indicate their response to each of the above item on a four-point continuum ranging from 'very much preferred', 'much preferred', 'preferred' and 'least preferred' with scores 4, 3, 2 and 1 respectively. Based on the total score for each method, preference index was worked out and they were ranked as described earlier.

vi) Frequency of training:

Frequency of training refers to the number of times a farmer would like to undergo a particular training course. In this study the frequencies suggested were once in a month, once in two months, once in six months, once in an year, once in two years, once in three years, once in six years and once in life time. Farmers were requested to indicate

their preference from among the suggested frequencies. Preference was analysed in respect of rice and coconut. Frequency of preference for each item was calculated and percentages worked out. Based on the percentages the frequency of training as preferred by the respondents was interpreted.

3.3.5. Subject matter content, selection of trainees, selection of trainers, evaluation and follow up of farmers' training as perceived by agricultural scientists and extension personnel

1) Subject-matter content

The subject matter contents to be included for farmers' training as perceived by agricultural scientists and extension personnel were studied as described below:

A list of improved cultivation practices of rice and coconut was prepared. The agricultural scientists and extension personnel were requested to indicate the degree of importance of these items as perceived by them on a four-point continuum; viz. 'very much important', 'much important', 'important' and 'least important'. Scores were given at 4, 3, 2 and 1 respectively for the responses. The total score secured by each item for the two categories of respondents were worked out separately. After computing the total score, an index was worked out for each item using the

following formula:

$$\frac{\text{Total score obtained}}{\text{Maximum possible score}} \times 100$$

Based on the index the items were ranked for the two sets of respondents separately.

Now, the scores as awarded by both the category of respondents for each item was added, index was worked out and ranked. The final ranks indicated the subject matter content to be included for training in the order of their importance, as perceived by the scientists and extension personnel.

11) Selection of trainees

To evolve a common criterion for the selection of trainees for training, a list of criteria was prepared in consultation with the scientists of Department of Agricultural Extension, College of Agriculture, Vellayani.

The respondents were requested to indicate the degree of importance of each criterion on a four-point continuum; viz. 'very much important', 'much important', 'important' and 'least important' with scores 4, 3, 2 and 1 respectively. Total scores secured by each criterion was worked out separately for the extension personnel and scientists. For each criterion an index was computed as follows:

$$\frac{\text{Total score obtained}}{\text{Maximum possible score}} \times 100$$

A combined ranking of criteria was also done based on the combined index considering the two categories of respondents, viz. agricultural scientists and extension personnel.

111) Selection of trainers

Here also a similar procedure was adopted to evolve the criteria for selecting trainers for farmers' training programme. A list of criteria to be considered for selection of trainers was prepared in consultation with the scientists of the Department of Agricultural Extension, College of Agriculture, Vellayani. The respondents were requested to indicate the degree of importance of each criterion as perceived by them on a four-point continuum ranging from 'very much important', 'much important', 'important' and 'least important' with scores 4, 3, 2 and 1 respectively. Ranking of the criteria was also done as in the case of selection of trainees.

1v) Evaluation of training

The perception of agricultural scientists and extension personnel with regard to the importance of different types of evaluation and also the various aspects to be considered for evaluating the training programme were studied.

Three types of evaluation considered for study were
a) only post training evaluation, b) pre-training and

post-training evaluation and c) concurrent evaluation. The respondents were asked to indicate the degree of importance of each type of evaluation on a four-point continuum namely, 'very much important', 'much important', 'important' and 'least important' with score 4, 3, 2 and 1 respectively. Based on the total score an index was developed. With regard to the aspects to be considered for evaluation, a list of relevant aspects was prepared in consultation with the experts of the Department of Agricultural Extension, College of Agriculture, Vellayani. Respondents were requested to indicate the degree of importance of each aspect on a four point continuum; viz. 'very much important', 'much important', 'important', 'least important'. Scores were given at 4, 3, 2 and 1 respectively. Total score for each item was worked out and an index computed.

v) Follow-up of training

Here the perception of agricultural scientists and extension personnel about the importance of different methods of follow-up activities of farmers' training programmes was analysed. A list of methods of follow-up of farmers training programme was prepared after consultation with the experts of the Department of Agricultural Extension, College of Agriculture, Vellayani. The respondents were requested to indicate the degree of importance of each method on a four-point continuum; viz. 'very much important', 'much

important', 'important' and 'least important'. Scoring procedure and ranking of methods were the same as discussed under the previous sections of selection of trainees and trainers and evaluation of training programmes.

3.4. Procedure followed for data collection

The data from farmer respondents were collected by using a structured, pre-tested interview schedule developed for the purpose. The farmers were interviewed at their residence or in the field and the purpose of the study was clearly explained to them. The responses were recorded in the schedule by the researcher. Data from the extension personnel and agricultural scientists were collected with the help of a pre-tested questionnaire developed for the purpose. The respondents were contacted at their offices and the questionnaires were got filled up. The data were collected during August-September 1989.

3.5. Statistical tools used

The data collected were put to the following statistical tests.

1) Percentage analysis

Percentage analysis was done to make simple comparisons wherever necessary.

ii) Simple correlation

Simple correlation coefficients were computed to find out the relationship between knowledge of farmers and their socio-personal characteristics.

iii) Path analysis

Path analysis using the 'Do little Method' developed by Wright (1934) was done to find out the direct and indirect effects of socio-personal characteristics of farmers on their knowledge. It also helped to assess the substantial indirect effects of each socio-personal characteristics through other variables. A VERSA IWS Computer at the College of Agriculture, Vellayani was used for the correlation analysis and path analysis.

RESULTS AND DISCUSSION

CHAPTER IV

RESULTS AND DISCUSSION

The results of the study and discussion on the findings in relation to the prefixed objectives are presented in this chapter under the following heads:

1. Knowledge of farmers about improved cultivation practices
2. Association of selected socio-personal characteristics of farmers with their knowledge about improved cultivation practices
3. Direct and indirect effects of selected socio-personal characteristics on the knowledge of farmers
4. Training needs of farmers on improved cultivation practices
5. Preferences of farmers on:
 - a. Type of training
 - b. Duration of training
 - c. Season of training
 - d. Venue of training
 - e. Methodology of training
 - f. Frequency of training
6. Subject matter areas of farmers' training as perceived by agricultural scientists and extension personnel

7. Perception of agricultural scientists and extension personnel about farmers training on:-
- a. Selection of trainees
 - b. Selection of trainers
 - c. Evaluation
 - d. Follow-up
8. Training strategy for the farmers of Kasaragod district.

1. Knowledge level of farmers about improved cultivation practices

Based on the results of the knowledge test administered, the distribution of respondents in relation to their level of knowledge is presented in Table 2.

Table 2. Distribution of farmers according to the levels of knowledge
(n = 100)

Sl. No.	Category	Frequency	Percentage
1.	Low	24	24
2.	Medium	57	57
3.	High	19	19
	Total	100	100

(Mean - 30.32, SD - 10.28)

It could be seen from Table 2 that majority (57%) of farmers clustered in the medium knowledge level category, 24 per cent in the low knowledge level category and the remaining 19 per cent in the high knowledge level category.

It is worthwhile to note that nearly one fourth of the farmer-respondents belonged to low knowledge level category, stressing the need for transferring knowledge on improved cultivation practices to the farmers more effectively. Farmers training programme being an important activity in the transfer of technology process, can play a vital role in improving this situation. It is however, encouraging that more than half of the farmers came under medium knowledge level category and about one fifth in the high knowledge level category.

Taking the crops individually, the distribution of farmers according to level of knowledge about improved cultivation practices of rice is presented in Table 3.

Table 3. Distribution of farmers according to levels of knowledge about improved cultivation practices of rice (n = 100)

Sl. No.	Category	Frequency	Percentage
1.	Low	24	24
2.	Medium	63	63
3.	High	13	13
	Total	100	100

(Mean - 14.55, SD - 5.55)

An examination of the table reveals that more than half of the farmers (63%) possessed medium level of knowledge on improved cultivation practices of rice, about one fourth of the farmers (24%) possessed low level knowledge and 13 per cent of them had high level of knowledge on improved rice cultivation practices. The computed mean knowledge index of farmers on improved cultivation practices was 49.07. The knowledge index of respondents and the fact that about one fourth of the respondent farmers possessed only low level of knowledge on improved rice cultivation practices, point to the need for organising educational programmes on improved cultivation practices of rice for the benefit of farmers.

The computed overall knowledge index of the respondent farmers on improved cultivation practices of rice was 49.07. This value does not seem to come near satisfactory level when compared with the extension efforts put in through T & V and other educational programmes, for popularising cultivation of improved rice varieties. To find out the knowledge level of farmers with respect to individual cultivation practices, the knowledge indices were computed, ranked and presented in Table 4.

It is evident from Table 4 that among the seven major cultural operations of rice crop, planting and after

Table 4. Knowledge level of farmers on the major item of improved cultivation practices of rice

Sl. No.	Major item	Knowledge		Rank
		Score	Index	
1.	Improved varieties	89	44.50	VI
2.	Nursery practices	308	51.33	II
3.	Planting and after care	217	72.33	I
4.	Water management	146	49.33	III
5.	Weed control	147	49.00	IV
6.	Manures and manuring	229	45.80	V
7.	Plant protection	238	39.67	VII

care, nursery practices and water management secured rank I, II and III respectively with regard to the knowledge index. Plant protection operations secured the lowest knowledge index of 39.67 (rank VII). Water management and weed control secured almost equal knowledge indices. The reason for securing a higher knowledge index with respect to planting and after care, nursery practices and water management could be attributed to the fact that these operations do not involve complex technology and also the recommendations are almost in tune with the existing practices of the farmers. On the contrary the knowledge indices for important operations like manures and manuring and

plant protection were comparatively low, 45.80 and 39.67 respectively. The results indicate that the farmers require frequent exposures on plant protection, manures and manuring and improved varieties of rice. The results are in agreement with the results of the studies conducted by Govindappa (1975), Menon (1976) and Mayani and Kumar (1980).

1.1. Knowledge of farmers about the sub-items of improved cultural operations under rice

1) Improved varieties

The knowledge score and corresponding indices secured by the respondents on the sub-items under improved varieties are presented in Table 5.

Table 5. Knowledge of farmers about improved varieties of rice

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	High yielding varieties of rice	47	47.00	I
2.	Suitability of varieties to the seasons and regions	42	42.00	II

The table reveals that the knowledge index for the sub-items of improved varieties viz., high yielding varieties of rice and suitability of these varieties to the seasons and regions were 47 and 42 respectively. The results indicate that the farmers had only moderate level of knowledge on the above sub-items, and hence due emphasis should be given on these two aspects in the farmers' training programme.

11) Nursery practices

The knowledge score secured by the respondents and the corresponding indices in respect of nursery practices are presented in Table 6.

Table 6. Knowledge of farmers about nursery practices of rice

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Seed rate for different methods of sowing	66	66.00	I
2.	Seed treatment	39	39.00	VI
3.	Preparation of nursery beds	58	58.00	II
4.	Manuring in nursery	50	50.00	III
5.	Water management in nursery	48	48.00	IV
6.	Age of seedlings	47	47.00	V

The six sub-items under 'nursery practices' were ranked based on the knowledge index computed for each item as shown in Table 6. Seed rate for different methods of sowing was ranked first (knowledge index 66.00) and seed treatment was ranked last (knowledge index 39.00). Age of seedlings also could get only fifth rank (knowledge index 47.00). Preparation of nursery beds, manuring in the nursery and water management in the nursery secured second, third and fourth ranks respectively. From the table it could be seen that seed treatment secured the lowest rank (VI) and this could be attributed to the fact that seed treatment is a complex technology involving selection of appropriate chemicals, use of correct dosage and method of treatment. Since the farmers do not possess adequate knowledge on the above aspects, they do not put into practice this item and hence the lowest rank. This calls for exposing the farmers to the theory and practice of seed treatment. Age of seedlings for transplanting depends mainly upon the duration of the variety. The fact that the farmers do not possess adequate knowledge on improved varieties (Table 5) might be the reason for this result.

111) Planting and after care

The data on knowledge of farmers with respect to the sub-items under planting and after care are presented in Table 7.

Table 7. Knowledge of farmers about planting and after-care of rice

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Land preparation	85	85.00	I
2.	Transplanting	69	69.00	II
3.	Spacing recommendations	63	63.00	III

As it is evident from Table 7, land preparation, transplanting, and spacing recommendations secured I, II and III rank respectively.

It is also worth noting that all the three sub-items under planting secured knowledge index above 60 indicating that the respondents had fairly good knowledge about these operations particularly for land preparation which secured the highest value of 85.

iv) Water management

The data on knowledge of farmers with respect to the sub-items under water management are presented in Table 8.

Table 8. Knowledge of farmers about water management of rice

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Water level required during transplanting	62	62.00	I
2.	Quantity of water required during various stages of crop growth	50	50.00	II
3.	Critical stages of water requirement for rice	36	36.00	III

As it could be seen from Table 8, knowledge about water level required during transplanting secured the first rank followed by knowledge about quantity of water required during various stages of crop growth (62 and 50 respectively). The level of knowledge about the critical stages of water requirement for rice is far from satisfactory. During its life period, the rice plant passes through certain stages during which any stress in moisture condition of the soil will result in poor yield. Hence, farmers should have a sound knowledge about these critical stages. The results of the study emphasise the need for imparting knowledge about this aspect to the farmers.

v) Weed control

The data on knowledge of farmers with respect to sub-items under weed control is presented in Table 9.

Table 9. Knowledge of farmers about weed control of rice

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Various types of weeds in rice field	61	61.00	I
2.	Type of weedicide dose, method and time of weedicide application	86	43.00	II

Among the two sub-items under weed control, various types of weeds in rice field ranked first with regard to the knowledge index (61.00) while type, dose, method and time of weedicide application ranked second (knowledge index 43.00). Herbicide application being a highly complex technology, the type of weedicide, dose, method and time of application should be given more weightage in the course content of the training for rice farmers.

vi) Manures and manuring

The data on knowledge scores of farmers with respect to sub-items under manures and manuring are presented in Table 10.

Table 10. Knowledge of farmers about manures and manuring of rice

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Organic manure application	64	64.00	I
2.	Dose, method and time of application of chemical fertilizers	69	34.50	IV
3.	Choosing suitable type of fertilizers	49	49.00	II
4.	Methods of increasing fertilizer use efficiency	47	47.00	III

An examination of the data in Table 10 indicates that organic manure application ranked first (knowledge index 64.00) and dose, method and time of application of chemical fertilizers secured the lowest knowledge index of 34.50. Choosing suitable types of fertilizers and methods of increasing fertilizer use efficiency ranked second and third with knowledge indices of 49 and 47 respectively.

Organic manure application has been an age old practice even in traditional methods of rice cultivation. Hence it is quite natural that the sub-item, organic manure application secured the first position among the four

sub-items with respect to the knowledge index. The sub-item which obtained the least knowledge index, ie dose, method and time of application of chemical fertilizers is a very crucial point in the manuring practice. The results underscore the exigency of exposing the farmers to this aspect of rice cultivation. Similarly, methods of increasing fertilizer use efficiency and choosing suitable type of fertilizers which secured III and IV rank, respectively need to be emphasised in the course content of the training for farmers.

vii) Plant protection

The knowledge of farmers with respect to the sub-items under plant protection are presented in Table 11.

Table 11. Knowledge of farmers about plant protection of rice

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Identification of various pests and diseases of rice	84	42.00	II
2.	Selection of pesticides/fungicides for controlling pests/diseases of rice	79	39.50	III
3.	Preparation of spray solution	31	31.00	IV
4.	Precautions in handling chemicals	44	44.00	I

A perusal of Table 11 shows that precautions in handling chemicals and identification of various pests and diseases of rice ranked first and second with values 44 and 42 respectively. Selection of pesticides/fungicides for controlling pests/diseases of rice and preparation of spray solution ranked third and fourth with corresponding knowledge indices of 39.50 and 31.00 respectively. Preparation of spray solution is the sub-item under plant protection which has the least knowledge index. The rice crop is vulnerable to a host of insect pests and diseases and for effective control of these pests and diseases the farmers should possess a thorough knowledge on all the four sub-items under plant protection. But conversely, the knowledge index on all the four sub-items were found comparatively low. If the farmers show lesser extent of knowledge in these items it means that they have to be exposed to the relevant informations on these subject matter areas in rice cultivation.

1.2. Knowledge level of farmers on improved cultivation practices of Coconut

The distribution of respondents according to level of knowledge about improved cultivation practices of coconut is presented in Table 12.

Table 12. Distribution of farmers according to levels of knowledge about improved cultivation practices of coconut

(n = 100)

Sl. No.	Category	Frequency	Percentage
1.	Low	22	22.00
2.	Medium	61	61.00
3.	High	17	17.00
	Total	100	100.00

(Mean = 15.79, SD = 5.36)

The distribution of respondents according to the level of knowledge about improved cultivation practices of coconut (Table 12) followed almost a similar pattern of the distribution with respect to knowledge about improved rice cultivation (Table 2). More than half of the farmers (61%) possessed medium level of knowledge on improved coconut cultivation, 22 per cent of them possessed only low level of knowledge and 17 per cent were clustered in the high level of knowledge category on coconut cultivation.

This distribution pattern of farmers with nearly one fourth of them still in the low level knowledge category, highlights the need for organising educational activities for the benefit of farmers.

The overall knowledge index of respondent farmers on the improved cultivation practices of coconut was 57.00. When compared with the overall knowledge index of rice, this value is more encouraging. This may be due to the fact that coconut being a perennial crop, the cultural operations are less complex when compared to rice. Still, the value indicates that there is necessity for imparting knowledge on the various aspects of coconut cultivation so as to equip the farmers with advanced technologies of cultivation.

To find out the knowledge level of respondents on the individual cultural operations, the knowledge indices were computed, ranked and presented in Table 13.

Table 13. Knowledge of farmers with respect to the major items of coconut cultivation

Sl. No.	Major item	Knowledge		Rank
		Score	Index	
1.	Improved varieties	108	54.00	IV
2.	Nursery practices	429	61.29	II
3.	Planting and after care	317	63.40	I
4.	Manures and manuring	142	47.33	VI
5.	Plant protection	318	53.00	V
6.	Multiple cropping in coconut garden	168	56.00	III

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From Table 13, it could be seen that planting and after care, nursery practices and multiple cropping in coconut garden ranked first, second and third with knowledge indices 63.40, 61.29 and 56.00 respectively. Improved varieties, plant protection and manures and manuring were ranked fourth, fifth and sixth with knowledge indices 54.00, 53.00, and 47.33 respectively. Comparatively higher knowledge index values for planting and after care, nursery practices and multiple cropping could be attributed to the fact that, as stated elsewhere, these operations involve simpler cultural operations and for which farmers possess reasonable amount of knowledge. The lowest knowledge index was secured by the sub-items manures and manuring. This may be due to the fact that coconut crop attracts lesser number of pests and diseases in comparison to rice and hence plant protection operations are second to manures and manuring. Manures and manuring emerge as the operation which require maximum emphasis while organising training for farmers, followed by plant protection and improved varieties, in that order.

1.3. Knowledge of farmers with respect to the sub-items of improved cultivation practices of coconut

1) Improved varieties

The knowledge of the respondents about the sub-items under improved varieties is presented in Table 14.

Table 14. Knowledge of farmers about the improved varieties of coconut

Sl. No.	Sub-items	Knowledge		Rank
		Score	Index	
1.	High yielding varieties of coconut	52	52.00	II
2.	Suitability of high yielding varieties of coconut to different situations	56	56.00	I

The knowledge index for the sub-items of improved varieties viz., high yielding varieties of coconut and suitability of high yielding varieties to different situation were 52.00 and 56.00 respectively. It is well known that the hybrid varieties which are having high yield potentials are suitable for cultivation only in situations where the farmers can provide good management conditions, and hence the higher knowledge index for the second sub-item in comparison to the first sub-item.

11) Nursery practices

The data on knowledge of the respondents about the sub-items under nursery practices are presented in Table 15.

Table 15. Knowledge of farmers about nursery practices of coconut

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Selection of mother palms	51	51.00	VI
2.	Harvesting and selection of seednuts	61	61.00	IV
3.	Storage of seednuts	64	64.00	III
4.	Preparation of nursery beds	60	60.00	V
5.	Sowing of seednuts	75	75.00	I
6.	Plant protection in nursery	68	68.00	II
7.	Selection of seedlings	50	50.00	VII

The data presented in Table 15 show the knowledge index and corresponding ranks secured by the seven sub-items under nursery practices of coconut cultivation. Sowing of seednuts (75.00), plant protection in nursery (68.00), storage of seednuts (64.00), harvesting and selection of seednuts (61.00), preparation of nursery beds (60.00), selection of mother palms (51.00) and selection of seedlings (50.00) ranked from I to VII in the descending order. A cursory look at the table reveals the fact that the respondents possess reasonably good level of knowledge

in respect of the sub-items of nursery practices of coconut expect for the selection of seedlings and selection of mother palms. In fact, the above two sub-items are very crucial in the better performance of the coconut. Hence these two items need to be emphasised while imparting training to the farmers on coconut cultivation.

iii) Planting and after care

The level of knowledge of farmers in respect of sub-items under planting and after care of coconut are presented in Table 16.

Table 16. Knowledge of farmers about planting and after care of coconut

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Preparation of pits for planting	58	58.00	V
2.	Spacing recommendations	62	62.00	IV
3.	Time of planting	69	69.00	I
4.	Irrigation of coconut palms	64	64.00	II
5.	Husk burial in coconut garden	63	63.00	III

From Table 16, it is evident that farmers possessed reasonably good knowledge in sub-items such as time of

planting (69.00), irrigation of coconut palms (64.00) and husk burial in coconut garden (63.00).

Among the six major cultural operations of coconut cultivation, planting and after care secured first rank with respect to the knowledge index (Table 13). Thus on the whole it is encouraging to note that the respondent farmers had a fairly good knowledge on the planting and after care of coconut and the sub-items under this operation.

iv) Manures and manuring

The data on the knowledge of farmers in respect of sub-items under manures and manuring are presented in Table 17.

Table 17. Knowledge of farmers about manures and manuring of coconut

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Organic manure application	54	54.00	I
2.	Dose, method and time of application of chemical fertilizers	38	38.00	III
3.	Choosing suitable type of fertilizers	50	50.00	II

Based on knowledge index organic manure application ranked first (54.00), and choosing suitable type of fertilizers (50.00) and dose, method and time of application of chemical fertilizers (38.00) ranked II and III respectively (Table 17).

Dose, method and time of application of chemical fertilizers are significant factors in determining the yield of coconut palms. The fact that farmers possessed least knowledge in this sub-item in comparison with other sub-items under manures and manuring, points to the need for giving importance to this item while formulating training strategy to the farmers.

v) Plant protection

The level of knowledge of farmers about the plant protection of coconut is discussed in the Table 18.

Table 18. Knowledge of farmers about plant protection of coconut

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Identification of pests and diseases of coconut	96	48.00	V
2.	Suitable pesticides/fungicides for controlling the pests/diseases of coconut	56	56.00	II
3.	Preparation of spray solution	53	53.00	III
4.	Biological control of coconut caterpillar	52	52.00	IV
5.	Precautions in handling chemicals	61	61.00	I

It is evident from Table 18 that the sub-items under plant protection viz. precautions in handling chemicals (61.00), suitable pesticides/fungicides for controlling the pests/diseases of coconut (56.00), preparation of spray solution (53.00), biological control of coconut caterpillar (52.00) and identification of various pests and diseases of coconut (48.00) were ranked based on the knowledge index I, II, III, IV and V respectively. Identification of pests and diseases of coconut is the item which secured the lowest knowledge index (48.00). This indicates the necessity of exposing the farmers to this topic more thoroughly. Similarly, biological control of coconut caterpillar was ranked as IV inspite of the fact that a parasite breeding station is functioning in the district since long. On the whole, the farmers seem to need much exposition on plant protection measures.

vi) Multiple cropping

The data on knowledge of farmers about sub-items under multiple cropping are presented in Table 19.

Table 19. Knowledge of farmers about multiple cropping in coconut

Sl. No.	Sub-item	Knowledge		Rank
		Score	Index	
1.	Intercropping in coconut garden	48	48.00	III
2.	Multi-tier cropping in coconut garden	65	65.00	I
3.	Mixed cropping in coconut garden	55	55.00	II

Table 19 illustrates the ranking of sub-items under multiple cropping in coconut garden. It reveals that farmers are less knowledgeable about intercropping in coconut garden (48.00) when compared with multi-tier cropping in coconut garden (65.00) and mixed cropping in coconut garden (55.00).

Multiple cropping is a concept in crop production which aims at increasing income through efficient land use. The results emphasise the need for imparting knowledge on intercropping in coconut gardens, to the cultivators.

2. Association between knowledge of farmers on improved cultivation practices and selected socio-personal characteristics of farmers

To find out the relationship between the knowledge level of farmers on improved cultivation practices and selected socio-personal characteristics, correlation coefficients were computed and the results are presented in Table 20.

The computed correlation coefficient (r) values for different variables reveal that except age and farming experience all the other variables established positive relationship with the knowledge of farmers. Education and mass media exposure were positively and significantly correlated with knowledge about improved cultivation

Table 20. Inter correlation matrix showing the relationship among and between independent variables and knowledge of farmers

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	Y_1
X_1	1.000							
X_2	-0.2926	1.0000						
X_3	0.8851	-0.3673	1.0000					
X_4	0.0427	0.1005	0.1285	1.0000				
X_5	-0.4806	0.2248	-0.4251	-0.0311	1.0000			
X_6	-0.4416	0.5667	-0.4535	-0.0048	0.4155	1.0000		
X_7	-0.2326	0.3034	-0.2749	0.0794	0.3067	0.5748	1.0000	
Y_1	-0.0888	0.5005	-0.1420	0.1428	0.0568	0.3298	0.1006	1.0000

X_1 - Age

X_2 - Education

X_3 - Farming experience

X_4 - Farm size

X_5 - Social participation

X_6 - Mass media exposure

X_7 - Contact with and knowledge about extension agency

Y_1 - Knowledge of farmers



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practices of farmers. Age and farming experience showed negative relationship with the knowledge of farmers on improved cultivation practices.

Farm size, social participation and contact with and knowledge about extension agency have established positive association with the knowledge of farmers on improved cultivation practices, but were not significant.

As seen from Table 21, age was found to be negatively and non significantly correlated with the level of knowledge of farmers. As the farmers grow old the enthusiasm to acquire knowledge about improved cultivation practices is likely to get reduced. It is a common observation that younger the farmers, more eager they will be to acquire knowledge about latest technologies in the field of agriculture and usually they do not miss a chance of exposure to such advanced technologies. This finding is in agreement with the results of the studies conducted by Ahamed (1981) and Kamarudin (1981).

The significant relationship between level of education and the level of knowledge on improved cultivation practices of farmers highlights the fact that education helps farmers in acquiring more knowledge about improved cultivation practices. As the farming technologies become more complex, only educated farmers could comprehend them.

Table 21. Correlation between independent variables and the knowledge level of farmers (n = 100)

Variable No.	Name of the independent variable	Correlation coefficients
X ₁	Age	-0.0888 ^{NS}
X ₂	Education	0.6005 ^{**}
X ₃	Farming experience	-0.1420 ^{NS}
X ₄	Farm size	0.1428 ^{NS}
X ₅	Social participation	0.0568 ^{NS}
X ₆	Mass media exposure	0.3298 ^{**}
X ₇	Contact with and knowledge about extension agency	0.1006 ^{NS}

** - Significant at 1 per cent level of probability

NS - Not significant

Therefore, educated farmers are likely to acquire more knowledge on improved agricultural practices from various sources especially print media. Thus educational level of farmers become an important factor to help them gain more knowledge about improved agricultural practices and hence this result. This result is in conformity with the findings of Haraprasad (1982), Vijayakumar (1983) and Viju (1985).

The results of the study also revealed that there was positive relationship between farm size and level of knowledge of farmers though it was not significant. When size of the holding is large, the farmers will be prompted to take risk and naturally search for new technologies which will bring them more profit.

Social participation was found to have positive but non-significant relationship with knowledge of farmers. It is only quite natural that a person with high social participation will get himself interacted with his peer groups and many other social organisations, resulting in the acquisition of improved cultivation practices.

Mass media exposure had shown positive and significant relationship with the level of knowledge of farmers on improved cultivation practices. The network of mass media like radio, TV and newspaper play a vital role in the

transfer of latest agricultural technologies to the farming community. Hence mass media exposure had established a positive and significant association with the level of knowledge of farmers on improved agricultural practices. This result is in line with the findings of Sohal and Tyagi (1978), Sripal (1978) and Haraprasad (1982) who also reported a positive and significant relationship between mass media exposure and knowledge of farmers.

Contact with and knowledge about extension agency had shown a positive but non significant association with knowledge level of farmers. Frequent contact with extension agencies can bring about improvement in the knowledge level of farmers on improved agricultural practices and hence the positive association.

3. Direct and indirect effects of selected independent variables on the knowledge of farmers

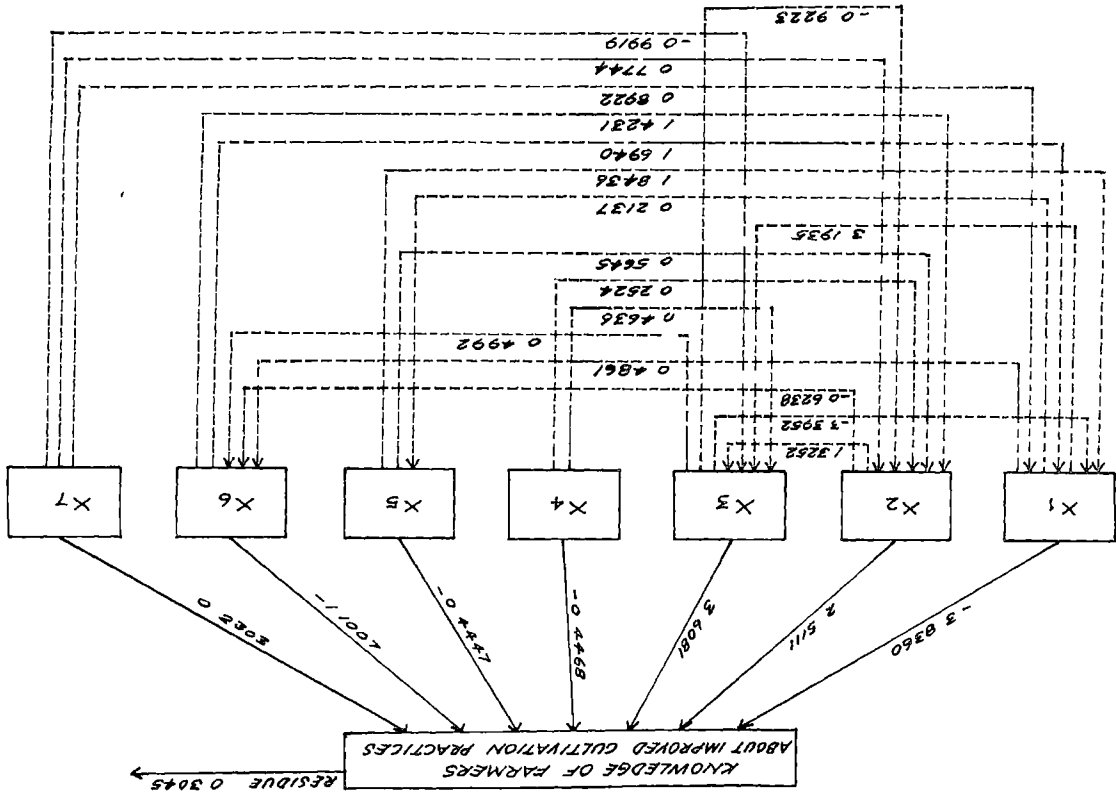
The direct and indirect effects of selected independent variables on the knowledge of farmers based on the path analysis are presented in Table 22. From Table 22 it could be seen that the highest direct effect on knowledge was due to the variable age (-3.8360). Next in the order of magnitude of direct effect was farming experience (3.6081) and education (2.5111). The magnitude of total indirect effects varied from 0.1832 in the case of education to 3.8933 in the case of age.

Table 22. Results of path analysis

Substantial effects of independent variables on the knowledge of the respondents
(n = 100)

Variable No.	Variable	Direct effect	Total indirect effect	Substantial indirect effects through the crucial variables according to rank		
				First	Second	Third
X ₁	Age	-3.8360	3.8933	3.1935 (X ₃)	0.4861 (X ₆)	0.2137 (X ₅)
X ₂	Education	2.5111	0.1832	-1.3252 (X ₃)	-0.6238 (X ₆)	-
X ₃	Farming experience	3.6081	0.6882	-3.3952 (X ₁)	-0.9223 (X ₂)	0.4992 (X ₆)
X ₄	Farm size	-0.4468	0.8011	0.4636 (X ₃)	0.2524 (X ₂)	-
X ₅	Social participation	-0.4447	2.4927	1.8436 (X ₁)	0.5645 (X ₂)	-
X ₆	Mass media exposure	-1.1007	3.2516	1.6940 (X ₁)	1.4231 (X ₂)	-
X ₇	Contact with and knowledge about extension agency	0.2303	1.6666	0.8922 (X ₁)	0.7744 (X ₂)	-0.9919 (X ₃)

FIG-3 PATH DIAGRAM SHOWING THE DIRECT AND INDIRECT EFFECTS OF SELECTED INDEPENDENT VARIABLES ON THE KNOWLEDGE OF FARMERS



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Diagrammatic representation of the results of path analysis is given in Figure 3.

i. X₁ - Age

The direct effect of this variable on knowledge was -3.8360 which is quite high. The high positive indirect effect (3.8933) through farming experience (3.1935), social participation (0.2137) and mass media exposure (0.4861) dominated this effect resulting in a non significant correlation value.

ii. X₂ - Education

The direct effect of this variable is high (2.5111). Negative indirect effects especially via farming experience (-1.3252) and mass media exposure (-0.6238) lead to a significant correlation.

iii. X₃ - Farming experience

The direct effect of farming experience was high 3.6081. The high negative indirect influence through age (-3.3952) and education (-0.9223) were mainly responsible for the negative correlation of this variable with knowledge.

iv. X₄ - Farm size

Direct effect of farm size was negative (-0.4468).

The indirect effect was mainly channelled through education (0.2524) and farming experience (0.4636). The total indirect effect of this variable was 0.8011 which was higher than that of the direct effect.

v. X₅ - Social participation

The direct effect of social participation was moderate (-0.4447). The indirect effect was mainly routed through age (1.8436) and education (0.5645). The total indirect effect was 2.4927 which was higher than the direct effect.

vi. X₆ - Mass media exposure

The direct effect of this variable was high and negative (-1.1007). The positive indirect effect was mainly through age (1.6940) and education (1.4231). The total indirect effect was 3.2516.

vii. X₇ - Contact with and knowledge about extension agencies

The direct effect of this variable was 0.2303 which was more than double its correlation with knowledge. This variable had high positive influence through age (0.8922) and education (0.7744) and negative influence through farming experience (-0.9919). The total indirect

effect was 1.5666 which was higher than that of the direct effect.

From the above results showing the direct and indirect effects of selected independent variables on knowledge of farmers on improved cultivation practices, it could be concluded that age, education, farming experience, social participation and mass media exposure were important in determining the knowledge of farmers on improved cultivation practices.

4. Training needs of farmers on improved cultivation practices of rice and coconut

The frequency distribution of farmers according to their training needs with respect to rice and coconut cultivation is presented in Table 23.

Table 23. Distribution of farmers according to the level of training needs

(n = 100)

Sl. No.	Category	Frequency	Percentage
1.	Low	15	15.00
2.	Medium	66	66.00
3.	High	19	19.00
	Total	100	100.00

(Mean - 134.91, SD - 921)

Table 24. Frequency distribution of farmers according to the level of training needs on the improved cultivation practices of rice

(n = 100)

Sl. No.	Category	Frequency	Percentage
1.	Low	11	11.00
2.	Medium	70	70.00
3.	High	19	19.00
	Total	100	100.00

(Mean = 67.04, SD = 5.06)

Table 24 illustrates the distribution of farmers according to the level of training needs on the improved cultivation practices of rice. It could be seen that 70 per cent of respondents were under medium level of training need category while 19 per cent high level of training need and only 11 per cent under low level of training need category. Taking the medium and high training need category together, the results lead to conclude that majority (89%) of the respondents expressed the desire to be trained in improved cultivation practices of rice.

4.1.1. Training need index with respect to rice

The computed training need index of the respondents

It could be seen from Table 23, that majority (66%) of the farmers came under medium training need category followed by 19 per cent of farmers under high training need category. Only 15 per cent of the respondents came under low training need category.

It is worthwhile to note that only less than one fourth of the farmers perceived a high level of training need in crop cultivation. This may be due to the fact that they are not well exposed to the modern cultivation practices.

Taking the high and medium training need category respondents together it could be conclusively stated that 85 per cent of the respondent farmers require exposures on latest agricultural technology and hence stresses the need for organising training programmes.

4.1. Training needs of farmers on improved cultivation practices of rice

The training needs of farmers on improved cultivation practices of rice crop were assessed and the results are presented in Table 24.

for improved cultivation practices in rice crop was 71.03 which is fairly high indicating that the respondent farmers require training on improved rice cultivation.

Rice is the most important food crop in the district and it is grown during three seasons in an year depending upon the availability of water. Hence it is quite reasonable that the respondents are desirous of getting exposed to latest technologies in rice production.

4.1.2. Training needs of farmers with respect to major items of rice cultivation

The training needs score and the corresponding indices in respect of individual cultivation operations of rice crop are presented in Table 25.

Table 25. Training needs with respect to major items of rice cultivation

Sl. No.	Major item	Training need		Rank
		Score	Index	
1.	Improved varieties	620	77.50	III
2.	Nursery practices	1546	64.42	V
3.	Planting and after care	646	53.83	VII
4.	Water management	678	56.50	VI
5.	Weed control	536	67.00	IV
6.	Manures and manuring	1383	86.44	II
7.	Plant protection	1410	88.13	I

It is evident from Table 25 that plant protection was perceived as the area having maximum training need (88.13). Manures and manuring (86.44), improved varieties (77.50), weed control (67.00), nursery practices (64.42), water management (56.50) and planting and after care of rice cultivation (53.83) were the other sub-items in which training was required.

As stated elsewhere, rice crop attracts a host of pests and diseases and protecting the crop from pests and diseases is the major problem confronted by rice growers. This problem has got added significance, as plant protection is one of the determining factors of cost of cultivation of the crop. The maximum training need index secured by this sub-item is also justified by the fact that the respondents had secured least knowledge index in plant protection (Table 4). Thus the results bring into focus the urgent need for giving prime importance to plant protection while scheduling the training course in rice. This finding is also in conformity with the results of the study conducted by Jha (1974), Chandrashekharam (1981) and Sabapathi (1988).

Manures and manuring was the second major item of rice cultivation, in the order of importance of training needs. For obtaining better yields in rice manures and

manuring play an important role. Farmers are aware of this fact and that is why they have perceived manures and manuring as the second important major item of cultivation in which they need training. Similar findings were reported by Singh (1971), Sinha and Verma (1976) and Mathiazhagan (1978).

Improved varieties was perceived as the third important item, in which farmers require training. Most of the farmers of Kasaragod district still cultivate traditional varieties of rice. An exposure on the advantages of improved varieties of rice might help to bring more area under high yielding varieties of rice.

Anantharaman (1977) and Gangaram (1979) have also concluded that improved strains of crops is one of the main areas of cultivation to be emphasised in farmers training programmes.

Weed control was the fourth important operation in which farmers needed training. Weed control being a labour intensive cultural operation, it will add to the cost of cultivation. Hence any new technology for chemical weed control is likely to be a welcome idea for rice farmers and hence this result. This finding is in conformity with the findings of Mathiazhagan (1978) in which he had pointed out that intercultural operations including weeding is an

area where farmers needed more training.

Many farmers felt that the new technologies in raising seedlings and transplanting were not reaching the farmers quickly and hence the need for training in nursery practices.

The results of the study in general indicate that more than the resource barrier, lack of exposure of the respondents to the latest production technologies of rice cultivation stands in the way of adopting the improved practices. This has been amply justified by the high training need indices in the case of almost all the operations under rice cultivation. Therefore, while organising training for the farmers on rice, all these aspects need to be taken care of.

4.1.3. Training needs of farmers with respect to sub-items of rice cultivation

Training needs with respect to sub-items under each cultural operation of rice cultivation as expressed by the respondents are explained hereunder.

1) Improved varieties

The training needs for items under improved varieties are presented in Table 26.

Table 26. Training needs of farmers with respect to improved varieties of rice

Sl. No.	Sub-items	Training need		Rank
		Score	Index	
1.	High yielding varieties of rice	322	80.50	I
2.	Suitability of varieties to the seasons and regions	298	74.50	II

Among the two sub-items under improved varieties of rice, high yielding varieties ranked first (80.50) and suitability of varieties to the seasons and regions (74.50) ranked second with respect to the training needs as perceived by the farmers (Table 26).

Data indicate that farmers are eager to get information about the high yielding varieties of rice and also about their suitability to the seasons and regions. Fourteen improved varieties of rice had been released from the various research stations under the KAU and it is imperative that farmers are kept informed of the improved varieties of rice from time to time.

11) Nursery practices

Training needs with respect to sub-items under nursery practices are presented in Table 27.

Table 27. Training needs of farmers with respect to nursery practices of rice

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Seed rate for different methods of planting	302	75.50	II
2.	Seed treatment	260	65.00	IV
3.	Preparation of nursery beds	271	67.75	III
4.	Manuring in nursery	190	47.50	VI
5.	Water management in the nursery	220	55.00	V
6.	Age of seedlings	303	75.75	I

As seen from the table, the training needs under nursery practices of rice cultivation as perceived by farmers were age of seedlings (75.75), seed rate for different methods of planting (75.50), preparation of nursery beds (67.75), seed treatment (65.00), water management in the nursery (55.00) and manuring in nursery (47.50) in the descending order.

Optimum age of seedlings to be transplanted depending upon the duration of the variety is an important factor influencing the establishment, and production of effective tillers of rice in the main field. Farmers have attached

much importance to this sub-item. Seed rate for different methods of planting, preparation of nursery beds, and seed treatment are the other sub-items in which, according to the farmers, training is required.

111) Planting and after care

Training needs with respect to sub-items under planting and after care as expressed by the respondents are presented in Table 28.

Table 28. Training needs of farmers with respect to planting and after care of rice

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Land preparation	148	37.00	III
2.	Transplanting	199	49.75	II
3.	Spacing recommendations	299	74.75	I

Table 28 reveals that the perceived training needs of farmers on planting and after care of rice were spacing recommendations (74.75), transplanting (49.75) and land preparation (37.00) in the order of their importance.

Spacing recommendation for different varieties and seasons is a very important aspect which if not correctly

followed may result in poor yield.

Spacing and depth of planting are two important aspects in transplanting and the respondent farmers seem inquisitive about these. Hence these aspects should be given importance in the training programme.

iv) Water management

Training needs of respondents with respect to sub-items under water management are presented in Table 29.

Table 29. Training needs of farmers with respect to water management of rice

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Water level required during transplanting	195	48.75	III
2.	Quantity of water required during various stages of crop growth	226	56.50	II
3.	Critical stages of water requirement for paddy	267	66.75	I

As shown in Table 29 critical stages of water requirement for paddy was ranked as first (66.75), quantity of water required during various stages of crop growth second (56.50) and water level required during transplanting third (48.75) in the order of importance with respect to training need.

Availability of water is one of the limiting factor in rice production. Rice can be cultivated in all the three seasons only if sufficient water is available. Efficient water management especially during critical stages of plant growth is very important for rice crop. It may be recalled that the respondents secured only third rank with regard to the knowledge index for critical stages of water requirement (Table 8). The maximum training need index 66.75, thus very well corroborate the need for giving emphasis to this topic in the training of farmers on rice production.

v) Weed control

Training needs with respect to sub-items under weed control as expressed by the respondents are presented in Table 30.

Table 30. Training needs of farmers with respect to weed control of rice

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Various types of weeds in paddy field	197	40.25	II
2.	Dose, method and time of weedicide application	339	84.75	I

Table 30 indicates two sub-items under weed control in rice. Dose, method and time of weedicide application was placed in the first place (84.75) and various types of weeds in paddy field in the second place (49.25) by the respondents.

Weed control by chemical weedicides comprising the aspects such as dose, method and time of weedicide application is comparatively complex and difficult to comprehend for the farmers. This might be the reason in selecting this sub-item as important one.

vi) Manures and manuring

Training needs with respect to sub-items under manures and manuring as expressed by the respondents are presented in Table 31.

Table 31. Training needs of farmers with respect to manures and manuring of rice

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Organic manure application	268	67.00	IV
2.	Dose, methods and time of application of chemical fertilizers	363	90.75	I
3.	Choosing suitable type of fertilizers	358	89.50	II
4.	Methods of increasing fertilizer use efficiency	345	86.25	III

The training needs as perceived by the farmers for the sub-items under manures and manuring were dose, methods and time of chemical fertilizers (90.75), choosing suitable types of fertilizers (89.50), methods of increasing fertilizer use efficiency (86.25) and organic manure application (67.00) in the descending order of importance. It is worth pointing out here, that the training need indices very well corroborate the knowledge indices of the corresponding items (Table 10), under manures and manuring, underscoring the need for organising training in all aspects of application of chemical fertilizers.

vii) Plant protection

Training needs with respect to sub-items under plant protection as expressed by the respondents are presented in Table 32.

Table 32. Training needs of farmers with respect to plant protection of rice

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Identification of various pests and diseases of rice	304	76.00	IV
2.	Selection of pesticides/ Fungicides for controlling pests/ diseases of rice	366	91.50	II
3.	Preparation of spray solution	380	95.00	I
4.	Precautions in handling chemicals	357	89.25	III

As shown in Table 32 the training needs of farmers for the four sub-items under plant protection were preparation of spray solution (95.00), suitable pesticides/fungicides for controlling pests/diseases of rice (91.50), precautions in handling chemicals (89.25) and identification of various pests and diseases of rice (76.00) in the descending order of importance.

Plant protection practices have gained much importance in rice production because incidence of pests and disease is a major problem in rice cultivation. It is again worth recalling that preparation of spray solution and selection of pesticides/fungicides which secured I and II rank respectively for training need index, secured IV and III rank respectively (Table 11) for knowledge index, reinforcing the exigency of organising training course in plant protection.

4.2. Training needs of farmers on improved cultivation practices of coconut

The distribution of farmers according to the level of training needs in the improved cultivation practices of coconut are presented in Table 33.

Table 33. Frequency distribution of farmers according to the level of training needs on the improved cultivation practices of coconut (n = 100)

Sl. No.	Category	Frequency	Percentage
1.	Low	16	16
2.	Medium	65	65
3.	High	19	19
	Total	100	100

(Mean 68.21, SD 6.59)

As it could be seen from Table 33, 65 per cent of the farmers had medium level of training need and 19 per cent and 16 per cent high and low level of training need respectively. The overall training need index for the respondents is 66.84 which is fairly high. Taking the high and medium categories together it could be conclusively stated that majority (84%) of the respondents were desirous to have training in improved cultivation practices of coconut.

4.2.1. Training need index with respect to coconut

The computed training need index of the respondents for the improved cultivation practices in coconut was 66.14.

The value is fairly high indicating the eagerness on the part of farmers to acquire informations on improved cultivation practices of coconut.

4.2.2. Training needs of farmers with respect to major items of coconut cultivation

To find out the training needs of respondents in the major items of coconut cultivation, the training need score and corresponding index were worked out and presented in Table 34.

Table 34. Training needs of farmers with respect to major items of coconut cultivation

Sl. No.	Major item	Training need		Rank
		Score	Index	
1.	Improved varieties	665	83.13	III
2.	Nursery practices	1665	52.03	VI
3.	Planting and after care	1050	52.50	V
4.	Manures and manuring	1012	84.33	I
5.	Plant protection	1675	83.75	II
6.	Multiple cropping in coconut garden	812	67.66	IV

It can be seen from Table 34 that the training needs of farmers in major items of coconut cultivation in the order of preference were manures and manuring (84.33),

plant protection (83.75), improved varieties (71.13), multiple cropping in coconut garden (67.66), planting and after care (52.50) and nursery practices (52.03).

Manures and manuring of coconut has emerged as most important major item under coconut cultivation requiring training, followed by plant protection, improved varieties, multiple cropping, planting and after care and nursery practices in the descending order. Manures and manuring and plant protection are the most important factors contributing to better yield and hence it is only natural that the farmers perceive these two items as important.

This finding is in agreement with the findings of Sasthry (1970), Gopal (1974), Anantharaman (1977) and Sabapathy (1988) who all reported that farmers were found to be interested in getting trained on plant protection, manures and fertilizers and improved varieties.

Multiple cropping in coconut garden is relatively new practice whereby farmers can derive more income through appropriate crop combinations in the coconut garden. Farmers have recognized the need to get the necessary information on the same and hence it was also viewed as an important subject matter area where they needed training. Planting and after care was placed in the fifth position by the farmers. Farmers attach less significance to

the said item because of the fact that it involves only simple technologies such as preparation of pits, time of planting, irrigation etc.

Nursery practices of coconut was ranked only sixth among the major items of coconut cultivation. Though production of quality planting material is an important area in coconut cultivation, State Government through the department of agriculture have taken necessary steps for the production and distribution of quality seedlings for the benefit of farmers. Hence farmers can be complacent in showing eagerness to get trained on nursery practices of coconut.

4.2.3. Training needs of farmers with respect to sub-items of coconut cultivation

Training needs of farmers with respect to sub-items of coconut cultivation as expressed by the respondents are explained hereunder.

i) Improved varieties

Training needs with respect to the sub-items under improved varieties as expressed by the farmers are presented in Table 35.

Table 35. Training needs of farmers with respect to improved varieties of coconut

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	High yielding varieties of coconut	351	87.75	I
2.	Suitability of High yielding varieties of coconut to different situations	314	78.50	II

As it could be seen from Table 35 high yielding varieties of coconut and suitability of high yielding varieties of coconut ranked first and second respectively with indices 87.75 and 78.50 respectively, with respect to the farmers' training needs, under improved varieties.

In their efforts to increase coconut production, the switch over from traditional to improved varieties including the hybrid varieties is imminent and hence this result.

11) Nursery practices

Training needs with respect to the sub-items under nursery practices as perceived by the respondents are presented in Table 36.

Table 36. Training needs of farmers with respect to nursery practices of coconut

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Selection of mother palms	225	81.25	II
2.	Harvesting and selection of seednuts	178	44.50	III
3.	Storage of seednuts	164	41.00	VI
4.	Preparation of nursery beds	161	40.25	VII
5.	Sowing of seednuts	155	38.75	VIII
6.	Plant protection in nursery	173	43.25	V
7.	Irrigation in nursery	177	44.25	IV
8.	Selection of seedlings	332	83.00	I

Table 36 shows that the sub-items under nursery practices of coconut in which farmers needed training in the order of importance were selection of seedlings (83.00), selection of mother palms (81.25), harvesting and selection of seednuts (44.50), irrigation in nursery (44.25), plant protection in nursery (43.25), storage of seednuts (41.00), preparation of nursery beds (40.25) and sowing of seednuts (38.75).

Scientific nursery management practices will result in good quality seedlings which is an important prerequisite for higher productivity of coconut palms. Though government have arrangements for the production and distribution of quality seedlings, farmers can be given an orientation to the scientific nursery techniques in coconut. Selecting mother palms, selecting seednuts and sowing and finally selecting good seedlings are the three foremost aspects of nursery practices on which farmers are to be very careful. Thus it can be construed that farmers have rightly attached greater importance to these items for getting trained. The remaining sub-items are relatively simpler and farmers are mostly aware of them and hence ranked on a lower scale.

111) Planting and after care

Training needs with respect to sub-items under planting and after care as expressed by the farmers are presented in Table 37.

Table 37. Training needs of farmers with respect to planting and after care of coconut

Sl. No.	Sub-item	Score	TNI	Rank
1.	Preparation of pits for planting	154	38.50	IV
2.	Spacing recommendation	305	76.25	I
3.	Time of planting	144	36.00	V
4.	Irrigation of coconut palms	171	42.75	III
5.	Husk burial in coconut garden	276	69.00	II

Table 37 presents the sub-items under planting and after care of coconut as preferred by farmers to have training. These were spacing recommendation (76.25), husk burial in coconut garden (69.00), irrigation of coconut palms (42.75), preparation of pits for planting (38.50) and time of planting (36.00) in the descending order.

Training in spacing recommendation would help the farmers to optimise the plant population in the garden. Husk burial and irrigation are closely inter-related operations for conserving moisture and thereby increasing yield and hence these three items secured the first three ranks in that order. Preparation of pits for planting and time of planting have little significance from the productivity point of view and hence might have ranked as IV and V.

iv) Manures and manuring

Training needs with respect to the sub-items under manures and manuring as expressed by the respondents are presented in Table 38.

Table 38. Training needs of farmers with respect to manures and manuring of coconut

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Organic manure application	278	69.50	III
2.	Dose, method and time of application of chemical fertilizers	390	97.50	I
3.	Choosing suitable type of fertilizers	344	86.00	II

Farmers' perception of training need on the sub-items under manures and manuring of coconut cultivation were dose, method and time of application of chemical fertilizers (97.50), choosing suitable type of fertilizers (86.00) and organic manure application (69.50) in the descending order.

A significant point that emerges from Table 38 is the fact that the three sub-items which secured 1st, 2nd and 3rd rank respectively secured 3rd, 2nd and 1st rank respectively with respect to the knowledge indices of farmers. Thus the complete agreement between knowledge indices and training need indices explains the need for emphasising manures and manuring of coconut while organising training for farmers.

Application of chemical fertilizers in the optimum dose depending on the soil condition, the variety of coconut grown, the age of palm, the correct method of application and also the appropriate time of application is an important cultural operation for ensuring good yield from coconut palms. Choosing suitable type of fertilizers to provide the required quantity of nutrients is also equally important. Taking into cognizance these factors farmers have ranked these items as first and second in respect of their training need in manures and manuring. Organic manure

application is indeed an age old practice and farmers do not consider it as important an item as to seek training on it. Hence it was placed only third among the three sub-items.

v) Plant protection

Training needs with respect to sub-items under plant protection as perceived by farmers are presented in Table 39.

Table 39. Training needs of farmers with respect to plant protection of coconut

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Identification of pests and diseases of coconut	297	74.25	IV
2.	Suitable pesticides/fungicides for controlling the pests/diseases of coconut	373	93.25	II
3.	Preparation of spray solution	375	93.75	I
4.	Biological control of coconut caterpillar	286	71.50	V
5.	Precautions in handling chemicals	344	86.00	III

Table 39 shows that the sub-items on which farmers needed training were preparation of spray solution (93.75), suitable pesticides/fungicides for controlling the pests/diseases of coconut (93.25), precautions in handling

chemicals (86.00), identification of pests and diseases of coconut (74.25) and biological control of coconut caterpillar (71.50) in the descending order of preference.

Selecting appropriate chemicals, preparing the spray solution following the correct dosage, and following the necessary safety measures are important aspects of a successful plant protection operation and hence rightly ranked as 1st. Coconut caterpillar is one of the major pests of coconut causing serious damage to the crop. Biological control of this pest utilizing some of its natural enemies has been recommended to avoid this damage. Department of Agriculture has established one Parasite Breeding Station from where natural enemies are made available free of cost. In spite of these facilities it seems that farmers are yet to become aware of the importance of biological control method of coconut caterpillar and hence it was ranked last by them.

vi) Multiple cropping in coconut garden

Training needs with respect to the sub-items under multiple cropping in coconut garden as perceived by the respondents are presented in Table 40.

Table 40. Training needs of farmers with respect to multiple cropping in coconut garden

Sl. No.	Sub-item	Training need		Rank
		Score	Index	
1.	Intercropping with coconut	278	69.50	I
2.	Multi-tier cropping in coconut garden	272	68.00	II
3.	Mixed cropping in coconut garden	262	65.50	III

Intercropping with coconut (69.50), multi-tier cropping in coconut garden (68.00) and mixed cropping in coconut garden (65.50) were ranked as I, II and III, respectively (Table 40). Intercropping in coconut garden is gaining popularity in recent years farmers can derive additional income from a unit area. Scientific management practices recommended include multiple cropping, intercropping, multi-tier cropping and mixed cropping in coconut garden. It can be seen that farmers have attached more or less equal weights for all the sub-items indicating the need for training in all the three topics.

5. Farmers' preferences about training

Farmers' preferences regarding type, duration, season, venue, methodology and frequency of training

programmes were analysed and data presented in the following sub-heads.

5.1. Farmers' preferences regarding type of training

The preferences of farmers regarding type of training programme are presented in Table 41.

Table 41. Farmers' preferences regarding type of training

Sl. No.	Type of training	Preference		Rank
		Score	Index	
1.	Institutional training	303	75.75	II
2.	Peripatetic training	371	92.75	I
3.	Farm school on AIR	272	68.00	III
4.	Correspondence course of KAU	225	56.25	IV

The study covered four types of training, namely, a) institutional training b) Peripatetic training c) Farm school on AIR and d) Correspondence course of KAU. From the Table 41 it could be seen that farmers' top most preference went to peripatetic training with a preference index (PI) of 92.75. Institutional training (PI 75.75) and Farm school on AIR (PI 68.00) were placed in second and third positions respectively. Correspondence course of KAU was the least preferred type (PI 56.25).

Peripatetic training programmes are organised in villages in the most realistic situations for a very short duration of one or two days. In this training, the trainers come to the farmers, instead of the farmers going to the training institutions. The rural environment always provide a conducive atmosphere for the farmers to convene freely and discuss with the trainers. These reasons can be attributed for the farmers' topmost preference for peripatetic training. This finding is suggestive of the need for organising as many peripatetic training programmes as could be. The result is in line with the findings of Gopal (1974), Sabarathnam (1976), Alexander (1985) and Kanagasabapathi (1988) who reported that farmers preferred peripatetic training more than any other type of training. Farmers may also be interested in visiting some institutions for getting trained because it may provide some change for the routine farming operations. Hence second preference went for institutional training. Lessons in agriculture and allied subjects are broadcast through AIR. But this programme of farm school on AIR often may not suit the convenience of many listeners and there is no scope for immediate clarification of doubts. In the case of correspondence course, there is time lag in between two lessons and often the participants may miss some of the lessons. These must be the reason, for the last two types of training securing

third and fourth rank respectively.

5.2. Duration of training

Farmers' preferences regarding duration of training are presented in Table 42.

Table 42. Farmers' preferences regarding duration of training

Sl. No.	Duration of training	Preferences		Rank
		Score	Index	
1.	One day	365	91.25	II
2.	Two days	380	95.00	I
3.	3-7 days	168	42.00	III
4.	2-3 weeks	141	35.25	IV
5.	1 month	107	26.75	V
6.	More than one month	103	25.75	VI

It can be observed from Table 42 that two days' duration was preferred to be the most suitable (95.00) closely followed by one days' training (91.25). Next in the order of preference of duration were 3-7 days (42.00), 2-3 weeks (35.25), one month (26.75) and more than one month (25.75).

Generally farmers prefer only short term training programme as they cannot stay away from their farm/residence

for long because they may have many pre-occupations to attend to. While organising farmers' training programmes this point has to be given due importance.

This finding is in agreement with the findings of Sidhu and Patel (1968), Jha (1974) and Alexander (1985) who all reported that farmers preferred one or two days training.

5.3. Season of training

Farmers' preferences regarding the season of training are presented in Table 43.

Table 43. Farmers' preferences regarding the season of training

Sl. No.	Month	Frequency	Percentage	Rank
1.	January	66	66	I
2.	February	21	21	II
3.	March	4	4	IV
4.	November	3	3	V
5.	December	6	6	III

A perusal of Table 43 reveals that majority (66%) of farmers preferred January as the suitable months for attending training programmes, closely followed by February

(21%). The number of farmers who preferred March, November and December was negligibly low.

From the results of the study it can be concluded that the months of January and February are the most convenient time for organising farmers' training programmes. It can be noted that the two months preferred by majority of the farmers do not coincide with the two major rice crop seasons (first crop and second crop) or hectic period of cultural operations for other crops. Farmers are relatively free during those periods. Hence they have opted for January and February as the suitable time (season) for training. This finding is in conformity with those of Sohal and Yanakal (1970), Mathiazhakan (1978) and Ahmed (1981).

5.4. Venue of training

Farmers' preferences regarding venue of training are presented in Table 44.

Table 44. Farmers' preferences regarding venue of training

Sl. No.	Venue of training	Preference		Rank
		Score	Index	
1.	Farm/residence of a progressive farmer	241	60.25	III
2.	Nearest Krishibhavan	354	88.50	I
3.	RARS, Pilicode	193	48.25	V
4.	CPCRI, Kasaragod	201	50.25	IV
5.	KVK, Manjeswar	134	32.50	VI
6.	Farmers' Co-operative Society	302	75.50	II

It could be observed from Table 44 that nearest Krishibhavan was the most preferred venue of training by the farmers (PI 88.50). Next in the order of preference were farmers' co-operative society (PI 75.00), farm/residence of a progressive farmer (PI 60.25), CPCRI, Kasaragod (PI 50.25), RARS, Piliicode (PI 48.25) and KVK, Manjeswar (PI 32.50).

In the re-organised set-up of the Department of Agriculture, Krishibhavan is functioning in every panchayat. These Krishibhavans are responsible in planning and implementing agricultural development programmes with local people's participation. Thus farmers are in constant touch with the Krishibhavans. This and the matter of proximity must be the factors which prompted the respondents to assign Krishibhavans the first choice for the venue of training.

Farmers are closely associated with their local co-operative society, from where they get financial assistance and other inputs. They are very familiar with that institution. Hence farmers might have ranked farmers' co-operative society as the second suitable venue for training.

In every locality there may be a few farmers who are looked upon by others as model farmers or from whom they seek guidance on farming. These progressive farmers

can influence other farmers on various aspects of decision making in farming. The farm or residence of such a progressive farmer could be chosen as a venue for training of farmers, as it secured the third rank. Conditions being the same, when option is given for a choice between nearby and distant institutions as venue for conducting training programmes, it is only natural that the farmers opt for a nearby institution. This must be the reason why CPCRI, Kasaragod, RARS, Pilicode and KVK, Manjeswar were assigned only fourth, fifth and sixth ranks respectively as a venue for training. This fact is again substantiated by the preference of respondents for peripatetic training rather than institutional training.

5.5. Methodology of training

Farmers' preferences regarding the methodology of training are presented in Table 45.

Table 45. Farmers' preferences regarding methodology of training

Sl. No.	Methodology	Preference		Rank
		Score	Index	
1.	Lecture	151	37.75	VI
2.	Discussion	307	76.75	III
3.	Field trip	355	88.75	II
4.	Demonstration	373	93.25	I
5.	Campaign	163	40.75	V
6.	Film show	130	32.50	VII
7.	Exhibition	229	57.25	IV

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Table 45 presents the views of farmers regarding the methodologies for imparting training to the farmers. It could be seen that demonstration was ranked as first (93.25). This was followed by field trip (88.75), discussion (PI 76.75), exhibition (PI 57.25), campaign (PI 40.75), lecture (PI 37.75) and filmshow (PI 32.50) in the order of preference.

Demonstration provide opportunity to the farmers to see, hear and do things. Since all the three sensory receivers are involved in demonstration the learning will be thorough and complete. It greatly assists in acquiring knowledge and skills on farming practices. Hence farmers might have given the first preference to this methodology of training.

Field trip will provide an opportunity to make an on the spot study of the latest technologies developed and put into practice. This fact might have motivated them to rank field trip as the second method in the order of preference.

Exchange of ideas between farmers and trainers and also among farmers is made possible through discussions. Hence discussion also was assigned with a higher preference (Rank III).

Exhibition on agriculture helps the farmers to directly observe various items such as specimens, models and other visuals related to farming and thereby assist them in learning useful practices or getting information on advanced farming technologies. Farmers have assigned exhibition with fourth place among the methodologies.

Campaign, lecture and film show were ranked only at the end as the last preferences. The findings of this study is in conformity with that of Poy (1972) and Gopal (1974) who reported that farmers assigned high rank to methods such as demonstration, field trip and discussion.

5.6. Frequency of training

Farmers' preferences regarding the frequency of training on rice and coconut are presented in Table 46.

Table 46. Farmers' preferences regarding frequency of training

Sl. No.	Frequency of training	RICE		COCONUT	
		Percentage	Rank	Percentage	Rank
1.	Once in one month	..	..	..	..
2.	Once in two months	..	..	..	..
3.	Once in six months	16	II	11	III
4.	Once in one year	64	I	14	II
5.	" two years	12	III	65	I
6.	" three years	6	IV	8	IV
7.	" six years	2	V	2	V
8.	" life time	..	..	..	..

From Table 46 it can be seen that majority of the farmers (64%) preferred to undergo training programmes on rice cultivation once in an year (Rank I). This was followed by once in six months (Rank II), once in two years (Rank III), once in three years (Rank IV) and once in six years (Rank V) in the descending order.

Annual training programme is the most preferred frequency of training for rice crop. Hence while formulating training programmes for farmers annual programmes should be thought of rather than organising frequent training programmes which farmers do not prefer. In the case of coconut cultivation farmers' preferences were once in two years (Rank I), once in an year (Rank II), once in six months (Rank III), once in three years (Rank IV) and once in six years (Rank V) in the descending order.

Coconut being a perennial crop, new technology to be imparted to the growers will be comparatively less, other than the usual calendar of operations. Hence, the frequency of training could be reduced to once in two years.

6. Perception of Agricultural Scientists and Extension Personnel about subject matter areas with respect to the major items of rice and coconut cultivation

6.1. Perception of Agricultural Scientists and Extension Personnel about subject matter areas with respect to the major items of rice cultivation

The table presents the training needs of farmers

Table 47. Training needs of farmers with respect to major items of rice cultivation as perceived by Agricultural Scientists and Extension Personnel

l. o.	Major item	Agrl. Scientists			Extension Personnel			Combined mean		
		Score	Index	Rank	Score	Index	Rank	Score	Index	Rank
1.	Improved varieties	168	87.5	I	124	78.75	III	292	82.95	III
2.	Nursery practices	380	65.97	VI	278	57.92	VII	658	74.77	V
3.	Planting and after care	207	71.87	V	166	69.17	V	373	70.64	VI
4.	Water management	228	79.16	IV	182	75.83	IV	410	77.65	IV
5.	Weed control	123	64.06	VII	99	61.87	VI	222	61.07	VII
6.	Manures and manuring	330	85.94	III	256	80.00	II	586	83.24	II
7.	Plant protection	332	86.46	II	269	84.06	I	601	85.37	I

on the cultivation of rice as perceived by agricultural scientists and extension personnel. According to agricultural scientists, while organising training on rice cultivation priority must be given for improved varieties (index 87.50), plant protection (index 86.46), manures and manuring (index 85.94), water management (index 79.16), planting and after care (index 71.37), nursery practices (index 65.97) and weed control (index 64.06) in the descending order of importance. While Extension Personnel were of the view that priority must be for plant protection (index 84.06), manures and manuring (index 80.00), improved varieties (index 78.75), water management (index 75.83), planting and after care (index 69.17), weed control (index 61.87) and nursery practices (index 57.92) in the descending order. It could be seen that the perception of the two categories of respondents differed with regard to the priority to be given for the subjects. Agricultural Scientists suggested improved varieties as most important while extension personnel suggested plant protection. This differential perception may be due to the fact that extension personnel have more field exposure and contact with farmers.

Combined mean score and preference index were worked out for each item and ranked. The results indicated that

plant protection secured first rank followed by manures and manuring and improved varieties as second and third ranks respectively. One salient point that emerges from the study is that this result is in full agreement with the perception of the respondents about the three topics ranked I, II and III on which they require training (Table 25). Therefore, it can be conclusively stated that while organising training for farmers in rice, plant protection should be given first priority followed by manures and manuring, improved varieties, water management, planting and after care and weed control in that order.

6.2. Perception of Agricultural Scientists and Extension Personnel about subject matter with respect to the major items of coconut cultivation

A glance at the table shows that both agricultural scientists and extension personnel pointed out manures and manuring, plant protection and improved varieties as the major items of coconut cultivation which are to be included in the training programme on coconut cultivation in the order of their importance. Combined ranking also brought out a similar result. Multiple cropping in coconut garden, planting and after care and nursery practices were placed next in the order of importance by agricultural scientists. Nursery practices was the major item of coconut cultivation which was assigned with least importance by both agricultural scientists and extension personnel.

Table 48. Training needs of farmers with respect to major items of coconut cultivation as perceived by Agricultural Scientists and Extension Personnel

Sl. No.	Major item	Agrl. Scientists			Extension Personnel			Combined mean		
		Score	Index	Rank	Score	Index	Rank	Score	Index	Rank
1.	Improved varieties	142	73.96	III	108	67.5	III	250	71.02	III
2.	Nursery practices	511	66.54	VI	352	55.0	VI	863	61.2 ^a	VI
3.	Planting and after care	341	71.04	V	234	58.5	IV	575	65.34	V
4.	Manures and manuring	239	82.98	I	193	80.41	I	432	81.82	I
5.	Plant protection	355	73.98	II	285	71.25	II	640	72.72	II
6.	Multiple cropping in coconut garden	207	71.88	IV	138	57.5	V	345	62.95	IV

In the case of coconut crop also, there was full agreement between training need indices of the farmer respondents and the combined training need indices as perceived by the agricultural scientists and extension workers. Hence, while organising training on coconut cultivation priority for topics could be fixed in that order.

7. Perception of agricultural scientists and extension personnel about farmers' training

7.1. Selection of trainees

Table 49 shows the perception of agricultural scientists and extension personnel about the criteria to be followed for the selection of trainees for a farmers' training programme. It can be seen from the table that both agricultural scientists and extension personnel agreed upon selecting farmers who are actually cultivating the land and farmers from whom others seek guidance as the two important criteria (Rank I and II respectively) to be considered for the selection of trainees. The remaining criteria presented were ranked more or less in a similar way by both the categories of respondents. In the combined ranking farmers who are actually cultivating the land, farmers from whom others seek guidance, farmers who have the spirit to assist others, farmers who are interested in training and based on the type of training were the

Table 49. Perception of Agricultural Scientists and Extension Personnel about the criteria of selection of trainees for farmers' training

Sl. No.	Criteria preferred	Agrl. Scientists			Extension Personnel			Combined mean		
		Score	Index	Rank	Score	Index	Rank	Score	Index	Rank
1.	Farmers who are respected by villagers	52	54.17	X	41	51.25	X	93	52.84	X
2.	Farmers from whom others seek guidance	84	87.50	II	64	80.00	II	148	84.09	II
3.	Farmers who have resources to adopt	68	70.83	VIII	46	57.50	VII	114	64.77	VIII
4.	Farmers whose example is followed by others	70	72.92	VI	51	63.75	VI	121	68.75	VI
5.	Farmers who are interested in training	74	77.08	IV	61	76.25	III	135	76.70	IV
6.	Farmers who have the spirit to assist others	81	84.38	III	59	73.75	IV	140	79.55	III
7.	Farmers who are actually cultivating the land	86	89.58	I	70	87.50	I	156	88.64	I
8.	Agricultural labourers who are engaged in farm operations	53	55.21	IX	44	55.00	IX	97	55.11	IX
9.	Based on type of training	71	73.96	V	54	67.50	V	125	71.00	V
10.	Based on the crops cultivated	69	71.88	VII	49	61.25	VII	118	67.05	VII

criteria ranked from first to fifth respectively in the descending order. It is obvious that a farmer who is actually cultivating his land if trained on improved cultivation practices of crops will utilize the knowledge and skill for improving his farm production and thereby increasing his income. Hence it came out as the foremost criterion for the selection of trainees. Farmers from whom others seek guidance and those farmers who have the spirit to assist others if imparted training on scientific agriculture, other farmers having contact with them and those who did not participate in training will also get the benefit of training. This finding is in tune with the results obtained by Sidnu and Patel (1968). Genuine interest in attending the training programme is also an important criterion to be considered, because, a farmer who is not interested in training if participate in it the passive attendance will spoil the objective of farmers' training. Type of training is another criterion (ranked fifth) to be taken into account while farmers are selected for training.

7.2. Selection of trainers

Perception of agricultural scientists and extension personnel about the qualifications of the trainers are presented in Table 50.

Table 50. Perception of Agricultural Scientists and Extension Personnel about the criteria of selection of trainers for farmers training

Sl. No.	Criteria preferred	Agrl. Scientists			Extn. Personnel			Combined mean		
		Score	Index	Rank	Score	Index	Rank	Score	Index	Rank
1.	Basic degree in agriculture	79	82.29	IV	70	87.50	III	149	84.66	III
2.	Field experience	91	94.79	I	76	95.00	I	167	94.89	I
3.	Knowledge of local agricultural problems	86	89.58	II	72	90.00	II	158	89.77	II
4.	Knowledge of local language	77	80.21	V	65	81.25	V	142	80.68	V
5.	Communication ability	82	85.42	III	67	83.75	IV	149	84.66	III
6.	Ability in choosing the appropriate teaching method	70	72.92	VII	55	68.75	VII	125	71.02	VI
7.	Expertise in using audio-visual aids	64	66.67	VIII	52	65.00	VIII	116	65.91	VIII
8.	Specialization in the subject matter area	72	75.00	VI	60	75.00	VI	132	75.00	VII
9.	Undergone training in training methodology	53	55.21	IX	46	52.50	IX	99	56.25	IX

Table 50 presents the perception of agricultural scientists and extension personnel about the criteria to be considered for selection of trainers for farmers' training. There was perfect agreement among agricultural scientists and extension personnel with regard to the selection of trainers having field experience and knowledge of local problems as the 1st and 2nd criterion respectively. When the perception of the two categories of respondents were taken into consideration independently it could be seen that there was consensus about selection of trainers having knowledge of local languages (V), specialization in the subject matter (VI), ability in choosing appropriate teaching methods (VII), expertise in using audio-visual aids (VIII) and persons undergone training in training methodology (IX). For the remaining two criteria viz. basic degree in agriculture and communication ability, there was near consensus. Therefore, the criteria ranked as I, II, V, VI, VII, VIII and IX by the individual group of respondents could be accepted in that order. Basic degree in agriculture and communication ability secured equal rank (III) in the combined ranking. Needless to state that all the qualities/qualifications of the trainers as presented in Table 50 will be complimentary to each other.

7.3. Evaluation of training

Perception of agricultural scientists and extension

personnel about the phase and aspects of evaluation of farmers training is presented in Tables 51 and 52 respectively.

A quick glance of Table 51 indicate that both agricultural scientists and extension personnel were of opinion to evaluate the trainees both prior and after the training course. The pre-training evaluation will help to know the trainers the knowledge level of the trainees in the subject matter area and based on this, emphasis can be given to the area in which the farmers are weak. Post training evaluation will help to assess the knowledge gained by the trainees due to the training. On the basis of post training evaluation necessary modifications could also be made in the future training courses.

With regard to the different aspects of training content and methodology to be evaluated in a farmers' training programme (Table 52) subject matter coverage of training, feedback from trainees, improvement in skill and knowledge of trainees were ranked as the first four aspects in the descending order. Use of audio visual aids in training and facilities for skill practice by the trainees were placed fifth and sixth in the combined ranking. Planning of the training, teaching methodology followed, timeliness of training and opinion of trainees about physical

Table 51. Perception of Agricultural Scientists and Extension Personnel about the phase of evaluation of farmers' training

Sl. No.	Phase to be evaluated	Agrl. Scientists			Extn. Personnel			Combined mean		
		Score	Index	Rank	Score	Index	Rank	Score	Index	Rank
1.	Only post-training evaluation	44	45.83	III	41	51.25	III	85	48.30	III
2.	Pre and post-training evaluation	89	92.71	I	75	93.75	I	164	93.18	I
3.	Concurrent evaluation	79	82.29	II	55	68.75	II	134	76.14	II

Table 52. Perception of Agricultural Scientists and Extension Personnel about the aspects of evaluation of farmers' training

Aspect to be evaluated	Agrl. Scientists			Extn. Personnel			Combined mean		
	Score	Index	Rank	Score	Index	Rank	Score	Index	Rank
1. Planning of the training	74	77.08	VII	57	71.25	VII	131	74.48	VII
2. Subject matter coverage of training	88	91.67	I	75	93.75	I	163	92.61	I
3. Improvement in knowledge of trainees	80	83.33	IV	65	81.25	IV	145	82.39	IV
4. Improvement in skill of trainees	83	86.46	III	68	85.00	III	151	85.80	III
5. Facilities for skill practice for trainees	75	78.13	VI	62	77.50	V	137	77.84	VI
6. Timeliness of training	69	71.88	IX	48	60.00	IX	117	66.48	IX
7. Physical facilities provided	67	69.79	X	44	55.00	X	111	63.07	X
8. Teaching methodology followed	70	72.92	VIII	53	66.25	VIII	123	69.89	VIII
9. Feedback from the trainees	86	89.58	II	71	88.75	II	157	89.20	II
10. Use of audio-visual aids in training	79	82.29	V	60	75.00	VI	139	78.98	V

facilities provided were emerged at the lower levels of ranking (Rank VII to X). The subject matter area covered in the training programme will reveal the extent of exposure of participants to the farm practices being dealt with. Effective coverage of the relevant subject matter areas will definitely have a bearing in the success of a training programme. Hence this aspect should be thought of first, while evaluating a farmers' training programme.

Feedback obtained from trainees of a training programme is of paramount importance since it will tell about the gain in knowledge due to training and it provides a basis for further improvements of the training programme. The response of the participants towards the various aspects of training programme, thus forms a major aspect to be evaluated in a farmers' training programme.

Improvement of skill and knowledge of trainees in the desired direction can be considered as the reflection of success achieved or objective fulfilled as far as a farmers' training programme is concerned. Hence they also form an important aspect of evaluation of a farmers' training programme.

Use of audio-visual aids in training and facilities for skill practice for trainees are other aspects to be considered for evaluation. Planning of the training,

teaching methodology followed, timeliness of training and physical facilities provided were emerged to be of lesser significance in evaluating a farmers' training programme.

7.4. Follow-up of training

Data on the perception of agricultural scientists and extension personnel about the follow-up of farmers' training programme is presented in Table 53.

It is obvious from the Table 53 that agricultural scientists and extension personnel perceive the methods of follow-up of training more or less in a similar way.

Contact with trained farmer through field visit by the trainer, identifying the constraints in putting into practice the knowledge and skill in field situation by the trained farmer and arranging further training based on the trained farmers' felt problems were emerged as the first, second and third methods in the order of their importance and perceived by both agricultural scientists and extension personnel. Inviting the trained farmers to the training institution to discuss their problems and arranging for the supply of inputs to the trained farmers were ranked fourth and fifth by the agricultural scientists while they appeared in the reverse order of importance in the case of extension personnel. Sending relevant literature on farming to the trained farmers and contact with trained farmers

Table 53. Perception of Agricultural Scientists and Extension Personnel about the follow-up of farmers' training

Method of follow-up	Agrl. Scientists			Extn. Personnel			Combined mean		
	Score	Index	Rank	Score	Index	Rank	Score	Index	Rank
Contact with trained farmers through correspondence	50	52.08	VII	49	61.25	VII	99	56.25	VII
Contact with trained farmers through field visit by the trainees	90	93.75	I	70	87.50	I	160	90.91	I
Identifying the constraints if any, in putting into practice the knowledge and skill in field situation by the trained farmer	80	83.33	II	66	82.50	II	146	82.95	II
Sending relevant literature on farming to the trained farmer	54	56.25	VI	50	62.50	VI	104	59.09	VI
Arranging for the availability of inputs to the trained farmer	63	65.63	V	60	75.00	IV	123	69.89	V
Arranging further training programmes based on the trained farmers' felt problems	76	79.17	III	64	80.00	III	140	79.55	III
Inviting the trained farmers to the training institution to discuss their problems	70	72.97	IV	57	71.25	V	127	72.16	IV

through correspondence were emerged a sixth and seventh in the order of their importance.

Field visits made by trainer to contact the trained farmer is a very effective follow-up activity because it provides opportunities to the trainer to assess the extent of adoption of the technologies taught in the training and constraints, if any, in putting into practice the knowledge and skill in field situation by the trained farmers. This finding is in agreement with the report of Pao (1975) where he had suggested field visit as an important method of follow-up of farmers' training.

Arranging further training programmes based on the trained farmers' felt problems is also important because technologies are fast changing and therefore farmers should be again exposed to the latest technologies.

Other methods of follow-up like arranging for inputs, sending literature and correspondence with trained farmers will have administrative constraints and therefore secured the lowest ranks.

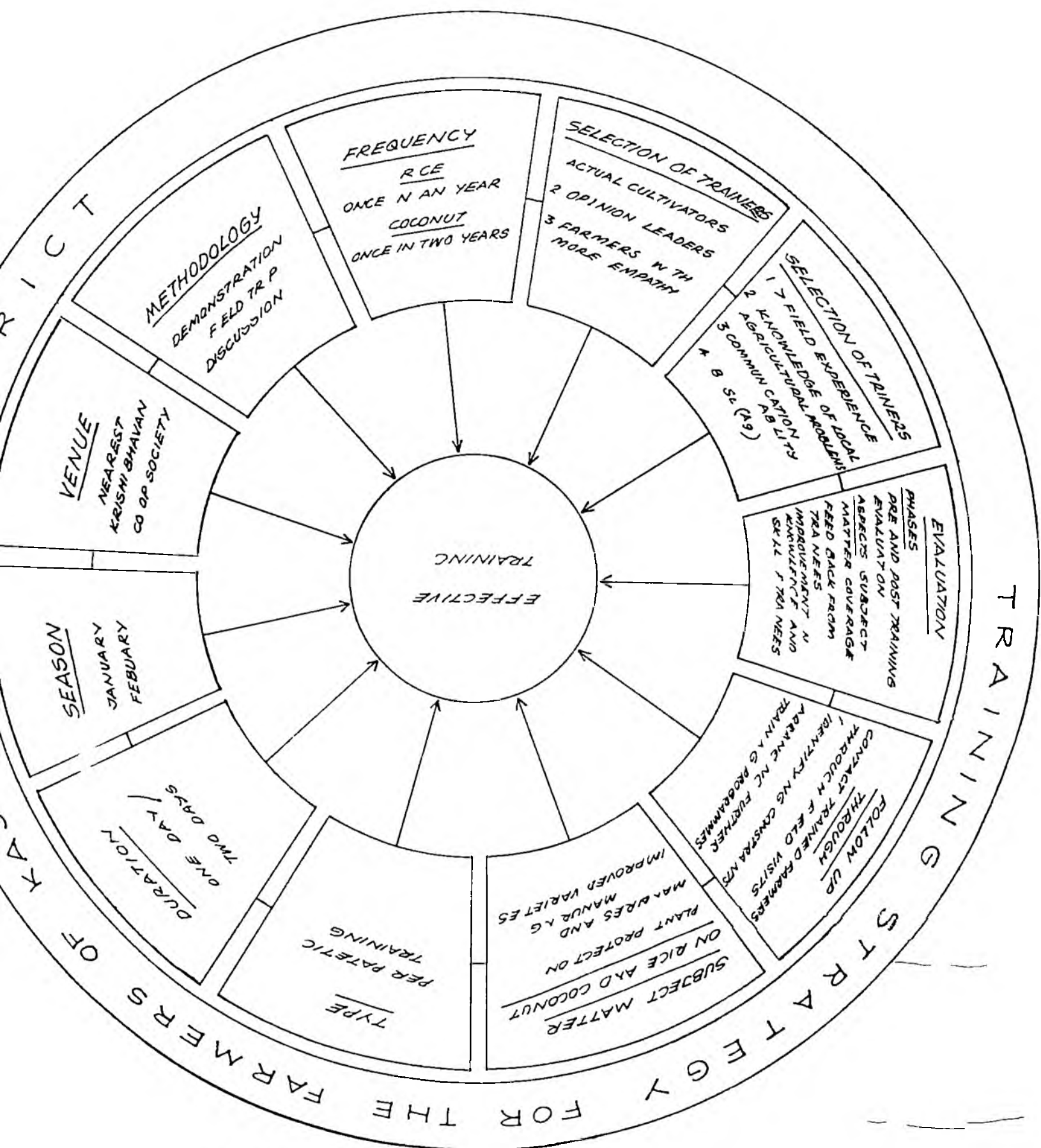


FIG 4 TRAINING STRATEGY FOR THE FARMERS OF KASARAGOD

8. Training strategy for the farmers of Kasaragod district

In the light of the results of the study a training strategy has been evolved for the farmers of Kasaragod by incorporating the training needs of farmers, preferences of farmers regarding type, duration, season, venue, methodology and frequency of training, perception of agricultural scientists and extension personnel about the subject matter, selection of trainees, selection of trainers, evaluation and follow-up of training programme. The same has been diagrammatically represented in Fig. 4.

I. Subject matter areas of training

1) Improved cultivation practices of rice

A) Major items - a) Plant protection b) manures and manuring and c) improved varieties

B) Sub items

a) Plant protection - preparation of spray solution, selection of pesticides/fungicides for controlling pests/diseases of rice and precautions in handling the chemicals.

b) Manure and manuring - Dose, method and time of application of chemical fertilizers, choosing suitable type of

fertilizers and methods of increasing fertilizer use efficiency.

- c) Improved varieties - High Yielding Varieties of rice and their suitability to seasons and regions.

11) Improved cultivation practices of coconut

- A) Major items - a) Manures and manuring b) Plant protection and c) improved varieties

B) Sub items

- a) Manures and manuring - Dose, method and time of application of chemical fertilizer, choosing suitable type of fertilizers.
- b) Plant protection - Preparation of spray solution, selection of suitable pesticides/fungicides for controlling pests/diseases of coconut and precautions in handling chemicals.
- c) Improved varieties - High yielding varieties of coconut and their suitability to different management conditions.

- II. Type of training - Peripatetic training
- III. Duration of training - Short duration - one or two days
- IV. Season of training - January, February
- V. Venue of training - Nearest Krishibhavan/Farmers'
Co-operative Society
- VI. Methodology of training - Demonstrations
Field trips and discussions
- VII. Frequency of training -
- 1) For rice cultivation - once in an year
 - 11) For coconut cultivation - once in two years
- VIII. Selection of trainees based on
- 1) Farmers who are actually cultivating the land
 - 11) Farmers from whom others seek guidance (opinion leaders)
 - 111) Farmers who have the spirit to assist others (empathy)
 - 1v) Farmers who are interested in training
- IX. Selection of trainers based on
- 1) Field experience
 - 11) Knowledge of local agricultural problems
 - 111) Communication ability
 - 1v) Basic degree in agriculture

X. Evaluation of training

- 1) Phase to be evaluated - Pre and post training evaluation
- 11) Aspects to be evaluated -
 - A) Subject matter coverage of training
 - B) Feedback from the trainees
 - C) Improvement in skill of the trainees
 - D) Improvement in knowledge of the trainees

XI. Follow-up of training - Methods

- 1) Contact with trained farmer through field visits by the trainer
- 11) Identifying the constraints, if any, in putting into practice the knowledge and skill in field situation by the trained farmer
- 111) Arranging further training programmes based on the trained farmers' felt problems

SUMMARY

CHAPTEP V

SUMMARY

Kasaragod is the northern most district of Kerala. The mainstay of the people of this district is agriculture. The major crops of the district include rice, coconut, arecanut, cashew and pepper. The productivity of major crops such as rice and coconut are below the State average. Lack of sufficient knowledge about the improved cultivation practices can be one of the probable reasons for the low productivity of crops. Need based training on improved agricultural technology has become an accepted strategy in the transfer of technology process of these practices. One of the pre-requisites for organising any systematic training programme, is to assess the training needs of farmers with respect to various aspects of improved cultivation of the major crops. Besides this, the preferences for the type of training, duration, season, venue, methodology and frequency of training programmes as perceived by the target farmers will also be worth analysing to make the training effective. The subject matter requirements of farmers, the procedure to be followed in the selection of trainees and trainers, evaluation and follow-up of farmers' training as perceived by the scientists and extension personnel will only add to the quality of the training programme. But no attempt has been made

so far, in the district to evolve a training strategy, taking the above factors into cognizance. Hence, the present study was taken up with the following specific objectives:

1. To analyse the knowledge of the farmers of Kasaragod district about the improved cultivation practices of major crops of the area.
2. To find out the association between the knowledge of farmers and their selected independent variables.
3. To analyse the training needs of the farmers of Kasaragod district about the improved cultivation practices of major crops of the area.
4. To study the preferences of the farmers of Kasaragod district about type, duration, season, venue, methodology and frequency of training programmes to be organised.
5. To study the perception of agricultural scientists and extension personnel about the subject matter, selection of trainees, selection of trainers, evaluation and follow-up of the training programmes to be organised for the farmers of Kasaragod district.
6. To develop a training strategy of the farmers of Kasaragod district.

The study was conducted in Kasaragod district. Ten panchayats were randomly selected from the district and 10 farmers who cultivate rice and coconut were randomly selected from each panchayat. Thus a total of 100 farmers were included in the study.

One scientist from KVK Manjeswar, 11 scientists from CPCRI, Kasaragod and 12 scientists from RARS, Piliicode were purposively selected. Thus, a total of 24 agricultural scientists were selected.

The 20 Agricultural Officers of the Krishibhavans working in the district constituted another category of respondents.

Based on the review of literature and discussions with experts of the Department of Agricultural Extension, Agronomy and Horticulture of the College of Agriculture, Vellayani, age, education, farming experience, farm size, social participation, mass media exposure and contact with and knowledge about extension agency were selected as the independent variables.

Knowledge of farmers was measured by using a teacher made knowledge test. A large number of items with respect to the improved cultivation practices of rice and coconut were prepared in consultation with the subject matter

specialists and extension personnel of the area under study. While preparing the items, care was taken to see that all the major improved cultivation practices of rice and coconut were included. Fifty four items were finally selected of which 28 items were on improved cultivation practices of rice and 26 on improved cultivation practices of coconut. The collected items were converted into multiple choice questions and administered to the selected farmer respondents.

Based on the knowledge level, the respondent-farmers were categorised into low, medium and high groups. Categorisation was also done based on the knowledge of farmers on the items of two crops separately. Knowledge indices were computed for the major and sub-items of cultivation practices of the two crops. Based on the index the knowledge level of the respondents on the major items and sub-items of improved cultivation practices of rice and coconut were ranked.

The training needs of farmers on the improved cultivation practices of rice and coconut were analysed. Training need index (TNI) was calculated based on the scores secured for each subject matter area against the maximum possible scores that could be obtained, expressed as percentage. INI was calculated for the two crops, for the major and sub-items of cultivation practices of the two

crops.

The preferences of farmers about type, duration, season, venue, methodology and frequency of the training programmes were studied using schedules prepared for the purpose. The perception of agricultural scientists and extension personnel about the subject matter, selection of trainees, selection of trainers, evaluation and follow-up of farmers' training was also studied using pre-tested questionnaires.

Data were collected from farmers with the help of a structured and pre tested interview schedule. A questionnaire was employed to elicit responses from agricultural scientists and extension personnel who were met individually.

Percentage analysis, correlation analysis and path analysis were employed to analyse the data collected. Based on the training needs of farmers, their preferences about type, duration, season, venue, methodology and frequency of training, and also based on the perception of agricultural scientists and extension personnel about subject matter, selection of trainees, selection of trainers, evaluation and follow-up of farmers' training programmes, a training strategy for the farmers of Kasaragod district was developed (Fig. 4).

The salient results of the study are presented hereunder.

1. More than half (57%) of the farmers were having medium level of knowledge on improved cultivation practices while 24 per cent low knowledge level and 19 per cent high knowledge level.

Sixty three per cent of the farmers possessed medium knowledge level on improved cultivation practices of rice, 24 per cent possessed low knowledge level and 13 per cent possessed high knowledge level. In the case of coconut cultivation the distribution of farmers was 61 per cent, 22 per cent and 17 per cent of medium, low and high knowledge levels respectively.

Based on knowledge index (KI) the major items of improved rice cultivation were ranked in the descending order of magnitude of planting and aftercare (KI 72.33), nursery practices (KI 51.33), water management (KI 49.33), weed control (KI 49.00), manures and manuring (KI 45.80), improved varieties (KI 44.50) and plant protection (KI 39.67). Similarly the major items of improved cultivation practices of coconut were in the order of planting and aftercare (KI 63.40), nursery practices (KI 61.29), multiple cropping in coconut garden (KI 56.00), improved varieties (KI 54.00), plant protection (KI 53.00) and manures and manuring (KI 47.33).

2. The independent variables education and mass media exposures showed positive and significant relationship with the knowledge of farmers. Farm size, social participation and contact with and knowledge about extension agency established positive but non significant association with knowledge of farmers. Age and farming experience of farmers were negatively but non significantly related to their knowledge.
3. Maximum direct effect towards knowledge was due to the variable age followed by farming experience and education. Age had the maximum indirect effect on knowledge followed by mass media exposure and social participation. The crucial variables through which the indirect effects were channelled were age, education, farming experience and mass media exposure.
4. About two third of the farmers (66%) perceived medium level of training needs, while 15 per cent perceived low level of training needs and 19 per cent perceived high level of training needs on improved cultivation practices.

According to the training needs of farmers on improved cultivation practices of rice, they were categorised as low (11%), medium (70%) and high (19%). Corresponding distribution of farmers with respect to improved

coconut cultivation practices was 16 per cent (Low), 65 per cent (Medium) and 19 per cent (High).

Based on the training need index the major items of cultivation of rice on which farmers needed training were in the order of plant protection (TNI 88.13), manures and manuring (TNI 86.44), improved varieties (TNI 77.50), weed control (TNI 67.00), nursery practices (TNI 64.42), water management (TNI 56.50), and planting and after care (TNI 53.83).

In the major item improved varieties, high yielding varieties of rice (TNI 80.50) and suitability of varieties to the seasons and regions (TNI 74.50) were the sub-items ranked first and second respectively. Sub-items under the nursery practices of rice cultivation perceived as needed to undergo training by farmers were in the order of age of seedlings (TNI 75.75), seed rate for different methods of planting (TNI 75.50), preparation of nursery beds (TNI 67.75), seed treatment (TNI 65.00), water management in the nursery (TNI 55.00) and manuring in nursery (TNI 47.50).

The training needs of farmers on the sub-items under planting and after care in rice were in the order of spacing recommendations (TNI 74.75), transplanting (TNI 49.75) and land preparation (TNI 37.00). The training needs of farmers

on the sub-items under water management of rice were in the order of critical stages of water requirement for rice (TNI 66.75), quantity of water required during various stages of crop growth (TNI 56.50) and water level required during transplanting (TNI 48.75). As regards to the weed control in rice the sub-items perceived by farmers in the order of importance were dose, method and time of weedicide application (TNI 84.75) and various types of weeds in paddy field (TNI 49.25). Training needs of farmers with respect to the sub-items of manures and manuring in rice in the order of importance were dose, method, and time of application of chemical fertilizers (TNI 90.75), choosing suitable type of fertilizers (TNI 89.50), methods of increasing fertilizer use efficiency (TNI 86.25) and organic manure application (TNI 67.00).

The training needs of farmers on the sub-items under plant protection in rice in the order of importance were preparation of spray solution (TNI 95.00), suitable pesticides/fungicides for controlling pests/diseases of rice (TNI 91.50), precautions in handling chemicals (TNI 89.25) and identification of various pests and diseases of rice (TNI 76.00).

The major items of coconut cultivation on which farmers require training were in the order of manures and manuring (TNI 84.33), plant protection (TNI 83.75), improved

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varieties (TNI 83.12), multiple cropping in coconut garden (TNI 67.66), planting and after care (TNI 52.50) and nursery practices (TNI 52.03).

Training needs of farmers with respect to the sub-items under improved varieties were in the order of high yielding varieties of coconut (TNI 87.75) followed by suitability of high yielding varieties of coconut to different situations (TNI 78.50). Sub-items coming under nursery practices of coconut in which farmers needed training in the order of importance were selection of seedlings (TNI 83.00), selection of mother palms (TNI 81.25), harvesting and selection of seednuts (TNI 44.50), irrigation in nursery (TNI 44.25), plant protection in nursery (TNI 43.25), storage of seednuts (TNI 41.00), preparation of nursery beds (TNI 40.25) and sowing of seednuts (TNI 38.75). Under the major item planting and after care the sub-items ranked in the order of importance were spacing recommendation (TNI 76.25), husk burial in coconut garden (TNI 69.00), irrigation of coconut palms (TNI 42.75), preparation of pits for planting (TNI 38.50) and time of planting (TNI 36.00).

Farmers' training needs on the sub-items under manures and manuring of coconut cultivation in the order of importance were, dose, method and time of application of chemical fertilizers (TNI 97.50), choosing suitable type

of fertilizers (TNI 86.00) and organic manure application (TNI 69.50).

Farmers' training needs on the sub-items under plant protection of coconut in the order of importance were, preparation of spray solution (TNI 93.75), suitable pesticides/fungicides for controlling the pests/diseases of coconut (TNI 93.25), precautions in handling chemicals (TNI 86.00), identification of various pests and diseases of coconut (TNI 74.25) and biological control of coconut caterpillar (TNI 71.50).

Sub-items coming under multiple cropping in coconut gardens, ranked in the order of preference by the farmers were intercropping with coconut (TNI 69.50), multi-tier cropping in coconut garden (TNI 68.00) and mixed cropping in coconut garden (TNI 65.50).

5. With respect to the farmers' preference on type of training, peripatetic training (PI 92.75) was the most preferred type, followed by institutional training (PI 75.75), Farm school on AIR (PI 68.00) and correspondence course of KAU (PI 56.25). Farmers' preference about the duration of training were in the order of two days' training (PI 95.00), one day training (PI 91.25), 3-7 days (PI 42.00), 2-3 weeks (PI 35.25), one month (PI 26.75) and more than one month (PI 25.75). Majority of the farmers (66%) preferred January

as the suitable season for training. February was placed second, 21 per cent preferring it. March, November and December were the other months preferred by four, three and six per cent of farmers respectively.

Regarding the venue of training, nearest Krishibhavan was the most preferred venue by the farmers (PI 88.50). Next in the order of preference were farmers' co-operative society (PI 75.00), farm/residence of a progressive farmer (PI 60.25), CPCRI, Kasaragod (PI 50.25), RARS, Pilicode (PI 48.25) and KVK, Manjeswar (PI 33.50).

Among the methodologies of training the most preferred methodology by farmers was demonstration (PI 93.25). Field trip was placed second (PI 88.75), followed by discussion (PI 76.75), exhibition (PI 57.25), campaign (PI 40.75), lecture (PI 37.75) and filmshow (PI 32.50).

Farmers preferred to undergo training programmes on rice cultivation in the order of preference of once in an year (64%), once in six months (16%), once in two years (12%), once in three years (6%), and once in six years (2%). In the case of coconut cultivation farmers' preference for the frequency of training was in the order of once in two years (65%), once in an year (14%), once in six months (11%), once in three years (8%) and once in six years (2%).

6. The major items of improved rice cultivation on which farmers required training as perceived by agricultural scientists and extension personnel in the order of importance were, plant protection (index 85.37), manures and manuring (index 83.24), improved varieties (index 82.95), water management (index 77.65), nursery practices (index 74.77), planting and after care (index 70.64) and weed control (index 63.07).

With respect to the major items of improved coconut cultivation on which farmers needed training as perceived by agricultural scientists and extension personnel in the order of importance were, manures and manuring (index 81.82), plant protection (index 72.72), improved varieties (index 71.02), multiple cropping in coconut garden (index 62.95), planting and after care (index 65.34), and nursery practices (index 61.29).

Farmers who are actually cultivating the land (index 88.64), farmers from whom others seek guidance (index 84.09), farmers who have the spirit to assist others (index 79.55) and farmers who are interested in training (index 76.70) were rated by the agricultural scientists and extension personnel as the important criteria to be considered for selection of trainees for farmers training.

Regarding the selection of trainers, field experience (index 94.89), knowledge of local agricultural problems

(index 89.77) and basic degree in agriculture and communication ability (both having index of 84.66) were perceived by agricultural scientists and extension personnel as the important criteria to be considered.

Regarding the phase of evaluation of farmers' training, pre and post-training evaluation was considered as most important (index 93.18) by the agricultural scientists and extension personnel followed by concurrent evaluation (index 76.14) and only post-training evaluation (index 48.30). Subject matter coverage of training (index 92.61), feed back from trainees (index 89.20), improvement in skill of trainees (index 85.80), and improvement in knowledge of trainees (index 82.39) were considered to be important aspects of farmers' training to be evaluated according to agricultural scientists and extension personnel.

Contact with trained farmer through field visit by the trainers (index 90.91), identifying the constraints, if any, in putting into practice the knowledge and skill in field situation by the trained farmer (index 82.95), and arranging further training programmes based on the trained farmers' felt problems (index 79.55) were the important methods of follow-up of farmers' training programmes, as perceived by the agricultural scientists and extension personnel.

Implications of the study

1. While organising training programmes for the farmers of Kasaragod district, subject matter areas like plant protection, manures and manuring and improved varieties of crops are to be given due emphasis.
2. Peripatetic type of training programmes are to be preferred to the other types since farmers have shown greater preference to it in comparison to others.
3. Duration of the training should be two days or one day which are mostly preferred by farmers.
4. Training programmes may be conducted preferably during January or February.
5. The nearest Krishibhavan and farmers' co-operative society are to be given priority while selecting venue for farmers' training programmes.
6. Demonstration, field trip and discussion are the preferable methodologies of training.
7. With regards to the frequency of training once in an year can be the ideal frequency for training on rice and once in two years for coconut cultivation.
8. While selecting farmers for training programmes, farmers who is actually cultivating the land, from whom others

seek guidance, who have the spirit to assist others and who are having genuine interest in attending the training programmes may be given priority.

9. Field experience, knowledge of local agricultural problems, communication ability and basic degree in agriculture are the criteria to be considered while selecting trainers for farmers' training.
10. Pre and post training evaluation should be conducted in a farmers' training programme for assessing the efficiency of the training. Subject matter coverage of training, feedback from trainees, improvement in skill and knowledge of trainees are the important aspects to be considered for the evaluation of farmers' training.
11. Contact with trained farmer through field visits by the trainer, identifying the constraints, if any, in putting into practice the knowledge and skill in field situation by the trained farmer and arranging further training programmes based on the trained farmers' felt problems are the methods of follow-up of farmers' training programmes that can be adopted.

Suggestions for future research

1. In this study, training needs of farmers were analysed with reference to rice and coconut only. Studies can be taken up on other important crops of the area also.

2. A study can be conducted to assess the impact of training programmes conducted by the Krishi Vigyan Kendra functioning in the district.
3. In this study only the knowledge component of farmers was measured. Studies relating to the existing levels of skill on various farm operations of farmers and their needs with respect to the performance of improved farming techniques can be conducted.
4. Action research studies evaluating the efficiency of various training methods could also be undertaken.

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APPENDICES

APPENDIX I

Production and productivity of major crops of
Kasaragod district

Sl. No.	Crop	Area under cultivation (Hectare)	Production (tonnes)	Yield per hectare	Yield per hectare State average
1.	Paddy	21280	32862	1.54 t/ha	1.708 t/ha
2.	Coconut	34472	149 million nuts	4322 nuts	4493 nuts
3.	Cashewnut	27415	16673	0.608 t/ha	0.664 t/ha
4.	Arecanut	8907	1669 million nuts	187380 nuts/ha	182959 nuts/ha
5.	Pepper	8526	2627	0.308 t/ha	0.235 t/ha
6.	Tobacco	435	824	1.876 t/ha	1.875 t/ha

Source: Department of Economics and Statistics (1988)

APPENDIX II

TRAINING STRATEGY FOR THE FARMERS OF KASARAGOD DISTRICT

Interview schedule Respondent No.

Name of Farmer:

Address :

1. Age: Years:
2. Education: Illiterate/can read only/can read and write/
primary school/Middle school/High school/
Collegiate & above
3. Farming experience: _____ Years.
4. Farm size: Wet land-ha.
 Dry land-ha.
 Garden land - ha.
 Total: -ha.
5. Social participation:

	Member	Office bearer
1. Karshika vikasana samithi		
2. Farmer's club		
3. Co-operative society		
4. Farmers organisa- tions (affiliated to political parties)		
5. Others (specify)		

6. Mass media exposure:

Mass media	Daily	2-6 day a week	Once a week	Once a fort- night	Rare- ly	Never
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1. How often do
you hear
radio?

2. How often do
you read or
listen to
newspapers,
magazines,
leaflets and
bulletins

How often do you read magazines, leaflets and bulletins	Regularly	Occasionally	Never
---	-----------	--------------	-------

How many films did you see last year?	More than 6	4-6	1-3	None
--	----------------	-----	-----	------

5. How many exhibitions
did you see last
year?

6. How many field days
or other agri. exten-
sion functions did
you attend last year?

7. Contact with and knowledge of Extension agency:

Extension workers	Knowledge about extension worker			Frequency of contact		
	Often	Occa- siona- lly	Ne- ver	Not known	Have heard	Seen
1. Agrl. demon- strators						
2. Agrl. Officers						
3. Block level officers of Agrl. depart- ment						
4. Any other - specify						

FARMER'S PREFERENCES ABOUT TRAINING

1. Type of training:

Type of training	Very much prefe- rred	Much prefe- rred	Prefe- rred	Least prefe- rred
1. Institutional training				
2. Peripatetic training				
3. Farm school on AIR				
4. Correspondence course of KAU				
5. Others (Specify)				

<u>2. Duration of training</u>	Very much prefe- rred	Much pre- ferred	Pre- ferred	Least prefe- rred
1. One day				
2. Two days				
3. 3-7 days				
4. 2-3 weeks				
5. 1 month				
6. More than 1 month				

3. Period/season of training:

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

1. Paddy
 2. Coconut
-

4. Venue of training:

	Very much prefe- rred	Much prefe- rred	Prefe- rred	Least prefe- rred
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1. Farm/residence of a progressive farmer
 2. Nearest Krishibhavan
 3. RARS, Pilicode
 4. CPCRI, Kasaragod
 5. KVK, Manjeswar
 6. Farmer's Co-op. Society
 7. Others (specify)
-

5. Methodology of training:

Methodology of training	Very much prefe- rred	Much prefe- rred	Prefe- rred	Least prefe- rred
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1. Lecture
 2. Discussion
 3. Field trip
 4. Demonstration
 5. Campaign
 6. Filmshow
 7. Exhibition
-

6. Frequency of training:

ONCE IN						
1M	3M	6M	1 Yr.	2 Yrs.	3 Yrs.	4 Yrs. 6 Yrs. Life-time

Paddy

Coconut

7. Subject matter to be included in the training programme:

Sl. No.	Subject matter areas	Very much needed	Much needed	Needed	Least needed
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I. PADDY CULTIVATION

I. Improved varieties:-

1. High yielding varieties of rice
11. Suitability of varieties to the season and region

II. Nursery practices:-

1. Seedrate for different methods of planting
 11. Seed treatment
 111. Preparation of nursery beds
 - 1v. Manuring in the nursery
 - v. Water management in the nursery
 - vi. Age of seedling
-

Sl. No.	Subject matter areas	Very much needed	Much needed	Needed	Least needed
---------	----------------------	------------------	-------------	--------	--------------

III. Planting and aftercare:-

1. Land preparation
11. Transplanting
111. Spacing recommendations

IV. Water management

1. Water level required during transplanting
11. Quantity of water required during various stages of crop growth
111. Critical stages of water requirement for paddy

V. Weed control

1. Various types of weeds in paddy field
11. Dose, method and time of weedicide application

VI. Manures and manuring:-

1. Organic manure application
 11. Dose, method and time of chemical fertilizers
 111. Choosing suitable type of fertilizers
 - 1v. Methods of increasing fertilizer use efficiency
-

Sl. No.	Subject matter areas	Very much needed	Much needed	Needed	Least needed
---------	----------------------	------------------	-------------	--------	--------------

VII. Plant protection:-

1. Identification of various pests and diseases of rice.
11. Suitable pesticides/ fungicides for controlling pests/ diseases of rice
111. Preparation of spray solution
- 1v. Precautions in handling chemicals

2. COCONUT CULTIVATION

I. Improved varieties of coconut:-

1. Various hybrid varieties of coconut
11. Suitability of hybrids to different situations

II. Nursery practices:-

1. Selection of mother palms
11. Harvesting and selection of seednuts
111. Storage of seednuts
- 1v. Preparation of nursery beds
- v. Sowing of seednuts

Sl. No.	Subject matter areas	Very much needed	Much needed	Needed	Least needed
	v1. Plant protection in nursery				
	v11. Irrigation in nursery				
	v111. Selection of seedlings				
	III. <u>Planting and after-care:-</u>				
	i. Preparation of pits for planting				
	11. Spacing recommendation				
	111. Time of planting				
	1v. Irrigation of coconut palms				
	v. Husk burial in coconut garden				
	IV. <u>Manures and Manuring:-</u>				
	1. Organic manure application				
	11. Dose, method and time of application of chemical fertilizers				
	111. Choosing suitable type of fertilizers				

Sl. No.	Subject matter areas	Very much needed	Much needed	Needed	Least needed
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V. Plant protection:-

1. Identification of various pests and diseases of coconut
11. Suitable pesticides/ fungicides for controlling the pests/ diseases of coconut
111. Preparation of spray colution
- 1v. Biological control of coconut caterpillar
- v. Precautions of handling chemicals

VI. Multiple cropping in coconut garden

1. Intercropping with coconut
 11. Multi-tier cropping in coconut garden
 111. Mixed cropping in coconut garden
-

APPENDIX III

ITEMS SELECTED FOR THE KNOWLEDGE TEST TO ASSESS THE
KNOWLEDGE OF FARMERS ON THE IMPROVED CULTIVATION PRACTICES
OF RICE AND COCONUT

A. Paddy:

- I. 1. Which of the following rice varieties is a short duration High yielding variety? (Triveni, Mushoori, Kayama)
2. Which of the following varieties is best suited for upland cultivation? (IR-8, Jaya, PTB-28)
- II. 1. What is the seedrate required for transplanting HYV of rice in one acre? (5-10 kg, 20-30 kg, 50-75 kg)
2. Which is the chemical used for pretreatment of seeds? (Agrosan GN, Sevin, Rogor)
3. What is the optimum area required for preparing the nursery for a mainfield of one acre? (5 cents, 10 cents, 15 cents)
4. If nitrogen deficiency symptoms are observed in the nursery urea is to be applied--days prior to pulling. (2, 15, 10).
5. In wet nursery the depth of water to be maintained from 5th day onward is --- d.m. (20, 5, 10).
6. Optimum age for short duration variety seedlings for transplanting is (18 days, 25 days, 30 days).
- III. 1. At the time of final ploughing lime is applied to paddy field to -- (reduce acidity, reduce alkalinity, to destroy weeds).

2. What is the optimum number of seedlings per hill when transplanted -- (1-2, 2-3, 7-8).
 3. What is the optimum spacing for transplanting, HY short duration variety in virippu season (10x5, 15x10, 25x25).
- IV.
1. How much water is to be retained during transplanting? (completely drained, about 1", completely flooded).
 2. At the maximum fillering stage the level of water should be (2cm, 3cm, 5cm).
 3. How many days before harvesting the field should be drained of water? (10, 13, 15).
- V.
1. Which of the following is a common weed in paddy field? (cyperus, sida, eupatorium).
 2. Which of the following is a weedicide? (Metacid, Hinosan, Delchlor).
 3. What is the recommended quantity of Machete required for one acre of rice? (1 kg, 8 kg, 15 kg).
- VI.
1. What is the recommended quantity of FYM for one acre paddy? ($\frac{1}{2}$ t, 2 t, 5 t).
 2. What is the recommended quantity of urea required for one acre, HY short duration paddy? (30 kg, 60 kg, 100 kg).
 3. Which is the nutrient present in urea? (N, P, K).
 4. How should we apply phosphatic fertilizer? (as basal, top dressing, split doses).

5. For increasing fertilizer use efficiency urea is mixed with neem cake in the ratio (1:5, 5:1, 2:5).

- VII. 1. Which of the following is a major pest of rice? (Rhinoceros beetle, leaf roller, white fly).
2. Blast disease of rice is due to (insect, fungus, nutrient deficiency).
 3. What is Ekalux? (Insecticide, fungicide, weedicide).
 4. What is Bavistin? (Fungicide, Insecticide, Weedicide).
 5. What is the recommended quantity of Ekalux for spraying one acre? (1 lit, 50 ML, 75 ML).
 6. Spraying for best result should be done (on a bright sunny day, on a rainy day, when there is wind).

B. COCONUT:

- I. 1. Which of the following is a hybrid variety of coconut? (ICT, T X D, Dwarf green).
 2. Hybrid varieties of coconut require --- management conditions for better performance (average, good).
- II. 1. Selected mother palms should have an yield potential of (not less than 80 nuts/year, not less than 50 nuts/yr, not less than 40 nuts/yr).
2. Age of selected seednuts should be --- (6 months, 8 months, above 11 months).
 3. Harvested seednuts should be stored for a minimum period of --- days (30, 45, 60).

4. Width of the seedbed should be (1 M, 1.5 M, 2 M).
 5. Seednuts should be sown --- cm apart within rows in seedbeds (30 cm, 25 cm, 20 cm).
 6. Termites attack in nursery can be controlled by applying (BHC, Bordeaux mixture, Dithane).
 7. Optimum girth at the collar of a good seedling (9-2 mold) should be (10 cm, 10-12 cm, 15 cm).
- III.
1. Size of pit for planting is (1 M^3 , 2 M^3 , 50 cm^3)
 2. General recommendation of spacing for coconut is (5 M, 7.5 M, 9 M).
 3. In general planting of coconut is done during (Jan-Feb, May-Jun, Nov-Dec).
 4. What should be the frequency of irrigation for young palms upto 2 years age during summer? (Once in 4 days, once in 8 days, once in 12 days).
 5. The purpose of husk burial in coconut garden is (weed control, moisture conservation).
- IV.
1. The quantity of OM to be applied per palm for the first three years is (5 kg, 10 kg, 15 kg).
 2. Quantity of urea to be applied for an irrigated adult Hybrid palm per year is -- (2.17 kg , 10 kg, 5 kg).
 3. The chemical fertilizers are to be applied --- in away from the trunk in circular trenches. (1.8 M, 1 M, 2 M).

- V. 1. Which of the following is a major pest of coconut?
(Rhinoceros beetle, leaf roller, white fly).
2. Which of the following is a serious disease of coconut? (stem bleeding, blast, leaf spot).
3. Which of the following is the fungicide commonly used to spray against budrot disease? (Bordeaux mixture, Bavistin, Ekalux).
4. Quantity of CuSO_4 required for preparing 10 litres of 1% BM is (100 g, 200 g, 10 g).
5. Against which of the coconut pests biological control measures are commonly practised? (Coconut caterpillar, root grub, red palm weevil).
6. Spraying of chemicals to coconut palms should be done (after 11 am, before 11 am).
- VII. 1. What is the minimum age of coconut palms between which an intercrop can be planted (15 yrs, 20 yrs, 25 yrs).
2. An example of multi-tier crop combination in coconut garden is (coconut-pepper-cocoa-pineapple, coconut-rice-pineapple, cocoa, coconut-nutmeg-clove).
3. A fodder crop recommended as intercrop in coconut garden (Guinea grass, para grass, Congo signal).

APPENDIX IV

QUESTIONNAIRE TO STUDY THE PERCEPTION OF AGRICULTURAL SCIENTISTS AND EXTENSION PERSONNEL ABOUT FARMERS' TRAINING.

RESPONDENT NO. NAME: ADDRESS:

TRAINING STRATEGY FOR THE FARMERS OF KASARAGOD DISTRICT

1. Subject matter to be included in the training programme.

Below are given subject matter areas (Major and sub items) of improved cultivation practices of rice and coconut, which are to be considered for including in the farmers training programme. Please indicate the degree of importance of each item by giving a tick (✓) mark in the appropriate column.

Sl. No.	Subject matter areas	Very much Impt.	Much Impt.	Impt.	Least Impt.
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I. PADDY CULTIVATION

I. Improved varieties:-

1. High yielding varieties of rice
- ii. Suitability of varieties to the season and region

II. Nursery practices:-

1. Seedrate for different methods
- ii. Seed treatment
- iii. Preparation of nursery beds

Sl. No.	Subject matter areas	Very much Impt.	Much Impt.	Impt.	Least Impt.
iv.	Manuring in the nursery				
v.	Water management in the nursery				
vi.	Age of seedling				
III.	<u>Planting and after-care:-</u>				
1.	Land preparation				
11.	Transplanting				
111.	Spacing recommendations				
IV.	<u>Water management</u>				
1.	Water level required during transplanting				
11.	Quantity of water required during various stages of crop growth				
111.	Critical stages of water requirement for paddy				
V.	<u>Weed control</u>				
1.	Various types of weeds in paddy field				
11.	Dose, method and time of weedicide application				

Sl. No.	Subject matter areas	Very much Impt.	Much Impt.	Impt.	Least Impt.
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IV. Manures and manuring:-

1. Organic manure application
11. Dose, methods and time of chemical fertilizers
111. Choosing suitable type of fertilizers
- 1v. Methods of increasing fertilizer use efficiency

V. Plant protection:-

1. Identification of various pests and diseases of rice
11. Suitable pesticides/fungicides for controlling pests/diseases of rice
111. Preparation of spray solution
- 1v. Precautions in handling chemicals

2. COCONUT CULTIVATION

I. Improved varieties of coconut:-

1. Various hybrid varieties of coconut
11. Suitability of hybrids to different situations

Sl. No.	Subject matter areas	Very much Impt.	Much Impt.	Impt.	Least Impt.
11.	Dose, method and time of application of chemical fertilizers				
111.	Choosing suitable type of fertilizers				
	<u>V. Plant protection:-</u>				
	1. Identification of various pests and diseases of coconut				
11.	Suitable pesticides/ fungicides for controlling the pests/ diseases of coconut				
111.	Preparation of spray solution				
iv.	Biological control of coconut caterpillar				
v.	Precautions of handling chemicals				
	<u>VI. Multiple cropping in coconut garden</u>				
1.	Intercropping in coconut garden				
11.	Multi-tier cropping in coconut garden				
111.	Mixed cropping in coconut garden				

Sl. No.	Subject matter areas	Very much Impt.	Much Impt.	Impt.	Least Impt.
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II. Nursery practices:-

1. Selection of mother palms
- ii. Harvesting and selection of seednuts
- iii. Storage of seednuts
- iv. Preparation of nursery beds
- v. Sowing of seednuts
- vi. Plant protection in nursery
- vii. Irrigation in nursery
- viii. Selection of seedlings.

III. Planting and after-care:-

1. Preparation of pits for planting
- ii. Spacing recommendation
- iii. Time of planting
- iv. Irrigation of coconut palms
- v. Husk burial in coconut garden

IV. Manures and Manuring:-

1. Organic manure application

II. SELECTION OF TRAINEES

Below is given a list of criteria to be considered while selecting farmers for training. Please indicate the degree of importance of each item by giving a tick (✓) mark against each in the appropriate column.

Criteria to be considered for selection	Very much Impt.	Much Impt.	Impt.	Least preferred
1. Farmers who are respected by villagers				
2. Farmers from whom others seek guidance				
3. Farmers who have resources to adopt				
4. Farmers whose example is followed by others				
5. Farmers who are interested in training				
6. Farmers who have the spirit to assist others				
7. Farmers who are actually cultivating land				
8. Farm labourers who are engaged in farm operations				
9. Based on the type of training				
10. Based on the crops cultivated				
11. Others, if any (specify)				

III. SELECTION OF TRAINERS

Below is given a list of criteria to be considered while selecting trainers for farmers training. Kindly indicate the degree of importance of each item by giving a tick mark (✓) against each in the appropriate column.

Criteria considered for selection	Very much Impt.	Much Impt.	Impt.	Least Impt.
1. Basic degree in agriculture				
2. Field experience				
3. Knowledge of local agricultural problems				
4. Knowledge of local language				
5. Communication ability				
6. Ability in choosing the appropriate teaching methods				
7. Expertise in using audio-visual aids				
8. Specialization in the subject matter area				
9. Undergone training in training methodology				
10. Any other (Please specify)				

IV. Evaluation of Training

A. Below is given the phase of farmers training to be evaluated. Please indicate the degree of importance of each phase by giving a tick mark (✓) against each in the appropriate column.

Phase to be evaluated	Very much Impt.	Much Impt.	Impt.	Least Impt.
1. Only post-training evaluation				
2. Pre and Post-training evaluation				
3. Concurrent evalua- tion				

B. Following is a list of aspects of farmer's training to be evaluated. The importance of each of the aspects given may kindly be rated by giving a tick mark (✓) against each in the appropriate column.

Aspect to be evaluated	Very much Impt.	Much Impt.	Impt.	Least Impt.
1. Planning of the training				
2. Subject matter coverage of the training				
3. Improvement in knowledge of the trainees				
4. Improvement in skill of the trainees				
5. Facilities for skill practice for the trainees				

Aspect to be evaluated	Very much Impt.	Much Impt.	Impt.	Least Impt.
6. Timeliness of training				
7. Physical facilities provided				
8. Teaching methodology followed				
9. Feed back from the trainees				
10. Use of audio-visual aids in training				
11. Any other (Please specify)				

V. Follow-up of Training

Below is given a list of methods of follow-up of farmer's training. Kindly indicate the degree of importance of each method by giving a tick mark (✓) against each in the appropriate column.

Method of follow-up	Very much Impt.	Much Impt.	Impt.	Least Impt.
1. Contact with trained farmer through letter correspondence				
2. Contact with trained farmer through field visit by the trainer				

Method of follow-up	Very much Impt.	Much Impt.	Impt.	Least Impt.
3. Identifying the constraints, if any, in putting into practice, the knowledge and skill in field situation by the trained farmer				
4. Sending relevant literature on farming to the trained farmer				
5. Maintaining the details about farmers who attended the training programmes				
6. Arranging for the availability of inputs to the trained farmer				
7. Arranging further training programmes based on the trained farmer's felt problems				
8. Inviting the trained farmers to the training institution to discuss their problems				
9. Any other (Please specify)				

TRAINING STRATEGY FOR THE FARMERS OF KASARAGOD DISTRICT

**BY
THAMBAN C.**

**ABSTRACT OF A THESIS
submitted in partial fulfilment of the
requirement for the degree
MASTER OF SCIENCE IN AGRICULTURE
Faculty of Agriculture
Kerala Agricultural University**

**Department of Agricultural Extension
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1990

ABSTRACT

A research study was undertaken to evolve a training strategy for the farmers of Kasaragod district, Kerala. A sample of 100 farmers were selected from ten panchayats of the district. Besides, 24 agricultural scientists and 20 extension personnel were also selected as respondents. A structured pre-tested interview schedule was used to elicit responses from farmers. A questionnaire was used in the case of agricultural scientists and extension personnel. The salient findings of the study are as follows:

Majority (57%) of the farmers were having medium knowledge level on improved cultivation practices of rice and coconut while 24 per cent had low and 19 per cent had high knowledge level. The farmers had appreciable knowledge about planting and after care while that regarding plant protection was poor in the case of rice. With regard to coconut, the farmers' knowledge on planting and after care was of the high order while that of manures and manuring was dismal. The farmers expressed maximum training needs on plant protection of rice, while in the case of coconut it was on manures and manuring. Most of the farmers preferred peripatetic type of training, preferably during January and February at the nearest Krishibhavan. Demonstration was the most preferred training method. The

agricultural scientists and extension personnel opined that the farmers should be trained on plant protection, manures and manuring and improved varieties with respect to rice and coconut cultivation. Actual cultivators, farmers from whom others seek guidance and farmers who have the spirit to assist others were the important criteria to be ^{considered} while selecting trainees for farmers' training as opined by agricultural scientists and extension personnel. Regarding the selection of trainers, they perceived field experience, knowledge of local agricultural problems and communication ability ^{as} on the important criteria to be considered. Pre and post-training evaluation was considered as the most important phase by them.

Subject matter coverage, feed back from trainees and improvement in skill and knowledge of trainees were the important aspects of farmers' training to be evaluated, they opined. Contact with trained farmers through field visits, by the trainers, identifying the constraints in putting into practice the knowledge and skill in field situation by the trained farmers and arranging further training based on the trained farmers' felt problems were the important methods of follow-up of farmers' training, as suggested by the agricultural scientists and extension personnel.

Based on the results of the study, a training strategy was prepared for the farmers of the Kasaragod district.