TRAINING NEEDS IN AGRICULTURE OF 'IRULAS' OF 'ATTAPPADY'

By

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THESIS

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1988

DECLARATION

I hereby declare that this thesis, entitled "Training Needs in Agriculture of 'Irulas' of Attappady" 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 State.

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Vellayani,
28-4-1988.

CERTIFICATE

Certified that this thesis, entitled "Training Needs in Agriculture of 'Irulas' of Attappady" is a record of research work done independently by Shri. K. Kanaga Sabapathi under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship to him.

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CHAPTER I

INTRODUCTION

In India, agricultural research was reoriented after independence to achieve the objective of accelerated agricultural development. As a result of scientific breakthroughs achieved in agriculture, newer farming technologies are now available at a much faster rate than what was a decade back. Although a lot of sophisticated know-how is available on our research farms for augmenting production, most of the farmers are still practising primitive fashions in agriculture. This is primarily because there is considerable gap between the technology developed on the research farms and its application on the farmers' fields. As society develops, it becomes imperative that the technology necessary for development should be passed on to the new generations. It is not only the new technology but the capacity of the user to understand and assimilate the technology which matters much. Therefore, the transfer of evolved technology is an equally important task for boosting production and in turn the prosperity of the nation. Transfer of technology is a function of many factors, training being the crucial one. Training has become a

critical input in view of growing sophistication in agricultural technology. The training component is repeatedly being perceived and suggested by many researchers with greater stress.

Johnson (1964) believed that if the Indian farmers were activated to use modern techniques through training, food deficiency in India would be wiped out. Singh and Gill (1970) suggested that if the training is to be more effective, the training needs of the farmers have to be established prior to starting the training programmes so that the subject matter of the training could be determined on the basis of needs of the farmer-trainees. So, identification of training needs becomes not only the first step but also the prime step in the formulation of training programmes.

This study is aimed at assessing the training needs in agriculture of 'Irulas' of Attappady. Indian economy is characterised by the problems of low per capita income, large number of small holdings, very high incidence of mass poverty and a sizeable percentage of tribal population.

Irula is a tribal community in Kerala. According

to Madan (1967) a tribe descends from biological, mythical or legendary ancestor, it occupies a defined territory, it has a common history, the tribe speaks a common dialect and it is invariably endogamous.

According to Gosami (1984), the anthropologist's conception of a tribe as a small culturally distinct and economically self sufficient community with a language of its own and an autonomous political organisation is utterly inappropriate to the so called tribal groups in India. For the Indian Scientists, tribes are those which are included in the Scheduled Tribe list in the constitution of India. The 414 tribes listed following the 1956 Presidential Notification differ greatly in their habits, modes of production, degree of isolation, degree of acculturation, level of development, social customs, beliefs and so on.

In India, tribal people form the decisively poorest section of the society. A comparative analysis of tribal and non-tribal population will reveal the lower placement of tribals in the society. So deliberate attempts should be made to raise the level of living of the tribals in India.

According to the census of 1981, 48 tribal

communities are available in Kerala State, out of which 35 are Scheduled Tribes and the rest are denotified tribal communities. 'Irulas' are one among the notified tribal communities available in the Attappady valley of Kerala State. The tribal tract of Attappady is in a desolate and desperate condition with regard to development. It is spread over an area of 750 sq. kms. at the north eastern corner of Mannarghat taluk in Palghat district of Kerala State. The eastern portion of Attappady valley remains to be the rain shadow belt. North east monsoon alone brings reasonable showers. Yet, had the north east monsoon also cursed these places, it might have by now become the forest desert in western ghats. The socio-economic condition of the inhabitants in this valley is miserably backward. The valley is grief stricken due to many man made and natural calamities. Many an attempt has been made at the Government level for uplifting the tribal life in the valley. Because of the poor showers received in the eastern tract of Attappady, dryland agriculture is practised by the inhabitants of this area. Jowar, Pulses, Groundnut, Ragi, Maize, Chamai and to some extent Paddy are cultivated in this valley.

'Irulas', 'Kurumbas' and 'Mudugas' are the three dominant tribes available in this tract. Out of these three tribes, 'Irulas' are numerically dominant. 'Irulas' are primary engaged in agriculture. They are pitch dark in colour and living in huts erected close to one another. Their language is colloquial Tamil. They are living in 99 hamlets. Each hamlet is controlled and co-ordinated by a well structured administrative body with 'Moopan' as the headman. 'Mannukkaran' is the key person associated with agricultural activities and he advises the farmers regarding the agricultural operations.

Need for the study

Due to the poor literacy percentage, poverty, backwardness and poor exposure to the modern agricultural technologies, the tribal people are still practising primitive agriculture. Their standard of living can be improved only by increasing the economic returns from agriculture, for which modernisation of agriculture is necessary. Modern techniques can be introduced in agriculture only through the formulation of proper training programmes. For formulating appropriate training programmes, the assessment of training needs is inevitable.

The crops cultivated by 'Irulas' are typical and are mostly different from that of other parts of Kerala. Considering the location of the hamlets of 'Irulas', which are mostly interior, suitable strategies for training such people in crops they cultivate are to be developed. In addition, the perception of the tribal people about their preferences to the venues of training, duration, season etc. are to be ascertained. So a detailed study of the training needs of 'Irulas' in the context of the peculiar tracts where they live is needed. Hence a study on the assessment of training needs in agriculture of 'Irulas' was carried out with the following specific objectives.

1. To identify the training needs in agriculture of 'Irulas' of Attappady.

2. To determine the level of knowledge of 'Irulas' on the cultivation of important crops in Attappady.

3. To assess the type, duration, season, venue and frequency of the trainings required as perceived by the 'Irulas'.

4. To find out the association between the training needs and the socio-psychological characteristics of 'Irulas'.

Scope of the study

The study is planned to determine the training needs of Irulas in agriculture, through the use of objective techniques. The research study by determining the training needs of 'Irulas' will provide realistic basis for planning the outlines of courses and their contents. It would also help the training agencies to know the type, duration, season, venue, frequency and method of trainings the tribal farmers preferred most. This study may play a crucial role in helping the development agencies to formulate effective and feasible training programmes for the particular tribal people.

Limitation 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) programme. Hence it was not possible for the researcher to explore the area in greater depth and in a more comprehensive manner. The study was confined only to 'Irulas' of Attappady and therefore, the results cannot be generalised for other tribals in Kerala or other parts of India, as the crops grown, cultivation practices etc. differ greatly from that of other parts. In spite of the limitations,

it is strongly believed that the findings of the study can be of much use in preparing the frame for the training programmes to 'Irulas' of Attappady.

Presentation of the study

The presentation of the remaining chapters of the thesis is as follows:

Chapter II deals with the definition of concepts and the theoretical orientation.

Chapter III deals with the methodology in which location of the study, sampling procedure, selection and empirical measurement of variables, techniques of data collection and statistical methods used are explained.

In Chapter IV the results and discussions are presented.

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

For any research study, perusal of the available literature is absolutely essential to have a vivid picture of the study undertaken. Review of literature helps to understand the given field thoroughly. This helps in summarising what is already known regarding the problem under investigation. This chapter explains the theoretical perspective adopted for this study and tries to link it with the relevant findings of other research studies on this subject.

The reviews of the past studies have been presented under the following headings.

1. Concept of training.
2. Importance of farmers' training and training needs.
3. Influence of training on the knowledge level of the respondents.
4. Subject matter areas in training.
5. Type, duration, season, venue, frequency and method of trainings.
6. Association between training needs and the socio-psychological characteristics.

1. Concept of 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.

Flippo (1961) described training as the act of increasing the knowledge and skill of an employee for doing a particular job.

Taylor (1961) elaborated the meaning of training as the means to bring about a continuous improvement in the quality of work performed by the staff and the individual. It should equip the leaders with necessary knowledge, skills or abilities and attitude to perform his job.

Hall (1962) gave the definition of the employee's training as the process of aiding employee to gain effectiveness in their present or future work, in the development of appropriate habits of thought and action, skills, knowledge and activities.

Sharma and Pisharody (1962) stated that training goes much further than teaching. It induces knowledge,

development of skills and habits.

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

Bennis (1969) conceived training for organization development as a small group effort designed to make its participants more aware of themselves and of the group process.

Rao (1969) defined farmers training as an intensive learning activity for a group of selected farmers, assisted by competent trainers to understand and practise the skills required in the adoption of new technology, at a place where appropriate facilities exist and at a time and duration considered suitable by the farmers.

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 the welfare and that of the company.

Mathur (1972) explained farmers' training as a process of providing instructions to the primary procedures 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 inputs.

Peter (1972) observed that training is a learning job which 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 proefficient in doing some jobs.

Combs and Ahamed (1974) envisaged 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 one side and develops skill among 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 i.e., better performance and, secondly the transfer of learning in the work situation directed to greater organizational effectiveness.

2. Importance of farmers' training and training needs

a) Importance of farmers' training

A number of reports underline the importance of farmers' training in augmenting agricultural production and rural development.

Charles and Charles (1938) explained the importance of

farmers' training in their Handbook 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 farmer 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 being 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 60 million farm families in India is possible only through intensive training of farmers both in the package of practices and in specialised techniques of production.

Johnson (1967) reported that farmers participated in training programme to learn something about why and how things happen, to know the basic principles of fertilizers, animal feeds etc. He further found 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 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 Training (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 improvement.

Srinivas 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.

Ahamed (1981) reported that trained farmers exhibited high extent of adoption when compared to the non-trained farmers. He also observed that the training programme enhances the level of the knowledge of the participants which might help in the rational decision making on the part of the farmers.

b) Training Need

'Training need is the difference between what is' and 'what ought to be'. It is really the discrepancy between the actual estimated requirements and the estimated or measured attributes of the people incorporated judiciously in the training objectives.

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

$$TNO = \frac{Osij}{Msij} \times 100$$

where Osij - sum of observed scores of j^{th} individual

Msij - Maximum scores attributable to the item rated by the j^{th} individual

Anantharaman (1977) in his study on training needs of small and marginal farmers measured the training needs on each major subject matter area and the specific items by the use of a three point rating scale with points much needed, somewhat needed and not at all needed with scores of 2, 1 and '0' respectively. The frequencies of each response categories were found out and the respective frequencies were multiplied by the score allotted to it. 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 Ahamad (1981), Chandrasekaran (1981), Savarimuthu (1981), Arumugam (1983) and Alexander (1985) in their studies on effectiveness of training programmes for farmers, the training needs of small tea growers, training needs of farm women, training needs of sericulturists and training needs of small rubber growers respectively.

Miller (1979) had given a formula for the identification

of training need.

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 Sadhu (1981) worked out the training needs of prospective poultry farmers of Punjab by using the following formula

Training need score = 1 - Average knowledge score

where

$$\text{The average knowledge score} = \frac{\text{Total knowledge score}}{\text{No. of questions x No. of respondents}}$$

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

Training need score : 1 - Obtained knowledge and skill score

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

i) 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 is the first choice

CII is the second choice

CIII is the third choice

ii) Index of Concensus (Cq)

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

where Cq - consenses index

F - Mean frequencies of persons preferring each category

C' - Number of categories with frequencies exceeding F

F' - Category frequency larger than $\bar{F}$.

3. Influence of training on the knowledge level of the respondents

English and English (1958) defined knowledge as the body of understood information possessed by an individual or

to help themselves attain economic and social improvement.

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by a culture. Knowledge is knowing what to do next.

Programme Evaluation Organisation (1960) evaluated the impact of three days 'Gram Sahayaks' training camps in Rajasthan. All Gram-Sahayaks and non-gram-sahayaks had knowledge of seed treatment, improved seeds, sowing and weeding. But higher proportion of gram-sahayaks had greater knowledge of all improved practices, than the non gram-sahayaks.

Johnson (1967) recommended that teaching a group of farmers with common interest in the organised classes was the most effective method of disseminating new knowledge on dairy practices.

Singh (1967) while evaluating the Panchayat Raj Training Programme observed that the participants liked such programmes which gave them an opportunity to learn more about agricultural innovations. He reported that the farmers in Bihar could gain more knowledge about improved agricultural practices even during their short stay in the training institute.

Programme Evaluation Organisation (1968) observed that the farmers of the package villages had more knowledge in the chemical plant protection measures (52.80 per cent)

than the farmers of the non-package villages (26.27 per cent). This was due to the more educational activities conducted in the package villages.

Evaluation Committee on Farmers Training and Education Programme (1969) reported that specific information and details regarding the cultivation of High Yielding Varieties of crops, particularly those relating to the sophisticated inputs were obtained by farmers through farmers training programme.

Karamathulla et al. (1969) reported that in the case of majority of the farmers who visited a national demonstration on hybrid jowar, the level of knowledge was enhanced upto 31.29 per cent in respect of seeds and sowing, fertilizers and plant protection as a result of training.

Rao and Dudhani (1969) observed appreciable increase in the knowledge level of trainees as a result of exposure to training situations. They further concluded that the gain in knowledge was more about the general characteristics of the high yielding varieties of paddy.

According to Verma and Rao (1969) farmers' training increased the knowledge of participants about farm practices over and above those in the control villages.

Khuspe (1970) found that all the groups of farmers who underwent different training programmes gained higher knowledge than those who did not receive any training. The training had significant impact on the knowledge of farmers. Owing to training there was significant change in their attitude towards HYVP. Similar findings were reported by Paul (1970), Gopal (1974), Kateppa (1975), Singh (1977), Singh and Sagar (1977), Ahamed (1981) and Meera (1981).

Salvi (1970) stated that most of the farmers gained knowledge about the latest scientific techniques after their training at the Farmers' Training Centre. The trained farmers disseminated information gained to other farmers about high yielding varieties, manures and fertilizers and water management.

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

Bhilegaonkar (1976) concluded that a little over half of the farmer respondents had medium level of knowledge

with reference to fertilizer use. The study also revealed that 21.05, 22.22 and 18.41 per cent of big, medium and small farmers respectively belonged to the high, medium and small farmers respectively were in low level category.

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. The knowledge test revealed that 50 per cent of small farmers and 60 per cent of marginal farmers were in below average category while the rest were in above average category.

Mayani and Sheth (1978) reported that the knowledge level of farmers on plant protection was poor while it was fair in agronomic and manurial practices.

Chandrasekaran (1981) found that untrained tea growers had a medium level of knowledge (63.48 per cent). High level of knowledge was possessed by 13.28 per cent and low level of knowledge by 23.24 per cent of the small tea growers. He also concluded that the untrained small tea growers lacked knowledge on the subject matter areas: plant protection (61.73 per cent) followed by pruning, care of young plants, manures and manuring after cultivation,

soil conservation, planting and propagation.

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

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

4. Subject matter areas of training

Anonymous (1967) suggested that the syllabus of training for farmer should include technical content, economics and risks in using package of practices, credits and supply of inputs.

Gill (1970) revealed that respondents felt that they received adequate training in all aspects except seed bed preparation, ploughing operations and proper harvesting to prevent shedding.

Sastry (1970) emphasised that plant protection, manures and fertilizers, improved seeds and agronomic practices of high yielding varieties were the subjects for which training was needed by the farmers.

Sharma (1970) stated that the knowledge and skills of farmers needed to be increased in subjects like plant protection, manures and fertilizers and improved seeds.

Singh and Sohal (1970) stated that all training should be practice oriented and the trainees should receive opportunities to master farming skills through practices in the use of inputs namely seeds, fertilizers, insecticides, farm implements and machinery such as seed cum fertilizer drills, spraying pumps, dusters, electric engine, diesel engine and feeds.

Sohal and Yanakal (1970) felt that the top priority should be given to agronomy, farm machinery and plant protection in farmers training programme.

Extension Education Institute (1971) recommended that training in plant protection was the foremost need of farmers followed by training in the use of fertilizers and new seed varieties. The priority ranks in the order of major subject matter areas were: plant protection

equipments, irrigation and water management, dairy farming, poultry farming, soil conservation and farm mechanisation.

Sathyanarayana and Bhaskaram (1971) stated that knowledge and skills of farmers needed to be improved in the subject matter areas such as determination of fertilizer and their application, soil sampling, use of plant protection chemicals and appliances, identification of pests and diseases, soil and water management, chemical control of weeds and rat control.

Singh (1971) located the areas: (i) knowledge about new inputs such as seeds, fertilizers, pesticides, farm implements and machineries, (ii) new techniques of production such as time and techniques of planting and harvesting, depth of sowing, irrigation, drainage, protection of crop, weeding, time of fertilizer application, crop rotation and soil conservation.

Patil and Kole (1972) steted that farmers needed training in the following order of preference. Use of fertilizers, pests and diseases, their control measures, soil analysis, preparatory cultivation, nutrient components of fertilizers, horticulture and irrigation methods.

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 programmes. The different specific items representing all the major topics in which farmers preferred training were: i) identification of various pests, ii) identification of various pesticides, iii) preparation of different concentration of pesticides, iv) calculating unit cost of fertilizers and doses, v) improved varieties in grain crops, vi) identification of improved fertilizers, vii) schedule of different plant protection chemicals, viii) reclamation of soil salinity and alkalinity, ix) pre-treatment of seeds and x) knowledge of horticultural crops.

Jha (1974) identified the training needs of small farmers in the following order of importance: Plant protection, high yielding varieties of paddy, fertilizer application, seed treatment, storage, credit, nursery raising, transplanting, irrigation, water management and marketing.

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.

Singh and Verma (1976) found that a high percentage of small and marginal farmers demanded intensive training in plant protection, manures, 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) inferred that both the small and marginal farmers commonly needed training in: characteristics of good seeds, pre treatment of seeds, calculation of unit cost of fertilizers, application of fertilizers according to soil condition, optimum doses of fertilizers, schedule of different plant protection chemicals, reclamation of acidity and alkalinity of soils, methods of soil conservation, marketing of produce through formal institutions, nutrient value of different vegetables and fruits, crop rotation, maintenance of

milch animals and calf rearing in that ordered sequence.

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

Gangaram (1979) concluded that some of the important sub areas in which farmers wanted training include knowledge about high yielding varieties, implements used in land preparation techniques of seed treatment, time of sowing, nursery beds, seed rate, age of seedling 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.

Chandrasekaran (1981) reported that the untrained tea growers did not differ much in the degree of knowledge and skill oriented training. Out of the thirteen major areas under knowledge oriented training, the small tea

growers identified seven areas namely plant protection, credits, pruning, care of young plants, manures and manuring, after cultivation and soil conservation for inclusion in the training programme. The skill oriented training was felt necessary in areas such as plant protection, pruning, care of young plants, soil conservation, manures and manuring, after cultivation and planting.

Savarimuthu (1981) found out that farm women needed intensive training on the method of sowing (65.83 per cent) followed by transplanting (64.17 per cent), weeding (63.13 per cent), manuring (62.50 per cent), nutrition and live stock keeping (60.83 per cent each). The last area in which the training was sought was irrigation and marketing.

Alexander (1985) concluded that areas in which small rubber growers preferred to undergo training both in the knowledge and skill aspects are in the order of plant protection, soil and leaf sampling, and planting and maintenance.

Mathiazhagan and Singh (1986) reported that areas in which banana growers needed training were manures and fertilizers, propagation, pruning, desuckering, plant

protection, improved varieties of banana and storage.

5. Type, duration, season, venue, frequency and method of trainings

a) Types of training

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

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

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 was for correspondence course. Others such as institutional training programme and farm school on AIR were placed as second and third respectively.

Chandrasekaran (1981) reported that about half of the trained small tea growers (53.12 per cent) preferred to have peripatetic training followed by institutional training (45.36 per cent). Savarimuthu (1981) also reported a similar result.

Alexander (1985) reported that nearly four-fifths (80.91 per cent) of small rubber growers preferred peripatetic or on-farm training while 19.09 per cent of the growers preferred institutional training.

b) Duration of the training

Sathyanarayana 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.

Vittal and Bhaskaram (1971) reported that a day's duration was preferred by majority of farmers.

Roy (1972) reported that first rank was given to one day training camp by farmer-trainees and two days training camp by trainers.

Jha (1974) confirmed Roy's report who also stated that most of the small farmers preferred only one or two days of camp.

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

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

Anantharaman (1977) reported that small and marginal farmers suggested two days' peripatetic training while nearly one-fifth favoured single day's. 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.

Chandrasekaran (1981) stated that nearly fifty 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 farm women

(70.83 per cent) preferred 2-3 days' training programme. The result is in confirmity with the finding of Alexander (1985).

c) 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. This is in concurrence with the findings of Singh (1967), Sastry (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 about general agriculture.

According to Srivastava (1968) April-May and September-October were the best period for training for Khariff 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 (1970) stated that the period April-May and December-January were the most preferred

and convenient time for any training. October-November was the last favoured period.

Sohal and Yanakal (1970) stated that training should be organised in the months of January-February and March. In the study on the training needs of banana growers, Mathiazhagan (1978) came out with a similar finding.

Vittal and Bhaskaram (1971) concluded that the training before the commencement of every cropping season was highly preferred by the farmers. Similar results were reported by Roy (1972), Jha (1974), Pandey and Singh (1976) and Anantharaman (1977).

Chandrasekaran (1981) reported that one fourth (26.50 per cent) 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 the trainings.

d) Venue of the training

Gill (1970) emphasised that most of the respondents

preferred the 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 farms. Ahamed (1981), Savarimuthu (1981), Arumugam (1983) and Alexander (1985) reported that the 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.

e) 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. 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. Only one study regarding the perception of farmers to the frequency of training could be reviewed. However it is essential to study the opinion of the tribal farmers about the frequency of the training they prefer.

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

f) Method 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 purposes 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.

Sastry (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 training methods formed the key to effective communication with the participant in any training situation. Demonstration, field trip and discussion were preferred by more 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.

Singh and Verma (1976) stated that farmers' training programme could be made effective if the field trials were shown to the trainees. They further reported that the training could 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 trip, 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 an important method followed by film shows.

Chandrasekaran (1981) reported that majority of the trained small tea growers felt that demonstration was the best suited training method followed by discussion and lectures. The study is in line with the findings of Ramakrishna (1980) who studied the impact of KVK on trained farmers, and Alexander (1985) who studied the training needs of small rubber growers.

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 + demonstration, and group discussion + field trip were considered most important by the sericulturists.

6. Association between training needs and socio-psychological characters

a) Age:-

Steward (1972) observed significant difference between

those young farmer members of vocational agricultural classes and young farmers who did not attend the vocationel agriculture classes.

Thangeraju (1979) while studying the extent of adoption of sericulture technology by trained and untrained farmers observed that there was no significant difference between trained and untrained farmers with reapect to their age.

Katarya (1980) inferred that more than 90 per cent farmers were young and middle aged group in KVK.

Ramakrishna (1980) stated that majority of the trained farmers were found to be young and middle aged.

Chandrasekaran (1981) reported that age had shown significant negative relationship with the training need of small farmers.

Arumugam (1983) and Alexander (1985) stated that age was found to have significant positive relationship with the training needs of small farmers.

b) Farm size

Ramakrishna (1974) observed that majority of the members of the Farmers' Discussion Groups were small land holders.

The size of holding was found to be not related to the adoption behaviour of farmers.

Chandrakandan (1975) found that farm size influenced gain of knowledge, retention of knowledge and symbolic adoption.

Thomaskutty (1975) also reported that there was no significant difference between trained and untrained farmers regarding the size of land holdings. Thangaraju (1979) also came out with a similar finding.

Singh (1977) reported that majority of the trained farmers had medium land holdings in all the five districts under study.

Mathiazhagan (1978) observed positive and significant relationship between farm size and training needs of farmers.

Alexander (1985) reported that there was no significant association between farm size and the training needs of small rubber growers.

c) Annual income

The study of Patel et al. (1968) revealed that majority of the trained farmers belonged to higher economic status than untrained farmers.

Menon and Basha (1974) found that majority (64 per cent) of the conveners of Farmers' Discussion Groups who underwent training belonged to the medium economic status groups.

Ramakrishna (1974) reported that majority of the members of Farmers' Discussion Groups were having low income.

Thangaraju (1979) while comparing the characteristics of trained and untrained sericulturists found that there was no significant difference between the trained and untrained groups with respect to their annual income.

Ramakrishna (1980) stated that majority of the trained farmers received low and medium level income.

Chandrasekaran (1981) reported that economic status had shown significant negative relationship with the training needs of small tea growers. It was confirmed by Alexander (1985).

Arumugam (1983) stated that economic status was found to have significant positive relationship with the training needs of small farmers.

d) Literacy status

Ramakrishna (1974) observed that majority of the members of the farmers discussion groups were literate agriculturists. The educational status of members had shown positive and significant relationship with adoption behaviour.

Pandya et al. (1975) a while analysing the characteristics of the farmers who participated in farmers day found that almost all (96 per cent) participant farmers were literate.

Singh (1977) observed that majority of the participating farmers in the training classes were literate.

Mathiazhagan (1978) reported that education was negatively and significantly related with the training needs of farmers.

Thangaraju (1979) found that there was no significant difference between the trained and untrained sericulturists with respect to their level of education.

Ramakrishna (1980) stated that majority of the trained farmers were with secondary level education.

Chandrasekaran (1981) reported that education had shown

significant negative relationship with the training needs of small tea growers.

Arumugam (1983) stated that education was found to have significant association with the training needs of small farmers.

Alexander (1985) revealed that education had negative relationship with the training needs of small rubber growers.

e) Farming experience

Sundararajan (1972) observed that joint decision and consultation was more in groups having more than 15 years of farming experience, in selection of strains. Respondents with 10-35 years of experience had more joint consultation on matters such an application of manures, plant protection and disposal of 'Kapas'. Respondents with 5-10 years of experience had more joint consultation in availing credit facilities.

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

Chandrasekaran (1981) reported that farming experience

had shown significant negative relationship with the training needs of small tea growers.

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

Alexander (1985) revealed that there was negative relationship between the farming experience and the training needs of small rubber growers.

f) Status of land Tenancy

Dhaliwal (1963) reported that owner farmers influenced the tenants in adoption of selected agricultural practices. Average adoption index was high in the case of owner operators than that of the tenants.

Kaushal and Malik (1975) found that full and high adoption of fertilizers was positively and significantly correlated in the case of self owned farmers only.

Tripathy (1977) observed negative relationship between land-tenure status and technological gap index of farmers in adoption of new rice technology.

Singh (1981) found no significant relationship of adoption

with the status of land ownership, except in the case of marginal farmers, where it was positively and significantly correlated.

Pillai (1983) reported that status of land tenancy was found to have no association with technological gap in integrated soil conservation practices in the case of low, medium and high gap categories of farmers.

Viju (1985) reported that land tenancy status had negative relationship with the attitude towards farming.

g) Attitude towards farming

According to Allport (1935), attitude is a mental and neural state of readiness organised through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related.

Sharma (1972) defined attitude as a personal disposition which impels an individual to react to some object or situations. Many researchers have established the positive and significant association of attitude towards the practices with adoption of farm practices (Nair (1969), Singh and Singh (1971), Somasundaram (1976), Tripathy (1977),

Pillai (1978), Mohandasan (1979), Singh (1981) and Surendran (1982).

Viju (1985) revealed that attitude of tribal farmers towards farming had positive and significant relationship with educational status, social participation, risk orientation, economic motivation and annual income. Status of land tenancy had negative relationship.

h) Social participation

Patel et al. (1968) reported that majority of the trained farmers occupied positions in village organisations, panchayats and co-operative societies as against the matched untrained farmers. While studying the characteristics of the members of Farmers' Discussion Groups who underwent training in the farmers' training centres, Ramakrishna (1974) found that most of the members had not got membership in any other social institutions. Mathiazhagan (1978) observed that social participation had got a negative significant correlation with the training needs of farmers. Thangaraju (1979) opined that there was no significant difference between trained and untrained sericulturists regarding their social participation. Ramakrishna (1980) stated that majority of the

trained farmers possessed medium level of social participation. Chandrasekaran (1981) reported that 'social participation' showed a significant positive relationship with the training needs of small tea growers. Arumugam (1983) found that the variable social participation had non-significant relationship with the training needs of small farmers.

i) Economic motivation

Hobbs (1964), Beal and Sibley (1967), Nair (1969), Singh and Singh (1971) found out positive and significant association between economic motivation and adoption of improved agricultural practices. Arumugam (1983) stated that economic motivation had significant relationship with the training needs of small farmers.

j) Cosmopoliteness

Cosmopoliteness was reported to have a positive and significant relationship with the extent of knowledge of farmers according to Somasundaram (1976), Kamerudeen (1981), Balachandran (1983), Siddaramaiah and Rajanna (1984). Researchers like Fliegel (1960) and Chauhan and Sinha (1976) reported that there was no significant relationship between cosmopoliteness and extent of adoption,

whereas Kittur (1976) and Channegowda (1977) have established a positive and significant association between cosmopoliteness and the extent of adoption. Thangaraju (1979) reported that there was significant difference between the trained and untrained sericulturists with respect to their urban contact. Ahamed (1981) stated that cosmopoliteness was positively and significantly correlated with the extent of adoption of untrained farmers. Arumugam (1983) pointed out that cosmopoliteness had non-significant association with the training needs of small farmers.

k) Fatalism

Sen (1969) reported that the leaders' fatalism do not influence the adoptive behaviour of others. Burmen and Sharma (1970) found that values had been found to affect the adoption of settled agriculture where lands were available with the tribals or made available by the government. Dar (1970) reported that the tribal attitudes, tradition and religion made it difficult for the tribals to accept restrictions on shifting cultivation. The isolation of the tribal areas from being exposed to new ideas made them extremely tradition bound. Sahu (1970) reported that due to the prevalence of rigid, traditional,

social and cultural outlook, tribal agriculture could rightly be classified as subsistence sector of the tribal economy. Srivastava and Singh (1970) reported that the tribals have continued to remain conservative and tradition bound. Yadav (1970) reported that the tribal leaders gave more emphasis on sticking to the traditional way of life. Rattan (1973) reported that communication of agricultural information in hills faces a fully animated individual who is aggressive enough to protect his values, rigid enough to defy even an idea of change. Drieberg (1977) observed that in the tribal institutions and cultures, taboos played a fundamental role. He further added that local religious priests played a key part in ordering tribal life which was observed to be a major problem to the change agents. About their beliefs, he further added that tribals organised mass hunt to propitiate their deities and ensure good crop. Dass (1978) reported about the highly superstitious nature of Bond tribes of Orissa and Vedes of Ceylon. Racine (1978) reported that Malayali tribes of Kalrayan mountains in Tamil Nadu are maintaining traditional social structures. Vyas and Mann (1980) stated that the tribal society continued to be superstition ridden. The predominance of superstition had not been shaken even under the changing conditions in certain other fields.

1) Indebtedness

Salunke and Thorat (1975) reported that indebtedness of small farmers had a significant relationship with adoption behaviour. Tribal indebtedness, according to Mathur (1977), is both a cause and effect of poverty and is related to bonded labour and alienation of tribal land. The study by Mathur (1977) revealed that the most important causes of indebtedness among the tribals of Kerala were their primitive agricultural technology, illiteracy, low wages, absence of marketing infrastructure and their social and religious obligations. Mathur (1977) also reported that these tribals who have improved seeds and modern technology of cultivation were heavily indebted than those who have not responded to improved techniques. Sadamate (1978) reported that indebtedness was positively and non-significantly related to the technological gap in the tribal farming system. Prakash (1980) reported a positive and significant relationship between indebtedness and adoption of improved agricultural practices in the medium developed tribal areas of Wynad, while this relationship was not significant in less developed areas. He also reported that study on the association between indebtedness and attitude of tribals towards

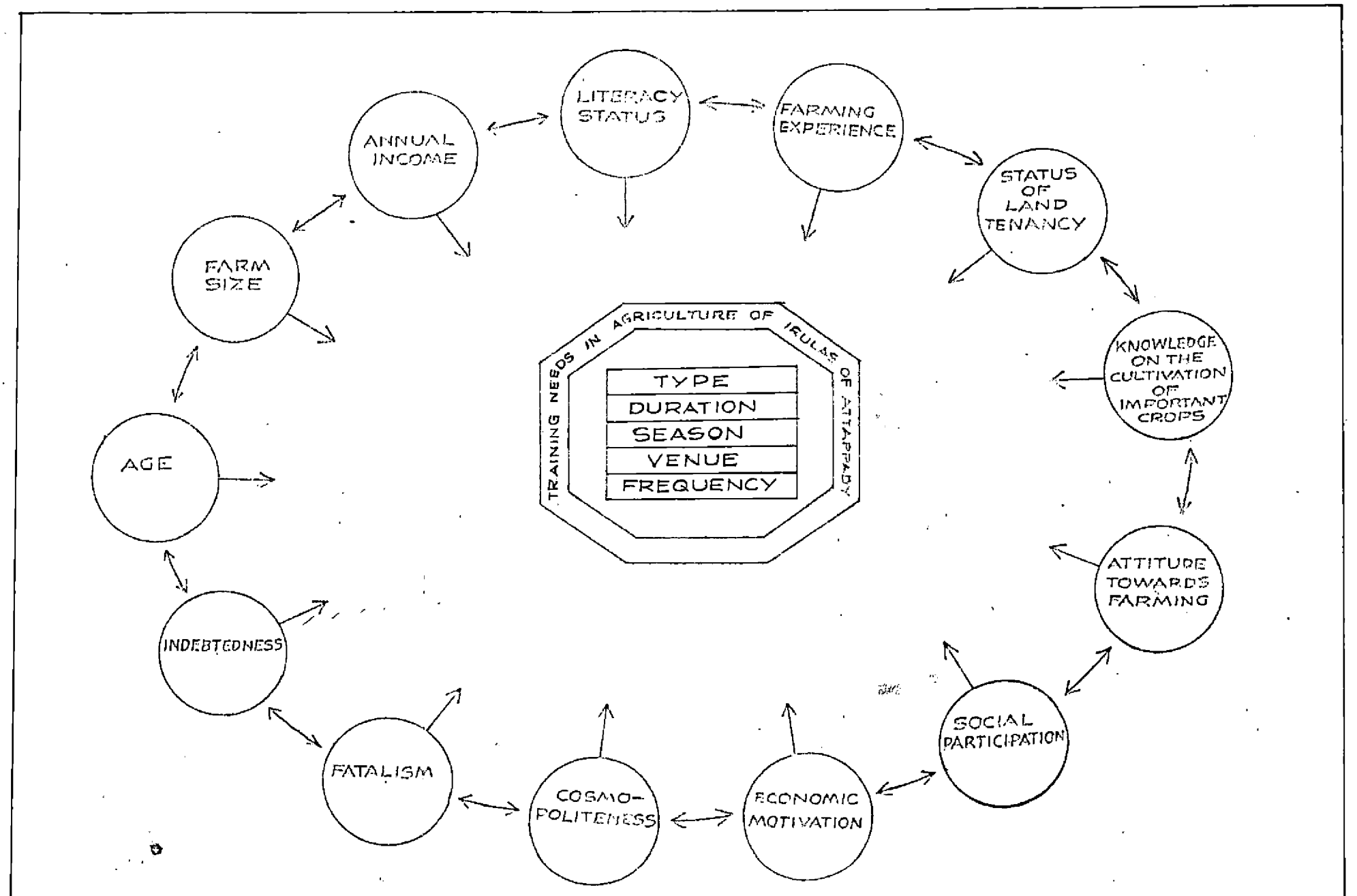


FIG. 1 CONCEPTUAL FRAME WORK OF THE STUDY

settled agriculture indicated that there was no significant relationship between indebtedness and attitude of tribals towards settled agriculture in both the medium and less developed areas.

The above reviews indicate that the personal and socio-psychological variables influenced the perception of training needs by farmers. Attappady being an unique tribal tract of Kerala with so much of peculiarities and variations, it was found necessary to study the effect of these variables on the training needs of the predominant tribal group of Attappady - the Irulas.

The conceptual frame work of the study is given in Figure 1.

METHODOLOGY

CHAPTER III

METHODOLOGY

The Research methods and procedures used in this study are presented in the following sections.

1. Location of the study
2. Sampling procedure
3. Selection and measurement of variables
4. Techniques of data collection
5. Statistical methods used

1. Location of the study

According to the census of 1981, Kerala had a total population of 25,453,680 of which 2,61,475 belong to the Scheduled Tribes (1.03 per cent). Out of the 48 tribal communities in the State, 35 are Scheduled Tribes (Appendix I.) and the rest denotified tribal communities (Mathur, 1977). Pulayans, Adiyans, Paniyans, Meratis, Kurumans, Kurichians, Irulas and Kanikkars are the most dominant communities among them. There are 52,421 households with Scheduled Tribe members in the State out of which 6,577 are in Palghat district. Among the five taluks of Palghat district namely Alathur, Chittoor,

Mannarghat, Ottappalam and Palghat, Mannarghat has the maximum number of Scheduled Tribe households (4799). In the Mannarghat taluk, the villages of Agali, Sholayur and Pudur have the majority of tribal households (4716) which are in Attappady region. Attappady has a tribal population of 20873, which accounts for 7.99 per cent of total tribal population of the Scheduled Tribes in Kerala State. (Source: Bureau of Economics and Statistics)

Prior to 1975, Attappady was a Tribal Development Block which was later converted into an Integrated Tribal Development Project. The entire project area is called Attappady. The Integrated Tribal Development Project, Attappady (ITDP) came into being on the independence day of 1975. The Project co-ordinates the various centres of socio-economic development and agricultural development activities in the area.

Attappady is considered to be one of the important forest regions of Kerala State, eventhough a considerable portion of the forest has been denuded. It forms the eastern half of the Mannarghat taluk. Nilgiris and Coimbatore districts of Tamil Nadu form the north and eastern boundaries, Coimbatore taluk forms the southern boundary, and the Thenkara village of Mannarghat taluk

forms the western boundary. Attappady is connected by an all weather road (Mannarghat-Aenakatti road) and a few narrow mountain passes from the Nilgiris. Bhavani, Siruveni, and Varagar are the three rivers flowing through this area towards the east.

Physiography

Attappady is a hilly area with undulating terrains with an elevation of 750-1000 metres. Malleswaram peak of Attappady has a height of 1664 metres which could be seen from most of the locations of Project area. The land slopes gradually towards east and merges with the elevated plains of Tamil Nadu State.

Climate and Rainfall

The climatic conditions vary as one proceeds from west to east of Attappady. The forest land and the slopes facing the west and south receive high rainfall as much as around 3000 m.m. In the east, towards the boarder of Tamil Nadu, it forms the rain shadow belt where the rainfall declines considerably.

In the high rainfall areas of the western half of Attappady, the soil is forest loam and laterite, while

in the low rainfall area of eastern half the soil is clay loam and silty clay loam with streaks of 'Kankar'. Alluvial soils are found in river banks only. Out of the 725 sq. km. of Attappady area, about 566 sq. km. is under forests, of which 210 sq. km. is covered by reserve forest.

Land use

There is a net area of about 12,900 ha. under cultivation in the Attappady region. A major area of Attappady receives only low rainfall so that the cropping pattern is dominated by dryland crops. The important crops grown are Jowar, Pulses, Groundnut, Ragi, Maize, little millet (chamai), Paddy etc. The areas under important crops are given in Appendix II.

Because of the undulating nature of land, hazards of soil erosion are severe in the Attappady area. Attempts have been made by the soil conservation unit of the Department of Agriculture to fight erosion by constructing stone pitched contour bunds across the slopes.

The map of Attappady area is given in Figure 2.

2. Sampling procedure

The present investigation was taken up in Attappady

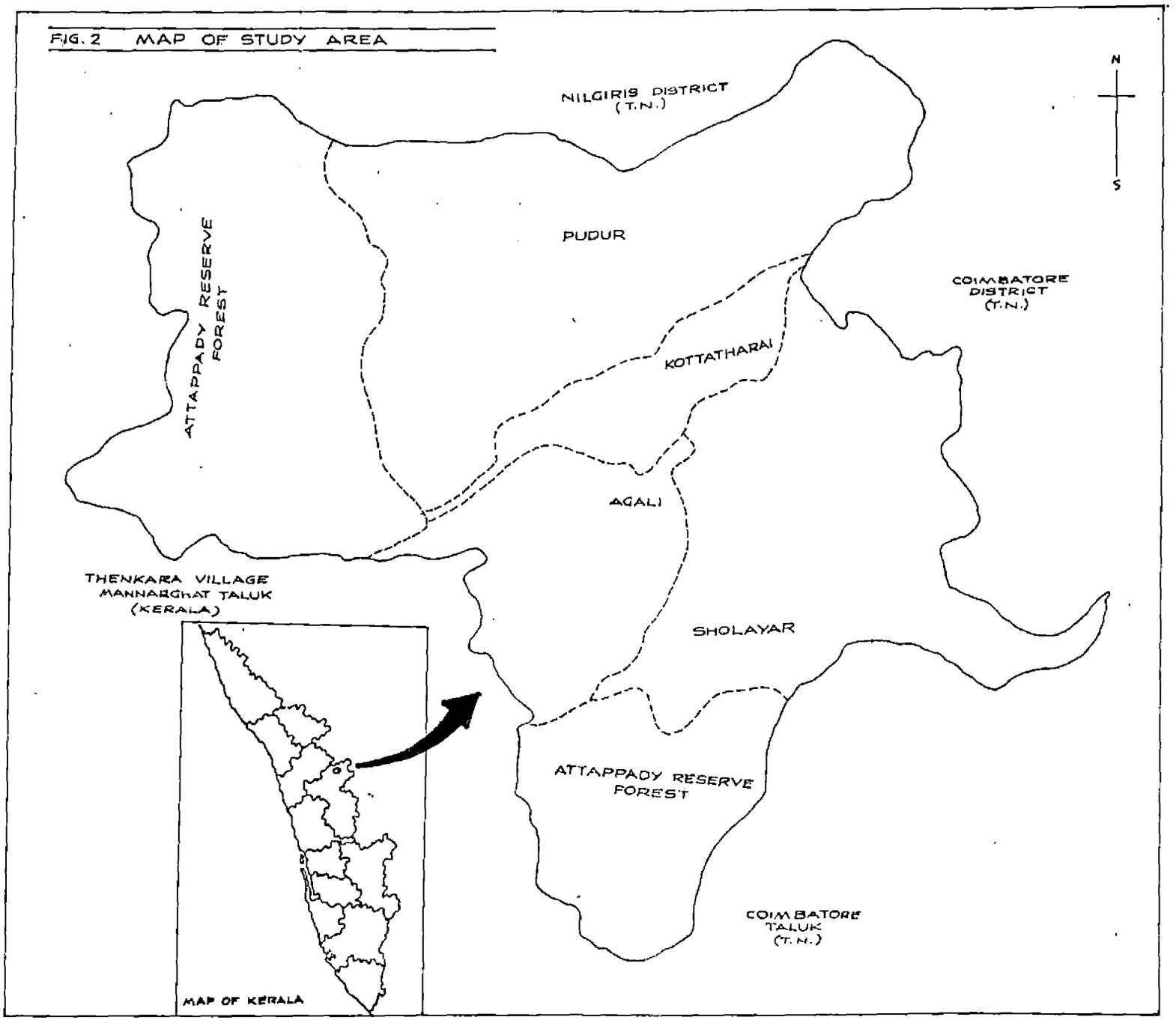


FIG. 2 MAP OF STUDY AREA
NILGIRIS DISTRICT (T.N.)
N
S
PUDUR
ATTAPPADY RESERVE FOREST
COIMBATORE DISTRICT (T.N.)
KOTTATHARAI
AGALI
THENKARA VILLAGE MANNARGHAT TALUK (KERALA)
SHOLAYAR
ATTAPPADY RESERVE FOREST
COIMBATORE TALUK (T.N.)
MAP OF KERALA

which is in an area comprising of 725 sq. km. coming under the jurisdiction of the Integrated Tribal Development Project, Attappady. Attappady area was purposively selected for the following reasons.

i. The area has a high population of tribals.

ii. The I.T.D.P. has become operational in this area right from 1975, and the Project is planning and implementing many agricultural development programmes for the tribal people.

iii. Attappady is the only area where maximum number of Irula population is found living.

The study has been limited to 'Irulas' because 'Irulas' form the numerically dominant tribe of Attappady. Their main occupation is agriculture. Out of the 138 tribal hamlets in Attappady, 99 are inhabited by 'Irulas'.

Selection of Respondents

'Irulas' live mainly in the four villages, namely, Agali, Kottathara, Pudur and Sholayur. From each village the respondents were selected on the basis of proportional allocation to the population of Irula farmers. Accordingly, 30 Irula respondents were selected from Agali village, 18 from Kottathara, 22 from Pudur, 30 from

Sholayur, the total sample comprising of 100. The population in each village and sample size selected are given in Table 1. The respondents from each village were selected randomly from the list of tribal farmers.

Table 1. Distribution of 'Irulas' in the villages and the sample size selected from each village.

S.No.	Name of villages where Irulas live	No. of Hamlets in the village	Population of the village	Sample size from each village
1.	Agali	29	3000	30
2.	Kottathara	17	1800	18
3.	Pudur	31	2131	22
4.	Sholayur	22	2957	30
	Total	99	9838	100

3. Selection and Measurement of variables

A detailed review of literature was done before selecting the variables for the study. In addition, a pilot study was conducted in Attappady area which also helped the researcher in selecting the variables. Experts in the Departments of Agricultural Extension and Agronomy of the College of Agriculture, Vellayani were consulted

and their suggestions were also considered for the final selection of the independent variables.

Measurement of Dependent Variable

Training need of Irulas in Agriculture was the dependent variable in the study. Training need was operationalised as the perceived needed level of training of 'Irulas' in relation to the different cultivation practices suitable to Attappady.

Different measurement procedures were followed by different researchers, for assessment of the training needs.

1. Choice Scores (ACS and TCS)

On the basis of the responses of the people on the proforma given earlier, priorities based on the I, II and III choices can be tabulated and identified as training needs. Following this, total choice scores (TCS) and Average Choice Scores (ACS) can be worked out by the following formula.

$$ACS = \frac{(CIx3) + (CIIx2) + (CIII)}{3}$$

where ACS - Average Choice Score

CI is the first choice

CII is the second choice

CIII is the third choice

ii. Index of Consensus (Cq)

When the training needs are collected on different tasks and activities from the trainees, the supervisors and the supervisees (clients) on the same item and when each respondent makes but one choice, only then the consensus index can be worked out for each category of respondents. This index has been recommended by Davis (1962) for use on nominal and ordinal categories. According to him, this is a simple useful tool for quantifying consensus. Its value ranges from 0 to 1. The value will be zero where the frequencies are equal to all categories indicating a complete lack of consensus and a maximum of unit, if there is but one zero, frequency in the distribution indicating complete consensus.

The formula given by Davis (1962) for calculating Index of Consensus is

$$Cq = \frac{f' - c'f}{f\,(c-1)}$$

Cq = Consensus Index

$\bar{f}$ = Mean frequencies of persons preferring each category

c' = Number of categories with frequencies exceeding $\bar{f}$.

f' = Category frequency larger than $\bar{f}$.

iii. Training Need Quotient (TNQ)

Another simple statistical tool for assessment of training need developed by Sureshwarsharma and Singh (1966) is a ratio scale called Training Need Quotient which accommodates variation in a number of items checked and ranged from 0 to 100. The formula for computation of TNQ is as follows.

$$TNQ = \frac{OSIJ}{MSIJ} \times 100$$

where OSIJ = Sum of observed scores of J^{th} individual for the I^{th} item.

MSIJ = Maximum Score attributable to the I^{th} item rated by J^{th} individual.

The relationship between various factors and TNQ of the respondents can be further examined by Chi-square.

Ascertaining training needs helps in exploring vulnerable areas wherein training can be designed as a basis of the felt needs of the participants. It is more important because an effective training requires motivation for an effective learning and transfer of learning on the part of trainees, which have full bearing on the training objectives.

The major crops cultivated by Irulas are Jowar, Pulses, Groundnut, Ragi, Maize, Chamai and Paddy. The training needs in major subject matter areas relating to the seven important crops were assessed in the study by the use of a three-point rating scale with points much needed, somewhat needed and not at all needed with corresponding scores of 3, 2 and 1.

The training needs of Irulas both in respect of knowledge and skill under each subject matter area were measured on the three-point continuum. The frequencies of each response categories were found out and the respective frequencies were multiplied by the score allotted to it.

Training need index

The training need index was calculated for each

crop with respect to scores obtained for training need of each crop against the maximum possible scores. The training need index was obtained by dividing the total score obtained by a respondent by the maximum possible score that could be obtained for all the crops by any respondent. Training need index for the seven important crops was also worked out by dividing the actual scores assigned for all the major operations of a particular crop by all the respondents, by the maximum possible scores that could be assigned for that crop by all the respondents. Then ranking was done based on the training need index. Similarly training need index was calculated for the major subject matter areas in the cultivation of important crops, and based on their magnitude, important areas of important crops in which tribal farmers required training were identified. The important subject matter areas identified were the following as finalised after discussions with experts in Agronomy and Agricultural Extension.

(i) Land preparation (ii) Seeds and sowing (iii) Manuring (iv) Intercultural operations (v) Plant protection

The respondents were divided into three groups with low, medium and high level of training needs based

on the procedure explained by Raghavarao (1983).

The maximum and minimum training need scores that could be obtained by the respondents were noted. Then the range was found out. The range was divided into five equal classes. The frequency of each class was found out and the mid point of each class was also noted. Then the frequencies were multiplied by the respective mid points and the cumulative total was also obtained. The method consists of making strata of equal sizes. In this method the cumulative total was divided into three equal sizes. The calculations were analogous to finding quartiles using fx and cumulative fx. Thus three groups with low, medium and high level of training needs were formed.

Total training need score was also worked out to study the relationship between the training needs of respondent with the other independent variables. The total score for each respondent was arrived at by summing up the scores of all the subject matter areas of the important crops as related by the respondents. Interview schedule used for measuring the training needs of the respondents is given in appendix III.

Training Need Quotient

The training need quotients for the various

operations of the crops were worked out by dividing the respective training need index by the total number of operations (ie 5).

To study the perception of the farmers on the choice of the type, duration, season, venue and frequency of the training programmes, simple schedules were prepared which were included in part II of Appendix III.

Measurement of independent variables

Based on the review of literature, pilot study and discussion with the experts, 13 independent variables were selected for the study.

i) Age: Age was operationalised as the number of completed years of the Irula farmer at the time of interview and the chronological age taken as the measure. Age expressed in completed years is taken as such.

ii) Farm size: Farm size refers to the cultivable area in hectares possessed by Irula farmer. Different researchers have tried to measure farm size in different ways. Trivedi (1964) while constructing a socio-economic status scale used item analysis for different size of holding groups. In their scale,

farmers with no land scored '0', upto 5 acres 2, upto 10 acres 3, upto 15 acres 4, upto 20 acres 5, and above 20 acres 6.

Roy et al. (1968) chose value of Agricultural products raised as a measure of farm size. In the present study, bulk of the farms possessed by Irulas comprise of slopy cultivable land which are rainfed. The following scoring procedure was used for the study.

Area	Score
Upto 1.00 ha.	1
From 1.01 to 2.00 ha.	2
From 2.01 to 3.00 ha.	3
From 3.01 to 4.00 ha.	4
From 4.01 to 5.00 ha.	5
More than 5.00 ha.	6

iii) Annual income:

In this study, annual income has been operationalised as the total annual earnings of the respondents from both farm and non-farm sources. The farm sources indicate the income obtained from the cultivated land owned or leased in and the non-farm sources include income from the collection of minor forest products,

farm and non-farm labour wages, dairy, poultry etc.

As the tribal farmers were unable to state the income in exact figures it was decided to group them into different categories and scores were assigned as follows.

Income level	Score
Upto Rs 1000	1
Above Rs 1000 and upto Rs 2000	2
Above Rs 2000 and upto Rs 3000	3
Above Rs 3000 and upto Rs 4000	4
Above Rs 4000	5

iv) Literacy status:

It was operationalised on the ability of the farmer to read and write.

A schedule was developed for the purpose with the scoring procedure as follows:

S.No.	Level of education	Score
1	Illiterate	1
2	Can read only	2
3	Can read and write	3

v) Farming experience:

It was operationalised as the completed years an Irula farmer has involved in farming. The following scoring procedure adopted by Chandrasekaran (1981) was followed in this study.

Years of experience	Score
(i) Upto 5 years	1
(ii) 5.01 to 10 years	2
(iii) More than 10 years	3

vi) Status of land tenancy:

This is operationalised as the fraction of the cultivable land owned by the Irula farmer which is in his possession. The procedure adopted by Pillai (1983) was followed. Status of land tenancy was calculated by using the formula.

$$\text{Status of land tenancy} = 1 - \left[\frac{\text{extent of cultivable land owned in ha.}}{\text{Total cultivated land owned in the scheme area in ha.}} \right]$$

If the respondent possesses all the land owned by him, the status of land tenancy could be '0'.

vii) Knowledge on the cultivation of crops:

Knowledge in this study is operationalised as the extent of understanding of the 'Irula' farmer-respondent at the time of interview as evident form his responses to a set of questions prepared on different aspects of cultivation of the important crops grown in the locality and also on land improvement.

Developing a knowledge test

Items were collected from review of literature and based on the discussions conducted with the specialists in the fields of Agronomy, Agricultural Extension and Soil Science. The tribal development officials of the I.T.D.P. Attappady and the Agricultural Officers of Palghat district were also consulted to arrive at the statements. The questions were intended to test the 'why' and 'How' aspects of the knowledge of tribal farmers in agriculture. General principles in cultivation and aspects of land preparation, seeds and sowing, manuring, intercultural operations and plant protection of the seven important crops cultivated by Irulas were included in the items.

Initial selection of items

Selection of items for the test was done on the basis of the following criteria

a) It should promote thinking
b) It should differentiate the well informed farmers from the poor informed ones.
c) It should have a certain difficulty index.

Based on these criteria, 64 items were initially selected. Ambiguous and overlapping statements were eliminated. Finally five questions on each of the seven important crops and five questions about the general cultivation aspects were selected. Thus, a total of 40 questions were prepared. A schedule was prepared with 40 items for administering them to farmers. All the items collected were in the objective form (Appendix IV).

Item analysis

40 items collected after editing were administered to 30 tribal farmers. These respondents were randomly selected tribal farmers who were altogether different from the sample selected for the main study and at the same time having identical conditions.

Item analysis yields information on item difficulty. The index of item difficulty reveals how difficult an item is. Scores of value one and zero were given to correct and incorrect responses respectively for the dichotomous questions. There was thus a possibility of respondents scoring a maximum of 40 points for all correct answers and zero for all wrong answers.

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

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

Calculation of item difficulty index

The index of item difficulty as worked out in this study refers to the percentage of respondents (p)

answering an item correctly.

The discrimination index was also worked out by using the following formula.

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

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

N - Total number of respondents in the sample.

Selection based on discrimination index could not be done since giving consideration to this, selection of equal number of questions from each crop was not possible. So, only the difficulty index was taken into consideration while arriving at the final statements. The difficulty and discrimination indices are given in appendix IV.

Based on the highest 'p' values, two questions pertaining to each of the seven important crops and two questions about the general cultivation aspects were selected. Thus a total of 16 items formed the final format of knowledge test.

Scoring

The summation of scores for correct answers over all the items for a particular respondent indicated his level of knowledge in cultivation practices. The knowledge index was worked out for individual farmer by using the following formula.

$$\text{Knowledge index} = \frac{\text{Total score obtained by a respondent}}{\text{Total number of statements}} \times 100$$

Reliability

The split-halves method was used to test the reliability of the test. The 16 items of the knowledge test were divided into two equal halves each having eight odd numbers and eight even numbers and administered to thirty similar respondents. The coefficient of correlation between the two sets of scores was 0.811, which was significant at one per cent level of probability. This indicated that the reliability of the test was high.

Validity

Content validity is a kind of validity by assumption as described by Guilford (1971). The questions included for the knowledge test were prepared in

consultation with the experts in the Departments of Agricultural Extension, Agronomy, Pathology and Entomology in the College of Agriculture, Vellayani, and a team of experts of the Soil Conservation Unit at Agali and Kottathara, so that it was assumed that the test could measure the knowledge of the tribal farmers in the cultivation of important crops in Attappady.

The respondents were classified into three groups according to the level of knowledge using the similar procedure adopted for classifying the respondents based on the training needs.

viii) Attitude towards farming:

On this study, attitude was operationalised on the Irula farmers' degree of favourableness or unfavourableness towards the psychological object. The respondents' attitude towards farming was measured with the help of the attitude scale developed by Sadamate (1978).

Out of the 10 statements, five statements were indicators of favourable attitude whereas the remaining five were indicators of unfavourable attitude. Three points on the continuum were Agree, Undecided and Disagree

with respective weights of 3, 2 and 1 for favourable statements.

ix) Social participation:

It is operationally defined as the degree of involvement of Irula farmer in social organisations as a member or as an office bearer and regularity in his attendance in the meetings of the social organisations.

The procedure developed by Lokhande (1974) was used for the purpose of measuring social participation. The scoring procedure was

Items	Scores
No membership	0
Membership in one organisation	1
Membership in more than one organisation	2
Office bearer in one organisation	3
Office bearer in more than one organisation	4
Distinctive features (MLA, MP etc.)	6

Attendance in meetings either as a member or as an office bearer was considered important. For attending meetings 'regularly', 'occasionally' and 'never', the scores given were 3, 2 and 1 respectively. To obtain

the final score of a respondent, the scores secured as a member or office bearer were multiplied with the scores secured for attendance in meetings and added up.

x) Economic motivation:

Economic motivation of an 'Irula' farmer is regarded as an indication of the degree of willingness for investment in adopting the farm innovations. The farmer who views himself to be economically motivated may seek more monetary gains than a farmer with values such as freedom from debt and self sufficiency.

In this study, economic motivation of the tribal farmer was measured with the help of the self-rating economic motivation scale developed by Moulik (1965). The scale consisted of three sets of statements each set having three short statements with weights 3, 2 and 1 indicating high, medium and low degrees of economic motivation. The forced choice method was followed to overcome the familiar problems of personal bias and lack of objectivity in self evaluation. This method forced the respondent to choose from a group of three short statements describing a particular personality character the one which most accurately described the

respondent himself and also the one which least accurately portrayed himself.

After obtaining the respondent's most-least choices for each of the three sets of statements, scoring was done by summing up the ratios of the weight of the most like statement to the weight of least like statements. As there were 3 sets of statements for the economic motivation scale, the sum of the ratios for the three sets was the respondent's self-rating score for economic motivation.

xi) Cosmopoliteness:

In this study, cosmopoliteness was operationally defined as the tendency of the Irula farmer to be in contact with outside world based on the belief that all the needs of an individual cannot be satisfied within his own community.

The procedure followed by Desai (1981) was used to measure the extent of cosmopoliteness. The two dimensions of the variable measured were

a) The frequency of visit to the nearest town in a month and

b) The purpose of visit to the town in a month

The scoring pattern was as follows.

a) Frequency of visit to the nearest town in a month

Frequency of visit	Score
Twice or more a week	5
once a week	4
once a fortnight	3
once a month	2
very rarely	1
never	0

b) Purpose of visit to the town in a month

Purpose of visit	Score
All visits relating to Agriculture	5
Some relating to Agriculture	4
Personal or domestic matters	3
Entertainment	2
All other purpose	1
No specific purpose	0

The total score of cosmopoliteness for each respondent was calculated by adding the score of the above two dimensions of cosmopoliteness.

xii) Fatalism:

Rogers (1962) defined fatalism as the degree to which an individual perceives a lack of ability to control his future.

In the study, fatalism is operationalised as the belief of the Irula farmer that human situations and acts were pre-determined by some supernatural power and can never or little be influenced by individual volition or by act of any one else.

To measure fatalism, the scale developed by Chattopadhyaya (1963) and followed by Verma (1970) was used. The scale consisted of five items. The first and second items were negative and the rest positive. The scoring was done as follows.

Response	Strongly Agree	Agree	Undecided	Strongly Disagree
Scores for positive items	4	3	2	1
Score for negative items	1	2	3	4

xiii) Indebtedness:

It is operationally defined as the total loan (Debt) in terms of money, an Irula farmer owes, at the

time of investigation to various money lending sources.

A simple schedule was developed to measure indebtedness. The respondents were categorised into the following groups on the basis of the total debt they had at the time of interview and the scores assigned were as follows.

Item	Score
No debt	0
Debt upto Rs 250	1
Debt upto Rs 500	2
Debt upto Rs 1000	3
Debt upto Rs 2000	4
Debt above Rs 2000	5

4. Techniques of Data Collection

Prior to collection of data a pilot study was conducted in the area which comprised of discussions with different tribal farmers, discussions with experts, and a reconnaissance survey of the project area. The interview schedule prepared in English was translated into Tamil for administering to the farmers, as most of the 'Irulas' speak Tamil.

The interview schedule was pre-tested and minor

modifications were made. The data collection was carried out during December 1987 and January 1988. The respondents were individually contacted. The assistance of local extension staff, tribal leaders, school teachers, ITDP staff and Soil Conservation Staff of Attappady were availed of for locating and interviewing tribal farmers.

Daily observation records were maintained to facilitate a clear understanding of the tribal agricultural practices and the felt and unfelt needs of the tribal farmers.

5. Statistical methods used

i) 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 the dependent variable and each of the independent variables.

iii) Path analysis

Path analysis developed by Wright (1934) was

done to find out the direct and indirect effects of the independent variables on the training needs of the respondents. It also helped to find out the substantial indirect effects of the independent variables through other variables.

The Versa IWS Computer of Keltron available in the College of Agriculture, Vellayani was utilized for the computations of correlation analysis and path analysis.

RESULTS AND DISCUSSION

CHAPTER IV

RESULTS AND DISCUSSION

The results of the investigation and discussion on the findings in the light of the objectives are given in this chapter under the following headings.

1. Levels of training needs of the respondents in agriculture.

2. Training needs pertaining to the important crops in Attappady.

3. Training needs with respect to the major operations for important crops.

   a) Training needs with respect to the major operations for Ragi.

   b) Training needs with respect to the major operations for Jowar.

   c) Training needs with respect to the major operations for Pulses.

   d) Training needs with respect to the major operations for Maize.

e) Training needs with respect to the major operations for Chamai.

f) Training needs with respect to the major operations for Groundnut.

g) Training needs with respect to the major operations for Paddy.

4. Level of knowledge of 'Irulas' on the cultivation of important crops.

5. Types of training preferred by 'Irulas'.

6. Methods of training preferred by 'Irulas'.

7. Duration of training preferred by 'Irulas'.

8. Seasons of training preferred by 'Irulas'.

9. Venues of training preferred by 'Irulas'.

10. Frequency of training preferred by 'Irulas'.

11. Association of independent variables with training needs.

12. Direct and indirect effects of independent variables on the training needs.

1. Levels of training needs of the respondents in agriculture.

The respondents were divided into three groups with low, medium and high levels of training needs based on the procedure explained by Raghava Rao (1983).

The maximum and minimum training need scores that could be obtained by the respondents were noted. They were 1050 and 350 respectively. Then the range was found out, ie. 700. The range was divided into five equal classes. The frequency of each class was found out and the mid point of each class was also noted. Then the frequencies were multiplied by the respective mid points and the cumulative total was also obtained. A table as shown below is formed based on the above procedure.

Table 2. Distribution of training need classes to fix the categories.

(n = 100)

Training need classes	Mid point x	Frequency f	fx	Cumulative fx
350 - 490	420	46	19,320	19,320
491 - 630	560	11	6,160	25,480
631 - 770	700	1	700	26,180
771 - 910	840	18	15,120	41,300
911 - 1050	980	24	23,520	64,820

The method consists of making strata of equal

sizes. In this method, the cumulative fx was divided into three equal sizes. The calculations were analogous to finding quartiles using fx and cumulative fx. The first class boundary 'L_1' occurred in the class where the cumulative fx was not lower than (64820/3) 21606.66. Hence 'L_1' was in the class 491-630 and

$$L_1 = 490.5 + \frac{21,606.66 - 19,320}{6160} \times 5$$

$$= 506.47$$

The second class boundary 'L_2' occurred in the class where the cumulative fx was not lower than 64,820 x 2/3 43213.33 and it was clear that 'L_2' was in the class 911-1050

$$L_2 = 910.5 + \frac{43213.33 - 41300}{23,520} \times 5$$

$$= 910.91$$

Based on the L_1 and L_2 values, three groups were formed as shown in Table 3.

Table 3. Distribution of the respondents according to the levels of training need.

(n = 100)

S.No.	Group	Training need score	Frequency	Percentage
1	Low	350 to 506	46	46.00
2	Medium	507 to 910	30	30.00
3	High	911 to 1,050	24	24.00
		Total	100	100.00

As seen from Table 3, 46 per cent of the respondents were in the low group who perceived only low level of training need. Only 24 per cent of the respondents perceived a high need for training, whereas 30 per cent fell in the medium group, who perceived a medium level of training need.

Only less than one fourth of the respondents perceived a high level of training need in agriculture. Even though the cultivation practices followed by 'Irulas' in Attappady are primitive and unscientific, it was seen that majority of the farmers do not have a high level of training need in agriculture, as reflected in their perception.

This is due to the main reason that they are not well exposed to the modern cultivation practices. Inadequate exposure to the modern agricultural practices leads to the continuance of existing primitive cultivation practices. Since they are not aware of the better technologies in agriculture, they do not have a high desire to know more and get trained in new areas.

The inadequacy of the training programmes for tribals also contribute much for the poor training need perception. The inadequacy of the awareness of the

available training institutions, training programmes, training agencies etc., and their poor knowledge about the benefits of the training programmes also could be the reasons for the low level of training need perception. Had they been exposed to some training programmes, they would have perceived differently. Illiteracy prevailing among the tribal people also could be responsible for the low level of perception about the training needs.

The results point out to the need for educating the tribal farmers about the importance of modern cultivation practices and also the benefits of training programmes. In order to improve the cultivation practices in the tribal area, it is necessary to start training programmes in agriculture for the benefit of the 'Irulas'.

2. Training needs pertaining to the important crops in Attappady.

Training need index for every crop was worked out by dividing the total score assigned for all the respondents, for all the operations of a particular crop by the maximum possible score that could be assigned for all the operations of a particular crop for all the respondents. Then the crops were ranked based on the magnitude of training need index.

The results are given in Table 4.

Table 4. Training need index : Crop-wise

(n = 100)

S.No.	Crop	Score	TNI	Rank
1	Ragi	13,399	0.89	1
2	Jowar	12,402	0.83	2
3	Pulses	11,890	0.79	3
4	Maize	10,148	0.67	4
5	Chamai	8,852	0.59	5
6	Groundnut	6,490	0.43	6
7	Paddy	3,768	0.25	7

Out of the seven major crops grown by the 'Irulas', highest training need perception was recorded in the case of Ragi (Training Need Index (TNI) 0.89). This was followed by training needs in Jowar (TNI 0.83), Pulses (TNI 0.79), Maize (TNI 0.67), Chamai (TNI 0.59) and Paddy (TNI 0.25).

'Irulas' live in the eastern portion of the Attappady area which is a rain-shadow belt. Only dry-land crops come up well in that area, since annual precipitation received is less and irrigation facilities

are meagre. As the 'Irulas' cultivate only the dry land crops such as Ragi and Jowar, their experience in farming is limited to such crops. Since the cultivation is mostly on Ragi, Jowar etc., their interest is mostly on the cultivation techniques of such dry land crops. Naturally, they perceived relatively more need of training on such crops. Another reason for the perception of more training need on such crops is that Ragi, Jowar and Pulse serve to be the staple food for such people. It is interesting to note that paddy is perceived to be the crop on which there is less training need. This is due to the reason that paddy is grown mostly in the low lying lands where there are irrigation facilities and majority of such areas has been already alienated to the settlers. Since 'Irulas' do not have the possession of fertile low lying lands where paddy is cultivated, paddy cultivation has become the monopoly of the settlers. Hence 'Irulas' perceive only less training needs in paddy.

Considering the area under each crop grown by the tribal people, it is seen that Jowar, Pulses, Groundnut, Ragi and Maize have maximum coverage. Naturally, they perceive more need for training with respect to such crops they cultivate. The abundant

availability of seed material for Ragi, Jowar, Pulse, Maize, Chamai and Groundnut in the local areas and also from the neighbouring district of Coimbatore is another possible reason for the perception. Ragi was ranked first with regard to the perception of training needs followed by Jowar (Rank 2), Pulse (Rank 3), Maize (Rank 4), Chamai (Rank 5), Groundnut (Rank 6) and Paddy (Rank 7).

3. Trainins needs with respect to major operations of important crops.

Training need index for the major operations was calculated by dividing the total score assigned for all the respondents for a particular operation in all the crops by the maximum possible score that could be assigned for all the respondents for a particular operation in all the crops. Then the major operations were ranked based on the training need indices.

Table 5. Training need index : Operation-wise.

(n = 100)

S.No.	Major operation	Score	TNI	Rank
1	Plant protection	18,519	0.88	1
2	Intercultural operations	15,667	0.75	2
3	Manuring	12,339	0.59	3
4	Seeds and Sowing	11,778	0.56	4
5	Land preparation	8,646	0.41	5

It is revealed from Table 5 that plant protection was perceived as the area having most training need (TNI 0.88). Intercultural operations (TNI 0.75), Manuring (TNI 0.59), Seeds and Sowing (TNI 0.56) and Land preparation (TNI 0.41) were perceived in the descending order of importance for training.

The crops grown by 'Irulas' were affected by various pests and diseases as found by the researcher at the time of the investigation. They have an eager desire to control the pests and diseases but they do not have the knowledge of plant protection operations. Hence they perceive maximum training need for plant protection. Any plant protection measure in the tribal areas using toxic chemicals is to be done with care. Use of toxic chemicals may lead to dysfunctional consequences in the tribal area. Hence appropriate management of pests and diseases in the tribal area is considered very important. The perception of high training need in plant protection is in confirmity with the findings of Sastry (1970), Sharma (1970), Jha (1974), Sinha and Verma (1976), Chandrasekaran (1981) and Alexander (1985).

'Intercultural operations' was perceived as the

second area in the sequence of importance of the perceived training needs. Attappady, being a forest area is inhabited by different types of weeds. The growth of weeds is a menace for the tribes in the cultivation of Groundnut, Jowar and many other crops. Recent years of drought enabled the farmers to know the advantages of conservation of moisture. Mulching and water management are important activities to be taken up to fight the threat of drought. Naturally, the tribes had given importance to the intercultural operations such as weed management, moisture conservation and water management.

Raman et al. (1974), Mathiazhagan (1978) and Gangaram (1979) also had pointed out that 'intercultural operations' is an area where farmers needed more training.

The average yield of crops cultivated by 'Irulas' is poor. This is because much of the fertile soil has been washed off due to soil erosion. Application of fertilizers for the crops is not common among the 'Irulas'. But they seem to be aware of the fact that manuring increases the yield. Due to the inadequate availability of organic manures, they are now thinking in terms of application of fertilizers. But they are

not at all knowledgeable in the technique of use of fertilizers. They observe fertilizer application done by settlers in their paddy fields and consequent better yields. Hence 'Irulas' have perceived manuring as the third important area where they needed training.

Sastry (1970), Sharma (1970), Singh and Sohal (1970), Singh (1971), Sathyanarayana and Bhaskaram (1971), Patil and Kole (1972), Sinha and Verma (1976), Pandey and Singh (1976), Anantharaman (1977), Mathiazhagan (1978) and Mathiazhagan and Singh (1986) concluded that manuring is an important area of operation where a high training need exists.

'Seeds and sowing' was perceived as the fourth important area on which the 'Irulas' require training. Most of the farmers are using only locally procured seeds for sowing, even though a few are aware of the hybrid seeds of Jowar available in Tamil Nadu Agricultural University. But the procurement of hybrid seeds is experienced as a problem by the tribal farmers. Treatment of the local seeds is required as a preventive measure against the diseases. The information about high yielding varieties is received by the farmers from the village level extension workers and as a result,

they exhibit tendency to know more about the high yielding varieties. Hence 'seeds and sowing' was perceived as a training need, even though it was ranked only fourth.

Singh and Sohal (1970), Singh (1971), Anantharaman (1977) and Gangaram (1979) have also concluded that 'seeds and sowing' is one of the main areas of operations which needed more training.

Land preparation was perceived only as the fifth important area of training needs. The land development activities in the area are taken up by the soil conservation unit of the Department of Agriculture. The unit is implementing soil conservation practices, which comprise of contour bunding and construction of check-dams, water harvesting structures etc. The works are done as per the provisions of the centrally sponsored 'Kundah Project'. Fifty per cent of the cost is treated as subsidy. Since there are technical personnel to implement the programmes, the tribals are not bothered about the technical aspects of the activities.

a) Training needs in major operations with respect to Ragi.

Table 6. Training need index : Operation-wise, Ragi.

(n = 100)

S.No.	Major operation	Score	TNI	Rank
1	Plant protection	2,908	0.97	1
2	Intercultural operations	2,817	0.94	2
3	Seeds and sowing	2,737	0.91	3.5
4	Manuring	2,734	0.91	3.5
5	Land preparation	2,203	0.74	5
	Total	13,399		

Table 6 revealed the perception of training need with respect to each operation required for Ragi crop. Plant protection was ranked as the first training need (TNI 0.97) followed by training need for intercultural operations (TNI 0.94). Seeds and sowing (TNI 0.91) and manuring (TNI 0.91) jointly shared the next two ranks. Land preparation took the last rank with least training need perception (TNI 0.74).

The reasons for perceiving the training needs

of various practices have been discussed elsewhere. The results reveal that plant protection should be given top priority while formulating training programmes in the cultivation of Ragi.

b. Training needs in major operations with respect to Jowar.

Table 7. Training need index : operation-wise, Jowar.

(n = 100)

S.No.	Major operation	Score	TNI	Rank
1	Seeds and sowing	2901	0.97	1
2	Plant protection	2814	0.94	2
3	Intercultural operations	2636	0.88	3
4	Manuring	2412	0.80	4
5	Land preparation	1639	0.55	5
	Total	12402		

A glance at the data presented in Table 7 spells out the perception of training need with respect to each operation required for Jowar. 'Seeds and Sowing' was perceived to have the highest training need (TNI 0.97) followed by training need for plant protection (TNI 0.94), intercultural operations (TNI 0.88),

manuring (TNI 0.80) and land preparation (TNI 0.55).

It is interesting to note that training need for 'seeds and sowing' was ranked first with respect to the major operations in the cultivation of Jowar. This is because of the recent introduction of the hybrid Jowar seeds in this tract. The significant difference in yield due to the use of hybrid seeds in Jowar by the settlers might have prompted them to prefer this area as the most needed area of training. The results point out that 'seeds and sowing' should be given prime importance while organising training programme in the cultivation of Jowar.

c. Training needs in major operations with respect to Pulses.

Table 8. Training need index : operation-wise, Pulses.

(n = 100)

S.No.	Major operation	Score	TNI	Rank
1	Plant protection	2,932	0.98	1
2	Manuring	2,654	0.88	2
3	Intercultural operations	2,508	0.84	3
4	Seeds and sowing	1,991	0.66	4
5	Land preparation	1,805	0.60	5
	Total	11,890		

A perusal of the data presented in Table 8 indicates that there is highest need for training in plant protection with respect to Pulses (TNI 0.98). This is followed by manuring (TNI 0.88), intercultural operations (TNI 0.84), Seeds and sowing (TNI 0.66) and land preparation (TNI 0.60).

The results point out to the need for giving high priority for plant protection while arranging training programmes in the cultivation of pulses.

d. Training needs in major operations with respect to Maize.

Table 9. Training need index : operation-wise, Maize.

(n = 100)

S.No.	Operation	Score	TNI	Rank
1	Plant protection	2892	0.96	1
2	Intercultural operations	2315	0.77	2
3	Seeds and sowing	1815	0.61	3
4	Manuring	1716	0.57	4
5	Land preparation	1410	0.47	5
	Total	10148		

An observation of the data presented in Table 9 explains the training need perception with respect to each operation required for the Maize crop. Here also plant protection was the area in which there was more training need perception (TNI 0.98). It was followed by intercultural operations (TNI 0.77), Seeds and sowing (TNI 0.61), manuring (TNI 0.57) and land preparation (TNI 0.47).

e. Training needs in major operations with respect to Chamai.

Table 10. Training need index : operation-wise, Chamai.

(n = 100)

S.No.	Major operation	Score	TNI	Rank
1	Plant protection	2715	0.91	1
2	Intercultural operations	2015	0.67	2
3	Manuring	1810	0.60	3
4	Seeds and sowing	1412	0.47	4
5	Land preparation	900	0.30	5
	Total	8852		

A perusal of the data presented in Table 10

revealed the highest need for training in plant protection in Chamai crop also (TNI 0.97). The intercultural operations (TNI 0.67), manuring (TNI 0.60), seeds and sowing (TNI 0.47) and land preparation (TNI 0.30) are in the descending order of preference with respect to the various operations in the cultivation of 'Chamai'.

f. Training needs in major operations with respect to Groundnut

Table 11. Training need index : Operation-wise, Groundnut.

(n = 100)

S.No.	Major operation	Score	TNI	Rank
1	Plant protection	2,443	0.81	1
2	Intercultural operations	2,110	0.70	2
3	Manuring	815	0.27	3
4	Seeds and sowing	610	0.20	4
5	Land preparation	512	0.17	5
	Total	6,490		

Table 11 shows the perception of training need with respect to each operation in Groundnut crop. Plant protection was ranked first (TNI 0.81), followed by

training need for intercultural operations (TNI 0.70), manuring (TNI 0.27), seeds and sowing (TNI 0.20) and land preparation (TNI 0.17).

g. Training needs in major operations with respect to Paddy.

Table 12. Training need index : Operation-wise, Paddy.

(n = 100)

S.No.	Major operation	Score	TNI	Rank
1	Plant protection	1815	0.61	1
2	Intercultural operations	1266	0.42	2
3	Seeds and sowing	312	0.10	3
4	Manuring	198	0.07	4
5	Land preparation	177	0.06	5
	Total	3768		

Data presented in Table 12 give the training need perceptions for the various operations in paddy. It is observed that the order of preference for various major operations in paddy is similar to that of Maize. Plant protection tops in the training need perception (TNI 0.61), followed by intercultural operations (TNI 0.42), seeds and sowing (TNI 0.10), manuring (TNI 0.07) and land preparation (TNI 0.06).

The summary of the training needs in agriculture of Irulas of Attappady is given in Table 13.

Table 13. Training needs in Agriculture of 'Irulas' of 'Attappady'.

A summary table (n = 100)

Crop	Major operations	Training need quotient	Cumulative training need index	Rank
Ragi	a	0.15		
	b	0.18		
	c	0.19		
	d	0.18	0.89	1
	e	0.19		
Jowar	a	0.11		
	b	0.19		
	c	0.18		
	d	0.16	0.83	2
	e	0.19		
Pulses	a	0.12		
	b	0.13		
	c	0.17		
	d	0.18	0.79	3
	e	0.19		
Maize	a	0.09		
	b	0.12		
	c	0.15		
	d	0.12	0.67	4
	e	0.19		
Chamai	a	0.06		
	b	0.09		
	c	0.14		
	d	0.12	0.59	5
	e	0.18		
Groundnut	a	0.03		
	b	0.04		
	c	0.14		
	d	0.05	0.43	6
	e	0.16		
Paddy	a	0.01		
	b	0.02		
	c	0.08		
	d	0.01	0.25	7
	e	0.12		

a - land preparation b - seeds and sowing
c - intercultural operations d - manuring
e - plant protection

Of the various important crops grown by 'Irulas', they perceived training needs for Ragi, Jowar, Pulses, Maize, Chamai, Groundnut and Paddy in the descending order of priority. Plant protection emerged as the most important training need in the case of Ragi, Pulses, Maize, Chamai, Groundnut and Paddy. Intercultural operations was also the most important training need in the case of Ragi. Seeds and sowing was as important a training need as plant protection in the case of Jowar.

While formulating the course content of various training programmes for these seven crops, the order of perception of training needs with respect to the five major operations are to be taken into consideration.

The results are diagramatically pointed out in Figure 3.

4. Level of knowledge of 'Irulas' on the cultivation of important crops.

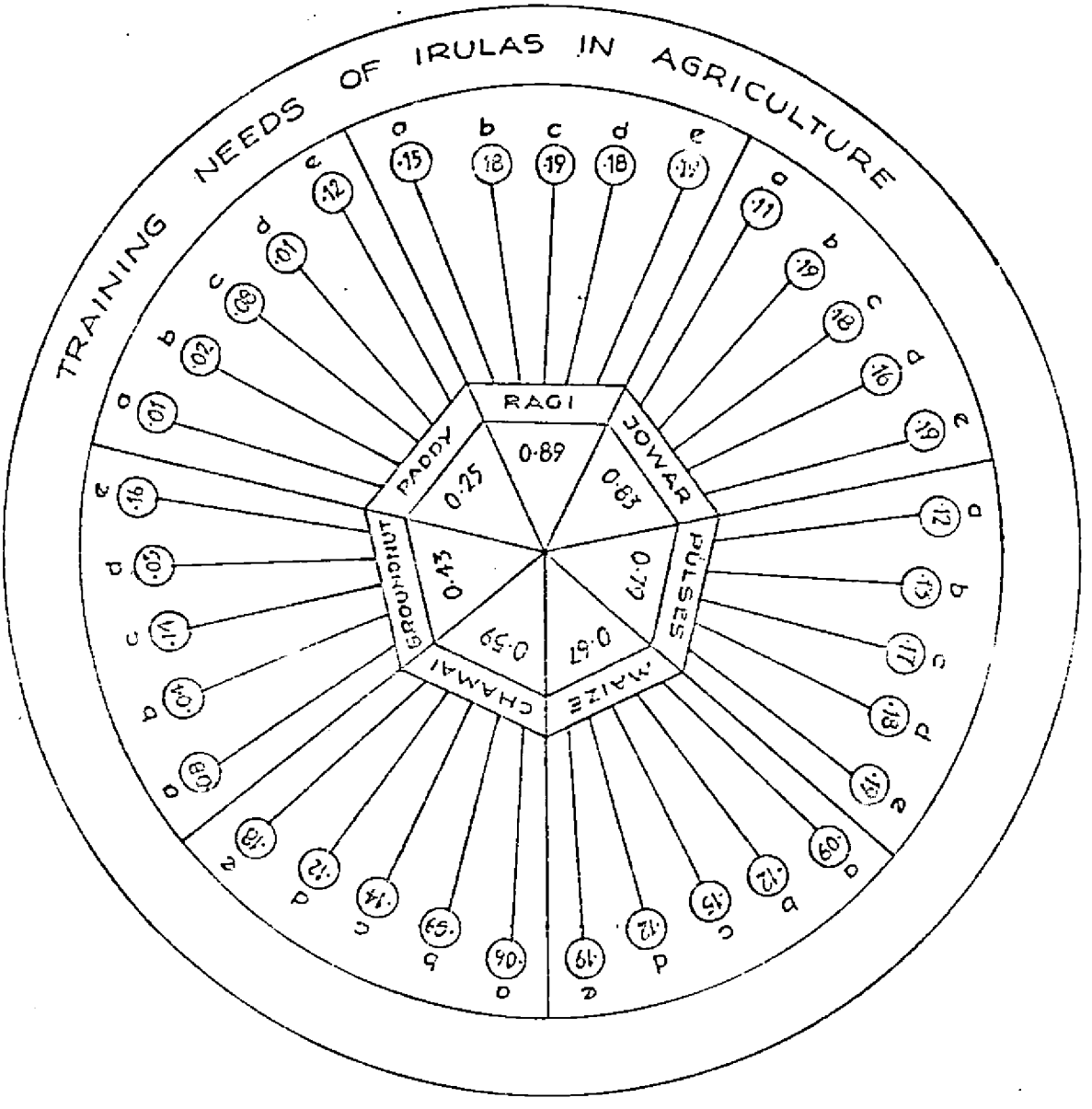
Table 14. Distribution of respondents according to the level of knowledge.

(n = 100)

S.No.	Level of knowledge	Knowledge score	Frequency	Percentage	Mean knowledge score
1	Low group	0 to 12	52	52.00	6.79
2	Medium group	13 and 14	19	19.00	13.63
3	High group	15 and 16	29	29.00	15.51
		Total	100	100.00	10.61

FIG. 3

TRAINING NEEDS OF IRULAS IN AGRICULTURE



a. LAND PREPARATION
b. SEEDS AND SOWING
c. INTERCULTURAL OPERATIONS
d. MANURING
e. PLANT PROTECTION

A cursory look at Table 14 reveals that majority of the respondents (52 per cent) had only low level of knowledge on the cultivation of important crops in Attappady. Only 29 per cent of the respondents had high level of knowledge in the cultivation practices. Nineteen per cent fell in the medium group of knowledge.

The tribal people are mostly illiterates. They have poor exposure to mass media. Most of the farmers live in remote areas, so that their access to cosmopolitan sources is very poor. The improved seed materials do not reach them due to their remote locations where they live. The economic backwardness and indebtedness of 'Irulas' also contribute to their poor conditions. Added to all these existing conditions, land alienation problem is a serious threat to the 'Irula' community. All these contribute to the low level of knowledge of the 'Irulas'.

As a consequence of the development activities of the Integrated Tribal Development Project, there is an increase in their awareness to progressive farming as compared to the primitive farming conditions which existed some time back. Some farmers who have access to the change agents and also those who are in

contact with the settlers have some more knowledge in the cultivation practices. This could be the possible reason for the high level of knowledge in the case of 29 per cent of the respondents.

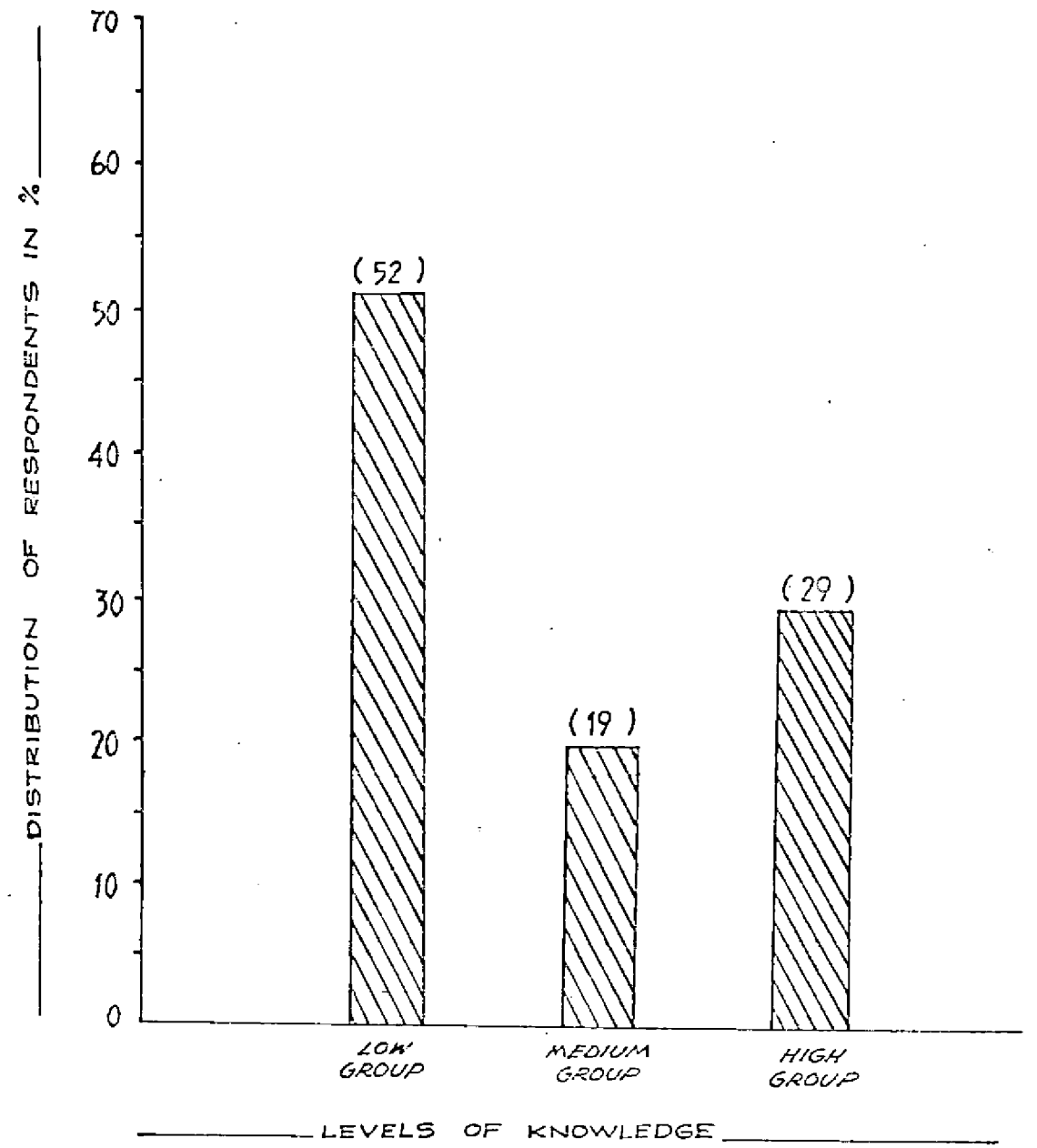
Anantharaman (1977) in his study on the training needs of small and marginal farmers had reported that 50 per cent of small farmers and 60 per cent of marginal farmers were in the below average category of knowledge on high yielding varieties of Jowar.

The results point out to the need of providing more knowledge to 'Irulas' in the cultivation of their major crops. This could be met by formulating and implementing meaningful training programmes for these people. This will result in the improvement of their economic standards and thereby their living conditions.

The results are diagramatically presented in Figure 4.

FIG. 4

DISTRIBUTION OF RESPONDENTS ACCORDING TO LEVELS OF KNOWLEDGE



5. Types of trainings preferred by Irulas.

Table 15. Types of training preferred by the respondents.

(n = 100)

S.No.	Type	Score	Preference index	Rank
1	Peripatetic training by KVK/ITDP/Dept. of Agri.	281	0.94	1
2	Institutional training by ITDP, Attappady	277	0.92	2
3	Institutional training by KVK, Pattambi	221	0.74	3
4	Farm School on Akhashwani	121	0.40	4
5	Correspondence course by KAU	116	0.39	5

Table 15 revealed that the tribal farmers prefer peripatetic training (preference Index (P.I) 0.94). Next in the order of preference were institutional training by Integrated Tribal Development Project (ITDP), Attappady (P.I. 0.92) and institutional training by Krishi Vigyan Kendra (KVK), Pattambi (P.I. 0.74).

Farm School on Akhashwani and correspondence course by Kerala Agricultural University (KAU) ranked

only fourth and fifth, respectively.

Peripatetic trainings are of very short duration which give the farmers an opportunity to visit progressive farms. Hence this type of training is most preferred by the tribal farmers. The ITDP is located at Agali which is the central place of this tribal area. Agali is also a marketing centre for the tribal people. Supply of inputs is also being made from ITDP and hence the tribal people would like to visit the Project Office. Hence any institutional training programme conducted by the ITDP can enroll tribal participants. Hence they preferred institutional training at ITDP as the second choice.

Institutional training by KVK was preferred as the third choice. KVK is a training centre for farmers and the farmers attending the training programmes are provided free boarding and lodging. This might be a reason for assigning the third rank for institutional training by KVK, Pattambi.

Farm School on Akhaswani and Correspondence Course by KAU were preferred only as the last fourth and fifth choices. The preference indices for farm school on Akhaswani (P.I. 0.40) and for correspondence

course by KAU (P.I. 0.39) revealed that their preference to these two were only minimum.

The study reveals that peripatetic programmes are to be organised in the tribal areas for the effective transfer of technology in agriculture to the farmers. This finding is in agreement with the earlier findings of Vidyarthi (1969), Gopal (1974), Sabarathnam (1976), Anantharaman (1977), Arumugan (1983) and Alexander (1985) who reported that farmers favoured peripatetic training more than any other type of training.

6. Method of training preferred by Irulas.

Table 16. Preference of Training methodology by the respondents.

(n = 100)

S.No.	Method of training	Score	Preference index	Rank
1	Film shows	283	0.94	1
2	Exhibition	267	0.89	2
3	Field trip	253	0.84	3
4	Demonstration	212	0.71	4
5	Study tour	211	0.70	5
6	Group Discussion	176	0.59	6
7	Lecture	112	0.37	7.5
8	Campaign	112	0.37	7.5

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8	Campaign	112	0.37	7.5

Table 16 revealed that filmshow was the most preferred method of training (PI 0.94). This was followed by exhibition (PI 0.89), field trip (PI 0.84), demonstration (PI 0.71), study tour (PI 0.70), group discussion (PI 0.59), lecture (PI 0.37) and campaigns (PI 0.37).

The tribes have a great fascination towards movie films. They walk long distances from their hamlets to see movies in the theatres at Agali and Kottathara. The novelty of the medium and the persistent vision contained therein are added attractions in the movies. Their interest in filmshow can be effectively exploited if educational efforts are made utilizing the film medium. Video being a powerful and potential extension of the movie film, there is great scope to picturise telefilms and video documentaries on agricultural subjects to effectively influence the tribal people.

Exhibitions and field trips can be arranged for teaching the tribal population, considering their perception of the second and third preferences to these methods of training. Next in the order of preference comes the demonstration. Study tours are also quite useful as training methods for the tribal population. Group discussion, lecture and campaigns are ranked only at the end as the last preferences.

The 'Irulas' at Attappady are mostly illiterates. They are interested in films so that the method of training through appropriate film shows would be of great value. While formulating the training programmes in agriculture for tribal population and while finalising the training methodology, the preferences to the methods of training are to be clearly spelt out. This will give an insight for the trainers in effectively teaching the trainees.

7. Duration of training preferred by 'Irulas'.

Table 17. Preference of the training duration by the respondents.

(n = 100)

S.No.	Duration	Score	Preference index	Rank
1	Two days	272	0.91	1
2	One day	270	0.90	2
3	3-6 days	193	0.64	3
4	One week	190	0.63	4
5	Two weeks	177	0.59	5
6	One month	122	0.41	6

Table 17 points out that two days duration of

training was preferred more by the respondents (PI 0.91). This was followed by one day training programme (PI 0.90). Next in the order of preference of duration were: 3-6 days (PI 0.64), one week (PI 0.63), 2 weeks (PI 0.59) and one month (PI 0.41).

It is seen that two days duration was perceived to be the most suitable (Rank 1), closely followed by one day's training (Rank 2). Generally, the farmers prefer only short-term training programme as they cannot stay away from their homes for long. Hence, while formulating training programmes, training institutions have to consider this important point of short-term capsule training programmes. This is particularly so in the case of tribal farmers who have least preference to long duration training programmes.

This finding is in confirmity with the finding of Alexander (1985) who stated that training programmes must be organised only for one or two days to the farmers.

8. Seasons of the training preferred by 'Irulas'

Table 18. Preferrence of the respondents regarding the season of trainings.

(n = 100)

I. Institutional training

S.No.	Month	Frequency	Percentage	Rank
1	April-May	56	56.00	1
2	June-July	36	36.00	2
3	September	8	8.00	3

II. Peripatetic training

S.No.	Month	Frequency	Percentage	Rank
1	September-October	48	48.00	1
2	June-July	42	42.00	2
3	April-May	10	10.00	3

It is seen from Table 18 that April-May was perceived as the best season for institutional training as it was perceived by 56 per cent of the respondents. July-July was perceived as the choice for

institutional training by 36 per cent of the respondents. September was perceived as the preferred season for institutional training only by eight per cent.

For peripatetic training the best season was during September-October as was perceived by 48 per cent of the respondents. Forty two per cent perceived June-July as the best season for peripatetic training. Only very few (10 per cent) perceived April-May as the best season for peripatetic training.

The farmers would not be in a position to attend training programmes during the sowing season and at the time of harvest. During the rainy season, the farmers may be reluctant to devote their time to attend the institutional trainings. In Attappady, rainy season is during September-October. Immediately after rains the farmers raise crops during which time they will be busy in fields, still at this time they can see sowing and planting in other farms. During the harvest season around January the farmers may not be interested in any training programmes.

In these circumstances we can say that April-May is the best season for conducting institutional trainings. Even though September-October is the rainy

season when farmers are busy usually in sowing, this season is considered as the best season for conducting peripatetic training, because only at this time they can see the techniques of sowing and planting done by progressive farmers. Because peripatetic trainings are of one day or two days duration, this will not affect the farmers' major activities in their farm.

Hence it is clear that in order to get the participation of tribal farmers in various training programmes in agriculture, the appropriate seasons perceived as best by 'Irulas' are to be considered, while formulating training programmes.

This finding is in confirmity with the findings of Sanders (1967) and Gill (1970) who stated that trainings should be organised in periods of less intensive farm activities. It was reported by Chandrasekaran (1981) and Savarimuthu (1981) that April-May are the best months for institutional trainings.

9. Venues of training preferred by 'Irulas'

Table 19. Venues of training preferred by the respondents.

(n = 100)

S.No.	Venue	Score	Preference index	Rank
1	ITDP Head Quarters, Agali	282	0.94	1
2	Soil Conservation Office, Kottathara	279	0.93	2
3	Krishi Bhavan, Agali	278	0.92	3
4	TNAU, Coimbatore	209	0.70	4
5	KVK, Pattambi	131	0.44	5
6	KVK, Ambalavayal	128	0.43	6
7	Horticultural College, Vellanikkara	127	0.42	7

It could be noted from Table 19 that ITDP Head Quarters, Agali was the venue of training best preferred by Irulas (PI 0.94). Soil Conservation Office, Kottathara and Krishi Bhavan, Agali were the next two venues preferred (PI 0.93 and 0.92 respectively). The other venues preferred in the descending order of importance were Tamil Nadu Agricultural University (TNAU), Coimbatore (PI 0.70), KVK, Pattambi (PI 0.44),

KVK, Ambalavayal (PI 0.43) and Horticultural College, Vellanikkara (PI 0.42).

Preference to a particular venue can be due to either proximity to the Station or the attitude of people towards the staff of that Station. The reciprocal relations existing between the officials in the various training institutions could play an effective role in the perceived preferences. The ITDP Head Quarters at Agali which is a central point in the tribal area is a source of attraction for the tribes. Agali is well connected by roads so that access to this venue is not a problem for the tribal people. Due to the above reasons, the respondents have indicated ITDP Head Quarters at Agali as the first choice.

Kottathara is also well connected by roads. The tribal people have established rapport with the officials of Soil Conservation Office at Kottathara. This could be the reason for assigning the second choice to this venue. Same justification is applicable in the case of Krishi Bhavan, Agali also. Being the central place for dissemination of information on agriculture, Krishi Bhavan at Agali was given this priority.

TNAU Coimbatore has the next preference as the venue for trainings. Few of the farmers have gone to Coimbatore and obtained seeds from the TNAU. Agali and Coimbatore even though wide apart, are connected by roads and frequent transport service. This could be the reason for preference to this venue.

It is seen that KVK, Pattambi, KVK, Ambalavayal and Horticultural College, Vellanikkara were ranked only as fifth, sixth and seventh respectively, since they are remote and transport services to such places are not frequent.

10. Frequencies of training preferred by 'Irulas'.

Table 20. Frequencies of training preferred by the respondents.

(n = 100)

S.No.	Frequency of the training	Score	Preference index	Rank
1	Once in a year	247	0.82	1
2	Once in 6 months	226	0.75	2
3	Once in 2 years	212	0.71	3
4	Once in 3 years	186	0.62	4
5	Once in 2 months	152	0.51	5
6	Once in 4 years	148	0.49	6
7	Once in a month	132	0.44	7
8	Once in 5 years	112	0.37	8
9	Once in life time	103	0.34	9

From Table 20 it is seen that training programmes conducted 'once in an year' are the best preferred (PI 0.82). Next in the order of preference were 'once in six months' (PI 0.75), 'once in two years' (PI 0.71), 'once in three years' (PI 0.62), 'once in two months' (PI 0.51), 'once in four years' (PI 0.49), 'once in a month' (PI 0.44), 'once in five years' (PI 0.37) and 'once in the life time' (PI 0.34).

This is an indication that the tribal people do not want very frequent trainings. They want trainings once in a year, once in six months or once in two years. Since maximum preference index is for 'once in a year', annual training programmes could be thought of, to educate the tribal people of 'Attappady'.

11. Association of independent variables with the training needs.

Table 21 gives the inter-correlation matrix which represents the inter-relationships among the variables. The independent variables and their correlation with the training need index of the respondents are given in Table 22.

Table 22 indicated that literacy status, status of land tenancy, knowledge on the cultivation of crops,

Table 21. Intercorrelation Matrix

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	y_1
1	1.0000**													
2	-0.3239**	1.0000**												
3	-0.6255**	0.6699**	1.0000**											
4	-0.0148	0.1400	0.0388	1.0000**										
5	0.2697**	-0.1136	-0.0801	-0.1408	1.0000**									
6	-0.0075	0.0361	-0.1533	-0.6103**	0.0109	1.0000**								
7	0.0517	0.0187	-0.1631	-0.5734**	0.0062	0.8589**	1.0000**							
8	-0.1198	0.0895	0.2504*	0.5298**	-0.0623	-0.7505**	-0.7548**	1.0000**						
9	-0.1566	0.1622	0.2411*	0.0288	-0.0301	-0.1380	-0.1651	-0.1568	1.0000**					
10	-0.1532	0.0910	0.2465*	0.4779**	-0.0224	-0.6982**	-0.7236**	0.7656**	0.0005	1.0000**				
11	-0.6656**	0.4747**	0.7344**	0.0418	-0.2571**	-0.1319	-0.0771	0.1818	0.2767**	0.2208*	1.0000**			
12	0.5150**	0.0036	-0.2590**	0.1423	0.1984*	0.0727	0.0463	-0.1136	-0.0129	-0.0804	-0.3742**	1.0000**		
13	0.0935	0.0230	-0.2246*	-0.5117**	-0.0510	0.8004**	0.7957**	-0.6542**	0.1615	-0.6450**	-0.1884	0.0368	1.0000**	
1	-0.0418	0.0011	0.2187*	0.5684**	0.0285	-0.9027**	-0.9145**	0.7757**	0.1804	0.7320**	0.1342	-0.0508	-0.8563**	1.0000**

x_1 - Age
x_2 - Farm size
x_3 - Income
x_4 - Literacy
x_5 - Farming experience
x_6 - Tenancy status
x_7 - Knowledge
x_8 - Attitude towards farming
x_9 - Social participation
x_{10} - Economic motivation
x_{11} - Cosmopoliteness
x_{12} - Fatalism
x_{13} - Indebtedness
y_1 - Training need score

** Significant at 1 per cent level of probability

* Significant at 5 per cent level of probability

Table 22. Correlation between the independent variables and the training need index of the respondents.

(n = 100)

Variable No.	Name of the independent variable	Correlation coefficients
x_1	Age	-0.0418^{NS}
x_2	Farm size	0.0011^{NS}
x_3	Annual income	0.2187*
x_4	Literacy status	0.5684**
x_5	Farming experience	0.0283^{NS}
x_6	Status of land tenancy	-0.9027**
x_7	Knowledge on the cultivation of crops	-0.9145**
x_8	Attitude towards farming	0.7757**
x_9	Social participation	0.1804^{NS}
x_{10}	Economic motivation	0.7320**
x_{11}	Cosmopoliteness	0.1342^{NS}
x_{12}	Fatalism	-0.0508^{NS}
x_{13}	Indebtedness	-0.8563**

* - Significant at 5 per cent level of probability

** - Significant at 1 per cent level of probability

NS - Non Significant

attitude towards farming, economic motivation and indebtedness were correlated with the training needs at one per cent level of probability.

Annual income was correlated with the training need at five per cent level of probability. Age, farm size, farming experience, social participation, cosmopoliteness and fatalism were not significantly correlated with the training needs.

The results indicated that the variables age, farm size, farming experience, social participation, cosmopoliteness and fatalism were not relevant in determing the training needs.

It is seen from Table 22, that as the annual income of the tribal farmer increased, the perception of training need also increased. Literacy status of the farmer might have enabled him to know more about the benefits of the training programmes so that as literacy status increased, the perception of the training need also increased. Status of land tenancy is seen to have high negative correlation with the training needs. A person who has transferred the possession of major part of his land may not be interested to know more about the scientific cultivation

practices. Naturally he may perceive a low need for training in agriculture. This could be the possible reason for the high negative correlation between the status of land tenancy and training needs.

Knowledge on the cultivation of crops was found to have high negative correlation with the training needs. A farmer who has only little knowledge in agriculture may like to get trained to increase the agricultural production from his land. A farmer who has all knowledge about the cultivation aspects may not perceive an immediate training need. The 'Irulas' being mostly illiterate, their knowledge on the cultivation of crops may not be adequate. The high negative correlation between knowledge and training need indicated that less knowledge on the scientific cultivation of crops resulted in the perception of more training need. It is imperative that the knowledge gap of the tribal people can be effectively reduced only by formulating and implementing suitable training programmes for such people.

Attitude towards farming has also emerged as an important variable as revealed from the results. Favourable attitude towards farming leads to a desire

among people to know more about it and develop a skill in farming. This is possible through training and hence attitude towards farming and training needs are correlated.

Economic motivation has also emerged as an important variable. Normally, the tribal people do not save anything for the next day and have very poor planning. Those who are economically motivated may try to improve their farming practices by acquiring knowledge from localite or cosmopolite sources. Since the localite sources are also not much knowledgeable in scientific agriculture, the only alternative is to get the technology from the cosmopolite sources. During training, they can be in touch with the change agents and acquire knowledge and skills to improve their economic standard. Hence, this positive association between economic motivation and training need is noticed.

Indebtedness was negatively correlated with training needs. 'Irulas' have alienated most of their lands to the settlers who lend money at high rates of interest. Indebtedness is a common phenomenon among the 'Irulas' of Attappady. The money they borrow from settlers is often devoted for alcoholic drinks and

such unproductive purposes. A person who has more indebtedness may find it difficult to pull on. Many such people work in their neighbours' farms as labourers. Such people may not perceive training needs in agriculture, as their orientation towards life and view of the world would be different. Hence this negative association between indebtedness and training needs in the cultivation of crops.

12. Direct and indirect effects of independent variables on the training needs.

From the results of correlation analysis, it could be seen that out of the 13 independent variables selected for the study, only seven variables were correlated with the training need. These seven variables were considered for studying their direct and indirect effects on training needs. Variables thus taken to study the direct and indirect effects on training needs were: annual income (x_3), literacy status (x_4), status of land tenancy (x_6), knowledge on the cultivation of important crops (x_7), attitude towards farming (x_8), economic motivation (x_{10}) and indebtedness (x_{13}).

The direct and indirect effects of the variables

Table 23. Results of path analysis.

Substantial effects of independent variables on the training need index of the respondents.

(n = 100)

Variable No.	Name of variable	Direct effect	Total indirect effect	Substantial indirect effects through the crucial variables according to rank		
				First	Second	Third
x_3	Annual income	0.03046	0.18823	-	-	-
x_4	Literacy status	-0.01963	0.54876	0.22493 (x_7)	0.19192 (x_6)	0.11759 (x_{13})
x_6	Status of land tenancy	-0.31447	-0.58823	-0.33693 (x_7)	-0.18394 (x_{13})	-
x_7	Knowledge on the cultivation of important crops	-0.39228	-0.52223	-0.27010 (x_6)	-0.18286 (x_{13})	-
x_8	Attitude towards farming	0.07992	0.69695	0.29610 (x_7)	-0.23601 (x_6)	0.15024 (x_{13})
x_{10}	Economic motivation	0.02104	0.71095	0.28386 (x_7)	0.21956 (x_6)	0.14822 (x_{13})
x_{13}	Indebtedness	-0.22981	-0.62649	-0.31214 (x_7)	0.25170 (x_6)	-

Residue 0.296144

are given in Table 23.

Table 23 revealed that highest direct effect towards training need was due to the variable 'knowledge on the cultivation of important crops' (-0.39228). This was followed by 'status of land tenancy' (-0.31447) and indebtedness (-0.22981).

The total indirect effects varied from 0.188234 in the case of income to 0.71095 in the case of economic motivation.

The results of path analysis is diagramatically presented in Figure 5.

i. x_3. income:-

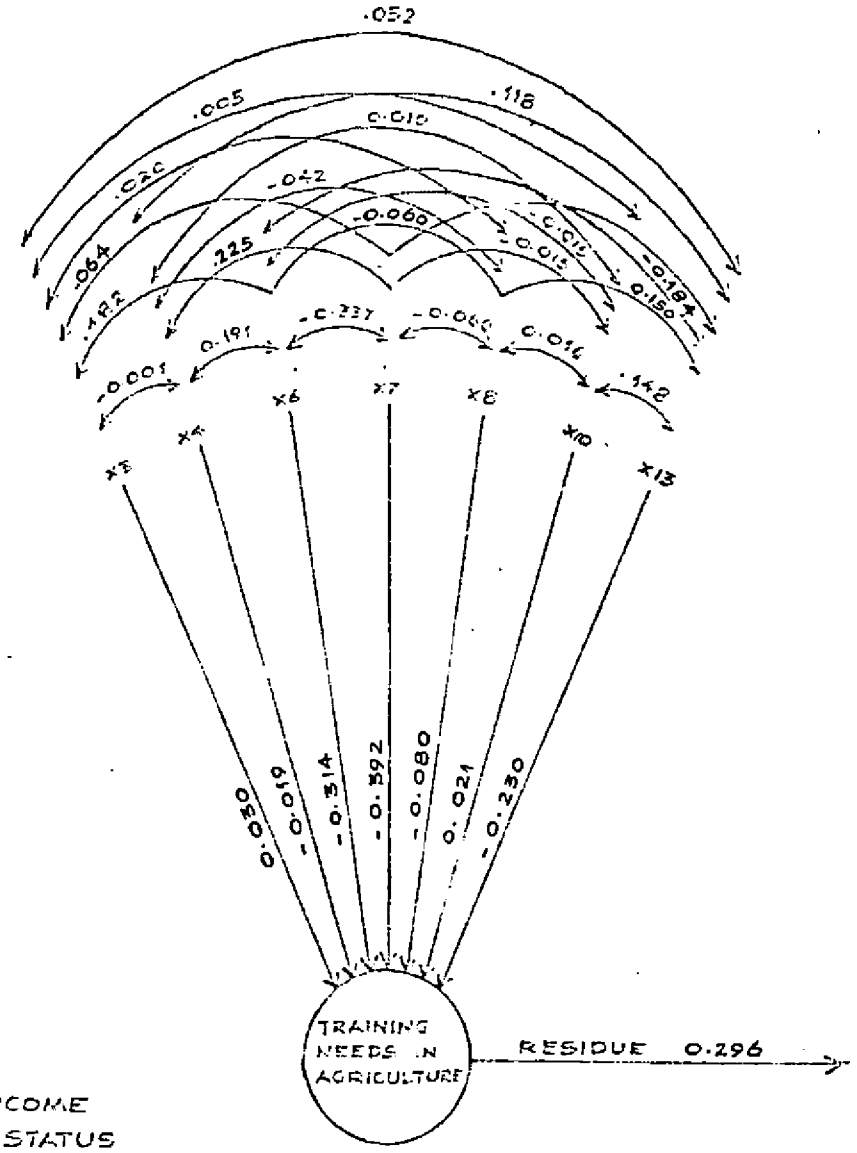
The direct effect of this variable was 0.03046 which was low. Its indirect effect on training need was not seen channelled through any other crucial variable. The total indirect effect was only 0.188234.

ii. x_4. Literacy status:-

The direct effect of literacy status on training need was very low being - 0.01963. Its indirect effects on training needs were channelled through 'knowledge on

FIG. 5

PATH DIAGRAM SHOWING THE DIRECT AND INDIRECT EFFECTS OF SELECTED INDEPENDENT VARIABLES ON THE TRAINING NEEDS IN AGRICULTURE OF IRULAS.



X3 – ANNUAL INCOME
X4 – LITERARY STATUS
X6 – STATUS OF LAND TENANCY
X7 – KNOWLEDGE ON THE CULTIVATION OF IMPORTANT CROPS
X8 – ATTITUDE TOWARDS FARMING
X10 – ECONOMIC MOTIVATION
X13 – INDEBTEDNESS

the cultivation of important crops' (x_7), land tenancy status (x_6) and indebtedness (x_{13}). Total indirect effect (0.54876) was more than the direct effect.

iii. x_6. Status of land tenancy:-

The direct effect of this variable was -0.31447. The indirect effect was mainly rooted through 'knowledge on the cultivation of important crops (x_7) and indebtedness (x_{13}). The total indirect effect of this variable was -0.38823 being higher than the direct effect.

iv. x_7. Knowledge on the cultivation of important crops:-

The direct effect of this variable was -0.39228. The indirect effect was mainly rooted through 'Status of land tenancy (x_6) and indebtedness (x_{13}). The total indirect effect of this variable was -0.522231 which was higher than that of the direct effect.

v. x_8. Attitude towards farming:-

The direct effect of 'attitude towards farming' was very low being 0.07992. Its indirect effects on training needs were channelled through knowledge on the cultivation of important crops (x_7), status of land

tenancy (x_6) and indebtedness (x_{13}). The total indirect effect of this variable was 0.696954 being significantly higher than that the direct effect.

vi. x_{10}. Economic motivation:-

The direct effect of this variable on training needs was very low (0.02104). The indirect effects were rooted through knowledge on the cultivation of crops (x_7), status of land tenancy (x_6) and indebtedness (x_{13}). Its total indirect effect was 0.71095 which was significantly higher than that of its direct effect.

vii. x_{13}. Indebtedness:-

The direct effect of 'indebtedness' on training needs was -0.22981. Its indirect effects were rooted through the variables, knowledge on the cultivation of crops (x_7) and status of land tenancy (x_6). The total indirect effect of this variable was -0.62649, which was considerably higher than the direct effect.

It was revealed that 'knowledge on the cultivation of crops', 'status of land tenancy', and 'indebtedness' had high direct as well as indirect effects on

determining the training needs, whereas 'economic motivation', 'attitude towards farming' and 'literacy status' had only high indirect effects through other variables in determining the training needs. It may be concluded that out of the seven variables tested to find their direct and indirect effects on training needs, 'status of land tenancy', 'knowledge on the cultivation of important crops', 'attitude towards farming', 'economic motivation', 'indebtedness' and 'literacy status' were important in determing the training needs of the tribal people in agriculture. Annual income was not very important in determing the training needs of the tribal people.

SUMMARY

CHAPTER V

SUMMARY

Attappady is considered to be one of the most important forest regions of Kerala State, even though a considerable portion of the forest has been denuded. It is a hilly area with undulating terrains with an elevation of 750-1000 metres. Attappady has an area of 725 sq. km. 'Irulas', 'Mudugas' and 'Kurumbas' are the dominant tribes living in Attappady valley. Among these three groups, 'Irulas' form the numerically dominant tribe, whose main occupation is agriculture. Out of the 138 hamlets in the Attappady valley, 99 are inhabited by 'Irulas'. Irulas are cultivators who are not progressive in their farming practices. Jowar, Pulses, Groundnut, Ragi, Maize, Chamai and Paddy are the important crops grown by 'Irulas'. Because of their primitive cultivation practices, these crops fetch them only poor returns. Modern technology can be introduced in their cultivation aspects, so that their income from agriculture can be increased. The increased economic returns can lead to improvement in their standard of living. To bridge the gap between the available technology and its adoption by the tribes, it is essential to train them in scientific

agriculture relating to the crops they cultivate. Before formulating any meaningful training programmes, it is necessary to ascertain the training needs. Hence a study was undertaken with the following objectives.

1. To identify the training needs in Agriculture of 'Irulas'.
2. To determine the level of knowledge of 'Irulas' on the cultivation of important crops in 'Attappady'.
3. To assess the type, duration, season, venue, and frequency of the trainings required as perceived by the 'Irulas'.
4. To find out the association between the training needs and the socio-psychological characters of 'Irulas'.

The study was carried out in the Attappady valley of Palghat district in Kerala. A sample of 100 Irula farmers was selected from the four villages of this valley using random and proportional allocation techniques.

A detailed review of literature was done, and experts in the departments of Agricultural Extension and Agronomy of the College of Agriculture, Vellayani

were consulted and based on their suggestions the variables for the research study were selected. Training need was the dependent variable for this study. The independent variables were selected based on review of literature and discussion with experts in the fields of Agronomy and Agricultural Extension. Age, farm size, annual income, literacy status, farming experience, status of land tenancy, knowledge on the cultivation of important crops, attitude towards farming, social participation, economic motivation, cosmopoliteness, fatalism and indebtedness were the independent variables selected for the study.

The training needs were assessed in the study by the use of a three-point rating scale with points much needed, somewhat needed and not at all needed with scores of 3, 2, 1 respectively. The training needs of Irulas both in respect of knowledge and skill were measured with this three-point continuum.

The important subject matter areas of training needs identified were finalised after discussion with the experts in Agronomy and Agricultural Extension. Land preparation, seeds and sowing, manuring, intercultural operations and plant protection were the five subject matter areas on which training needs were assessed.

Training need index was calculated based on the scores obtained against the maximum possible scores that could be obtained. Based on the magnitude of training need index, the subject matter areas were ranked.

Total training need score was also worked out, by summing up the scores of all the subject matter areas of the important crops, to study its relationship with the independent variables.

Knowledge level of 'Irulas' on the cultivation of important crops was found out by a knowledge test developed exclusively for the purpose. Sixty four items were initially selected. After editing to eliminate ambiguous and overlapping statements, 40 items were selected. All the items were in the objective form. The 40 items were administered to 30 tribal farmers having identical conditions, but different from the sample. Scores of one and zero were given to correct and incorrect responses, respectively. The scores obtained by the 30 respondents were arranged in the descending order of total scores from the highest to the lowest and the respondents were divided into three equal groups arranged in descending order of total scores obtained by them. These groups were G_1, G_2 and G_3 with 10 respondents in each group.

For item analysis, the middle group namely G_2 was eliminated retaining only the terminal ones with high and low scores.

The index of item difficulty was worked out in this study which refers to the percentage of the respondents answering an item correctly. Two questions from each area with highest percentage of correct responses were selected and they were used for the knowledge test. The item discrimination indices were also worked out, but this aspect could not be used as a criterion since by using this index, selection from every area was not possible.

The independent variable 'age' was measured as the actual age completed in years at the time of interview. 'Farm size' was measured by the scoring procedure devised for this study. Here, farmers with upto 1 hectare of land scored 1, upto 2 ha 2, upto 3 ha 3, upto 4 ha 4, upto 5 ha 5, and more than 5 ha 6. Annual income was measured by a scoring procedure devised for the study. The farmers with an annual income of upto Rs. 1000 scored 1, upto Rs. 2000, upto Rs. 3000, upto Rs. 4000 and above Rs. 4000 scored 2, 3, 4 and 5 respectively.

Literacy status was measured by using a schedule

developed for the purpose. Farming experience was measured by the scoring procedure adopted by Chandrasekaran (1981). In this, the farmers with an experience upto five years scored one, upto 10 years 2, and more than 10 years 3. Status of land tenancy was measured by the procedure adopted by Pillai (1983), where if the respondent possesses all the land owned by him, the status of land tenancy could be '0' and if he leases out all the land owned by him, the score could be one. 'Attitude towards farming' was measured by the scale developed by Sadamate (1978). 'Social participation was measured by scoring procedure developed by Lokhande (1974). Economic motivation was measured by the scale developed by Moulik (1965). Cosmopoliteness was measured by the scoring procedure developed by Desai (1981). 'Fatalism' was measured by using the scale developed by Chattopadhyay (1963). Indebtedness was measured by the schedule devised for the study. In this, the respondent scored '0' if he is not indebted. The score of one for the debt upto Rs. 250, 2 for upto Rs. 500, 3 for upto Rs. 1000, 4 for upto Rs. 2000, and 5 for above Rs. 2000 were assigned.

Data were collected with the help of a well structured and pretested interview schedule. The data so collected were analysed with the help of statistical

techniques. Percentage analysis, correlation analysis and path analysis were employed to derive the results. The salient findings of the study are as follows.

Salient findings

Perception of training needs of 'Irulas' in Attappady

1. Nearly half of the respondents (46 per cent) perceived only low level of training need. Twenty four per cent of the respondents perceived a high need for training and 30 per cent fell in the medium group who perceived a medium level of training need. Only less than one fourth of the respondents perceived a high level of training need in agriculture. Though these tribal farmers do not practise the modern methods of agriculture, majority of them have not perceived a high level of training need. Illiteracy, poor awareness about the training institutions, training programmes, and their poor knowledge about the benefits of trainings in agriculture remain to be the reasons for their poor perception of training needs.

2. Training need perception with respect to the seven important crops grown in this area, was also studied. Out of the seven major crops, highest training need

perception was recorded in the case of Ragi (Training need index TNI - 0.89). This was followed by training needs in Jowar (TNI 0.83), Pulses (TNI 0.79), Maize (TNI 0.67), Chamai (TNI 0.59), Groundnut (TNI 0.43) and Paddy (TNI 0.25) respectively.

3. Training need perception with respect to the major operations in the cultivation of important crops was also assessed, plant protection was perceived as the area having most training need (TNI 0.88). Intercultural operations (TNI 0.75), manuring (TNI 0.59), seeds and sowing (TNI 0.56) and land preparation (TNI 0.41) were perceived in the descending order of importance for training.

4. In Ragi crop, plant protection topped in training need perception (TNI 0.97), followed by training need for intercultural operations (TNI 0.94), seeds and sowing (TNI 0.91) and manuring (TNI 0.91). Land preparation took the last rank with low training need perception (TNI 0.74).

5. The major operations under Jowar as preferred were in the order of seeds and sowing (TNI 0.97), plant protection (TNI 0.94), intercultural operations (TNI 0.88), manuring (TNI 0.80) and land preparation (TNI 0.55).

6. With respect to Pulses, highest need for training was for plant protection (TNI 0.98). Next in the order of importance were manuring (TNI 0.88), intercultural operations (TNI 0.84), seeds and sowing (TNI 0.66) and land preparation (TNI 0.60).

7. Training need perception in the descending order of importance for the various operations in Maize were plant protection (TNI 0.96), intercultural operations (TNI 0.77), seeds and sowing (TNI 0.61), manuring (TNI 0.57) and land preparation (TNI 0.47).

8. In Chamai crop the order of preference in training for various operations were plant protection (TNI 0.91), intercultural operations (TNI 0.67), manuring (TNI 0.60), seeds and sowing (TNI 0.47), and land preparation (TNI 0.30).

9. In Groundnut crop, plant protection ranked first in the training need perception (TNI 0.81). Next in the order of ranks were intercultural operations (TNI 0.70), manuring (TNI 0.27), seeds and sowing (TNI 0.20) and land preparation (TNI 0.17).

10. Training need perception in the descending order of importance for various operations in paddy

were plant protection (TNI 0.61), intercultural operations (TNI 0.42), seeds and sowing (TNI 0.10), manuring (TNI 0.07), and land preparation (TNI 0.06).

Level of knowledge on the cultivation of important crops in Attappady

11. Majority of the respondents (52 per cent) had only low level of knowledge on the cultivation of important crops in Attappady. Only 29 per cent of the respondents had high level of knowledge in the cultivation practices. Nineteen per cent fell in the medium group. Illiteracy, poor exposure to mass media and their poor access to cosmopolite sources contribute to their poor knowledge on the cultivation of important crops.

Types, method, duration, season, venue and frequency of training as preferred by 'Irulas'.

12. Peripatetic training was the most preferred type of training (PI 0.94) by the respondents. Institutional training by ITDP, Attappady was the second choice (PI 0.92).

13. The various training methods ranked in the order of preference were Film shows (PI 0.94), Exhibition (PI 0.89), Field trip (PI 0.84), Demonstration

(PI 0.71), Study tour (PI 0.70), Group discussion (PI 0.59), Lecture (PI 0.37), and Campaign (PI 0.37).

14. Two days' duration was preferred more by the respondents (PI 0.91). This was followed by one day's training programme (PI 0.90), 3-6 days' duration (PI 0.64), one week's duration (PI 0.63), two weeks' duration (PI 0.59) and one month's duration (PI 0.41).

15. The months of April-May were preferred by 56 per cent of the respondents as the most suited period for institutional training. The second most preferred period was June-July (36 per cent). For peripatetic training, the months of September-October were preferred by 48 per cent of the respondents and 42 per cent of the respondents preferred June-July for peripatetic training.

16. ITDP Head Quarters at Agali was the most preferred venue (PI 0.94). Next in the order of preference were soil conservation office, Kottathara (PI 0.93), Krishi Bhavan, Agali (PI 0.92), TNAU, Coimbatore (PI 0.70), KVK, Pattambi (PI 0.44), KVK, Ambalavayal (PI 0.43) and Horticultural College, Vellanikkara (PI 0.42).

17. The respondents preferred to have trainings once in a year (PI 0.82). Next in the order of preference

for frequency of trainings were 'once in 6 months' (PI 0.75), once in 2 years (PI 0.71), once in 3 years (PI 0.62), once in 2 months (PI 0.51), once in 4 years (PI 0.49), once in a month (PI 0.44), once in 5 years (PI 0.37) and once in life time (PI 0.34).

Socio-economic characters

18. Of the 13 variables studied, seven variables viz., annual income, literacy status, status of land tenancy, knowledge on the cultivation of important crops, attitude towards farming, economic motivation, and indebtedness were found to have significant relationship with the training needs of 'Irulas'. Of these variables, status of land tenancy, knowledge on the cultivation of important crops, and 'indebtedness' were found to have negative relation while the rest had positive association. But the variables age, farm size, farming experience, social participation, cosmopoliteness, and fatalism, did not establish significant association with the training need.

Direct and indirect effects

19. Knowledge on the cultivation of important crops had highest direct effect on training needs,

followed by status of land tenancy and indebtedness.

Economic motivation, attitude towards farming, indebtedness, status of land tenancy, literacy status and knowledge on the cultivation of important crops showed high indirect effects through other crucial variables.

The crucial variables through which indirect effects were channelled were: status of land tenancy, knowledge on the cultivation of important crops and indebtedness.

Implications :-

1. While organizing any training programme for 'Irulas' of Attappady, the poor knowledge level of the tribal farmers in the cultivation of important crops may be taken into account.

2. Special emphasis may be given in imparting training in the crops: Ragi, Jower, Pulses, Maize, Chamai, Groundnut and Paddy. While imparting training, the major operations such as plant protection, inter-cultural operations, and seeds and sowing should be given greater importance. The training should include both knowledge and skill aspects.

3. Peripatetic training proves to be more useful and practical than other methods in involving a larger number of tribal farmers. So the training agencies may conduct more number of peripatetic trainings.

4. Methods such as Film shows, Exhibition and Field trip could be used in preference to other methods. To make the training session effective, these methods may be used either individually or in combination with other methods.

5. Training for a shorter duration of 1-2 days proves to be more useful and practical for the tribal people. So the trainings may be planned for a duration of 1 or 2 days unless and otherwise warranted for longer duration.

6. The months of April-May would be convenient for all the tribal farmers to undertake institutional trainings. The months of September-October may be utilized for organizing peripatetic trainings.

7. Since majority of the tribal farmers preferred ITDP Head Quarters, Agali, Soil Conservation Office, Kottathara, and Krishi Bhavan, Agali as the suitable venues for trainings, these venues may be used for

organizing training programmes so as to involve more number of participants for training.

8. As preferred by majority of the tribal respondents, training programmes on agriculture may be arranged 'once in a year' or 'once in six months'.

9. Since status of land tenancy, knowledge on the cultivation of important crops and indebtedness have negative relation with the training need, it is suggested to include tribal farmers who have not alienated much of their land, those with poor knowledge on the scientific cultivation of crops and those who are less indebted for the training as the potential trainees. This category of farmers may respond better for the training and they may form a potential group as they need more training than others.

Suggestions for Future Research:-

1. Studies may be undertaken to assess the adoption rate, time lag in adoption, communication behaviour, yield gap, technological gap etc. of Irulas of Attappady.

2. It will be worthwhile to explore the training needs of 'Mudugas' and 'Kurumbas' of Attappady who are also practising primitive style of agriculture.

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*Originals not seen

APPENDICES

APPENDIX I

LIST OF SCHEDULED TRIBES OF KERALA

1. Adiyan
2. Arandan
3. Eravallan
4. Hill Pulaya
5. Irulas, Irulan
6. Kadar
7. Kammara
8. Kanikkaran, Kanikkar
9. Kattunaikan
10. Kochu Velan
11. Konda Kapus
12. Konda Veddis
13. Koraga
14. Kota
15. Kudiya, Melakudi
16. Kurichian
17. Kurumans
18. Kurumbans
19. Malamalasar
20. Mala Aryan
21. Mala Pandaram

22. Mala Vedan

23. Mala Kuravan

24. Malasar

25. Malayan

26. Malayarayar

27. Mannan

28. Marati (in Hosdurg and Kasaragode taluk of Cannanore District)

29. Muthuvan, Muduger, Muduvan

30. Palleyan

31. Palliyan

32. Paniyan

33. Pulayan

34. Ulladan (Hill dwellers)

35. Uraly

- -

Source: Census of India, 1981. Series - I Part, II B (iii)

APPENDIX II

THE AREAS UNDER IMPORTANT CROPS IN ATTAPPADY

CROPS	AREA in Ha
Jowar	850
Pulses	750
Groundnut	650
Ragi	600
Maize	500
Chamai	350
Paddy	350
Other cereals	325
Cotton	220
Sugarcane	150

APPENDIX III

TRAINING NEEDS IN AGRICULTURE OF 'IRULAS' OF 'ATTAPPADY'

INTERVIEW SCHEDULE

PART - I

Village:-

Hamlet:- Respondent No.

1. Name of the respondent :

2. Address :

3. Age in completed years :

4. Farm size. (Under possession)

Area

a) Upto 0.50 Ha
b) 0.51 to 1.00 Ha
c) 1.01 to 1.50 Ha
d) 1.51 to 2.00 Ha
e) More than 2.00 Ha

5. Crop cultivated

Sl.No.	Crop	Area in Ha
a)		
b)		
c)		
d)		

6. Annual income

Sl.No.	Income level
(i)	Upto Rs. 1000
(ii)	Above Rs. 1000 and upto Rs. 2000
(iii)	Above Rs. 2000 and upto Rs. 3000
(iv)	Above Rs. 3000 and upto Rs. 4000
(v)	Above Rs. 4000

7. Literacy Status

Sl.No.	Literacy level
(i)	Cannot read & write
(ii)	Can read only
(iii)	Can read & write

8. Farming Experience

Sl.No.	Years of experience
(i)	Below 5 years
(ii)	5 to 10 years
(iii)	Above 10 years

9. Status of land tenancy:-

Tenancy status	Cultivable area in Ha
(i) Cultivable land owned	
(ii) Cultivable land leased in	
(iii) Cultivable land leased out	
Total	

10. Knowledge on the cultivation of crops.

A. JOWAR

1. The normal seed rate required for planting one hectare of Jowar is . . . . . (correct/wrong)

2. The normal yield from a Jowar crop from one hectare is . . . . . (correct/wrong)

B. RAGI

3. Ragi crop matures in about 135 days (say true or false) (correct/wrong)

4. The average yield of ragi crop ranges from . . . . . (correct/wrong)

C. PULSES

5. The seed rate of black gram is . . . . . (correct/wrong)

6. What is the seed rate for green gram? (correct/wrong)

D. GROUNDNUT

7. The normal duration of groundnut crop is . . . . . (correct/wrong)

8. The tikka leaf spot of groundnut can be controlled by spraying . . . . . (correct/wrong)

E. MAIZE

9. Seed rate for maize for broadcasting is . . . . . (correct/wrong)

10. The duration of a maize crop is . . . . . (correct/wrong)

F. PADDY

11. The seed rate for rice crop is . . . . . (correct/wrong)

12. In how many days the seedlings will be ready for transplanting after sowing in nursery? (correct/wrong)

G. CHAMAI

13. The normal duration of the chamai crop is . . . . . (correct/wrong)

14. What is the normal yield that can be obtained from one acre? (correct/wrong)

H. GENERAL

15. What is use of contour bunding? (correct/wrong)

16. What is the purpose of planting grasses on the top of the contour bunds? (correct/wrong)

11. Attitude towards farming

Please indicate your agreement with the following statements on the three point continuum.

Sl. No.	Statements	Agree	Undecided	Disagree
1	I feel farming is not a promising occupation.			
2	Farming leads to overall development of one's family.			
3	Absolute gain in terms of economic return from farming is very low			
4	Farming is a challenge to tribals and they should accept it.			
5	Farming is an occupation of rich people.			
6	Farming is not the solution to remove tribal poverty.			

7. Farming is a non-profit enterprise and I feel it is useless to stick to it

8. Food problem of tribals can be solved by taking farming on a wide scale

9. Farming is a profitable occupation

10. Farming provides settled living for tribals

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12. Social participation

Please indicate whether you are a member or office bearer in the following organisations and if so how frequently do you attend the meeting?

Sl. No.	Organisation	As member	As Office bearer	Attend meeting		
				Regularly	Occasiona- lly	Never
1.	Panchayat					
2.	Co-operative society					
3.	Rural Radio forum					
4.	Youth Club					
5.	Distinctive features MLA, MP etc.					
6.	Any other (Pl. specify)					

13. Economic Motivation

Please indicate your agreement with the following statements on the respective columns.

Sl. No.	Statements	Most like	Least like
A (a)	All I want from my farm is to make just a reasonable living for the family (1)		
(b)	In addition to making reasonable amount of profit, the enjoyment in farming life is also important for me (2)		
(c)	I would invest in farming to the maximum to gain a large profit (3)		
B (a)	I would not hesitate to borrow any amount of money in order to run the farm properly (3)		
(b)	Instead of growing new cash crops which cost more money, I follow the routine farming practices (2)		
(c)	It is not only monetary profit but also the enjoyment of work done, which give me satisfaction for my hard work on the farming (1)		
C (a)	I hate to borrow money on principles even when it is necessary for properly running the farm (1)		
(b)	My main aim is maximising monetary profit in farming by growing each crops in comparison to growing of crops which are simply consumed by my family (3)		
(c)	I avoid excessive borrowing of money for farm investment (2)		

14. Cosmopoliteness

Please indicate how frequently do you visit the nearest town and the purpose of your visit.

A.

Sl. No.	Particulars
(i)	Two or more times a week
(ii)	Once a week
(iii)	Once in 15 days
(iv)	Once in a month
(v)	Occasionally
(vi)	Never

B. Purpose of visit

Sl. No.	Particulars
1.	All visits relating to Agriculture
2.	Some relating to Agriculture
3.	Personal or domestic matters
4.	Entertainment
5.	Other purpose
6.	No purpose

15. Fatalism

Please indicate your agreement with the following statements on the respective columns.

	SA	A	DA	SDA
(i) Those who say that they have seen ghosts either distort truth or tell a lie.				

(ii) It is better to disbelieve in what is not proved or tested but when tested it is to be relied on.

(iii) A basic human tragedy is that man proposes and God disposes.

(iv) Mantras have far-reaching effects if one can chant and recite accurately on right occasions, he can produce miraculous effects.

(v) Every moment in man's life has already been settled and determined by his fate.

16. Indebtedness

Please indicate your nature of indebtedness

Sl. No.	Source	Purpose of borrowing	Amount borrowed	Terms

PART II

1. Have you participated in any training programmes in Agriculture Yes/No

If yes please specify

Sl. No.	Name of training programme attended	Duration	Venue	Training programme conducted by	Whether perceived by you as satisfactory Yes/No

2. Type of training

Please indicate your preference with respect to the following training programmes for farmers.

Sl. No.	Type of training	Most preferred	Somewhat preferred	Least preferred
		3	2	1
i)	Institutional training by ITDP Attappady			
ii)	Institutional training by KVK Pattambi			
iii)	Peripatetic training by KVK/ITDP/Department of Agri.			
iv)	Correspondence course by KAU.			
v)	Farm School on Akhashwani			

3. Method of training

Please indicate your choice for the following training methods.

Sl. No.	Method	Most preferred	Somewhat preferred	Least preferred
(i)	Lecture			
(ii)	Group discussion			
(iii)	Exhibition			
(iv)	Field trip			
(v)	Study tour			
(vi)	Campaigns			
(vii)	Film shows			
(viii)	Demonstration			
(ix)	Others			

4. What is the duration of the training you prefer?

Sl. No.	Duration	most pre-ferred	somewhat pre-ferred	least pre-ferred
(i)	One day			
(ii)	Two days			
(iii)	3-6 days			
(iv)	one week			
(v)	two weeks			
(vi)	one month			

5. Season of training

Which month is preferred by you to undergo the following training programmes.

Sl. No.	Nature of training programme	Month
(i)	Institutional training	
(ii)	Peripatetic training	
(iii)	Others (please specify)	

6. Venue of training

Please indicate your choice for following venues for your training.

Sl. No.	Venue	most prefe-rred	somewhat prefe-rred	least prefe-rred
(i)	ITDP Head Quarters, Agali			
(ii)	KVK Pattambi			
(iii)	KVK Ambalavayal			
(iv)	Horticultural College, Vellanikkara, Trichur.			

(v) Krishi Bhavan, Agali

(vi) TNAU, Coimbatore

(vii) Soil Conservation Office, Kottathara

7. Frequency of the training

Please indicate the frequency of training that you desire.

Sl. No.	Frequency	most preferred	somewhat preferred	least preferred
(i)	Once a month			
(ii)	Once in two months			
(iii)	Once in 6 months			
(iv)	Once in a year			
(v)	Once in 2 years			
(vi)	Once in 3 years			
(vii)	Once in 4 years			
(viii)	Once in 5 years			
(ix)	Once in the life time			

8. Training methods in Agriculture

Please indicate the perception of your training need in the following subject matter areas related to the cultivation of following important crops.

Sl. No.	Major Area	Training needs					
		Knowledge			Skill		
I	JOWAR	much needed (3)	somewhat needed (2)	Not at all needed (1)	much needed (3)	somewhat needed (2)	Not at all needed (1)
1. Land preparation							
(a) Terracing the slopes as required for the cultivation.							

(b) Contour bunding

(c) Construction of water harvesting structures on slopy lands.

(d) Initial tillage for sowing

(e) Minimum tillage

2. Seeds and Sowing

(a) Characteristics of improved varieties of seeds and seedlings.

(b) Selection of varieties of crop suitable to locality.

(c) Seed rate and spacing.

(d) Pre-treatment of seeds.

(e) Methods of sowing/planting.

3. Manuring

(a) Taking soil samples and sending for analysis.

(b) Optimum doses of fertilizer required.

(c) Time of fertilizer application for the crop.

(d) Applying fertilizers according to soil conditions.

(e) Use of organic manures.

4. Intercultural operations

(a) Weeds and weed management.

(b) Mulching and moisture conservation.

(c) Optimum utilization of irrigation water.

(d) Time and number of irrigations.

(e) Water management.

(3) (2) (1) (3) (2) (1)

5. Plant Protection

(a) Identification of pests and diseases.

(b) Suitable pesticides/fungicides to control the pests and diseases.

(c) Operating sprayers and dusters.

(d) Precautions in handling the chemicals.

(e) Prophylatic spraying.

II. PULSES

1. Land preparation

(a) Terracing the slopes as required for the cultivation.

(b) Contour bunding

(c) Construction of water harvesting structures on slopy lands.

(d) Initial tillage for sowing.

(e) Minimum tillage

2. Seeds and sowing

(a) Characteristics of improved varieties of seeds and seedlings.

(b) Selection of varieties of crop suitable to locality.

(c) Seed rate and spacing.

(d) Pre-treatment of seeds.

(e) Methods of sowing/planting.

(3) (2) (1) (3) (2) (1)

3. Manuring

(a) Taking soil samples and sending for analysis.

(b) Optimum doses of fertiliser required.

(c) Time of fertilizer application for the crop.

(d) Applying fertilizer according to soil conditions.

(e) Use of organic manures.

4. Intercultural operations

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5. Plant protection

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(b) Suitable pesticides/fungicides to control the pests and diseases.

(c) Operating sprayers and dusters.

(d) Precautions in handling the chemicals.

(e) Prophylatic spraying.

(3) (2) (1) (3) (2) (1)

III. GROUNDNUT

1. Land preparation

(a) Terracing the slopes as required for the cultivation.

(b) Contour bunding.

(c) Construction of water harvesting structures on slopy lands.

(d) Initial tillage for sowing.

(e) Minimum tillage.

2. Seeds and sowing

(a) Characteristics of improved varieties of seeds and seedlings.

(b) Selection of varieties of crop suitable to locality.

(c) Seed rate and spacing.

(d) Pre-treatment of seeds.

(e) Methods of sowing/planting.

3. Manuring

(a) Taking soil samples and sandling for analysis.

(b) Optimum doses of fertiliser required.

(c) Time of fertilizer application for the crop.

(d) Applying fertilizer according to soil conditions.

(e) Use of organic manures.

(3) (2) (1) (3) (2) (1)

4. Intercultural operations

(a) Weeds and weed management.

(b) Mulching and moisture conservation.

(c) Optimum utilization of irrigation water.

(d) Time and number of irrigations.

(e) Water management.

5. Plant protection

(a) Identification of pests and diseases.

(b) Suitable pesticides/fungicides to control the pests and diseases.

(c) Operating sprayers and dusters.

(d) Precautions in handling the chemicals.

(e) Prophylatic spraying.

IV. RAGI

1. Land Preparation

(a) Terracing the slopes as required for the cultivation.

(b) Contour bundling.

(c) Construction of water harvesting structures on slopy lands.

(d) Initial tillage for sowing.

(e) Minimum tillage.

(3) (2) (1) (3) (2) (1)

2. Seeds and sowing

(a) Characteristics of improved varieties of seeds and seedlings.

(b) Selection of varieties of crop suitable to locality.

(c) Seed rate and spacing.

(d) Pre-treatment of seeds.

(e) Methods of sowing/planting.

3. Manuring

(a) Taking soil samples and sending for analysis.

(b) Optimum doses of fertiliser required.

(c) Time of fertilizer application for the crop.

(d) Applying fertilizer according to soil conditions.

(e) Use of organic manures.

4. Intercultural operations

(a) Weeds and weed management.

(b) Mulching and moisture conservation.

(c) Optimum utilization of irrigation water.

(d) Time and number of irrigations.

(e) Water management.

(3) (2) (1) (3) (2) (1)

5. Plant protection

(a) Identification of pests and diseases.

(b) Suitable pesticides/fungicides to control the pests and diseases.

(c) Operating sprayers and dusters.

(d) Precautions in handling the chemicals.

(e) Prophylatic spraying.

V. MAIZE

1. Land preparation

(a) Terracing the slopes as required for the cultivation.

(b) Contour bunding.

(c) Construction of water harvesting structures on slopy lands.

(d) Initial tillage for sowing.

(e) Minimum tillage.

2. Seeds and sowing

(a) Characteristics of improved varieties of seeds and seedlings.

(b) Selection of varieties of crop suitable to locality.

(c) Seed rate and spacing.

(d) Pre-treatment of seeds.

(e) Methods of sowing/planting.

(3) (2) (1) (3) (2) (1)

3. Manuring

(a) Taking soil samples and sending for analysis.

(b) Optimum doses of fertiliser required.

(c) Time of fertilizer application for the crop.

(d) Applying fertiliser according to soil conditions.

(e) Use of organic manures.

4. Intercultural operations

(a) Weeds and weed management.

(b) Mulching and moisture conservation.

(c) Optimum utilization of irrigation water.

(d) Time and number of irrigations.

(e) Water management.

5. Plant protection

(a) Identification of pests and diseases.

(b) Suitable pesticides/fungicides to control the pests and diseases.

(c) Operating sprayers and dusters.

(d) Precautions in handling the chemicals.

(e) Prophylatic spraying.

(3) (2) (1) (3) (2) (1)

VI. CHAMAI

1. Land preparation

(a) Terracing the slopes as required for the cultivation.

(b) Contour bunding.

(c) Construction of water harvesting structures on slopy lands.

(d) Initial tillage for sowing.

(e) Minimum tillage.

2. Seeds and sowing

(a) Characteristics of improved varieties of seeds and seedlings.

(b) Selection of varieties of crop suitable to locality.

(c) Seed rate and spacing.

(d) Pre-treatment of seeds.

(e) Methods of sowing/planting.

3. Manuring

(a) Taking soil samples and sending for analysis

(b) Optimum doses of fertiliser required.

(c) Time of fertiliser application for the crop.

(d) Applying fertilizer according to soil conditions.

(e) Use of organic manures.

(3) (2) (1) (3) (2) (1)

4. Intercultural operations

(a) Weeds and Weed management.

(b) Mulching and moisture conservation.

(c) Optimum utilization of irrigation water.

(d) Time and number of irrigations.

(e) Water management.

5. Plant protection

(a) Identification of pests and diseases.

(b) Suitable pesticides/fungicides to control the pests and diseases.

(c) Operating sprayers and dusters.

(d) Precautions in handling the chemicals.

(e) Prophylatic spraying.

VII. PADDY

1. Land preparation

(a) Terracing the slopes as required for the cultivation.

(b) Contour bunding.

(c) Construction of water harvesting structures on slopy lands.

(d) Initial tillage for sowing.

(e) Minimum tillage.

(3) (2) (1) (3) (2) (1)

2. Seeds and sowing

(a) Characteristics of improved varieties of seeds and seedlings.

(b) Selection of varieties of crop suitable to locality.

(c) Seed rate and spacing.

(d) Pre-treatment of seeds.

(e) Methods of sowing/planting.

3. Manuring

(a) Taking soil samples and sending for analysis.

(b) Optimum doses of fertiliser required.

(c) Time of fertilizer application for the crop.

(d) Applying fertilizer according to soil conditions.

(e) Use of organic manures.

4. Intercultural operations

(a) Weeds and weed management

(b) Mulching and moisture conservation.

(c) Optimum utilization of irrigation water.

(d) Time and number of irrigations.

(e) Water management.

(3) (2) (1) (3) (2) (1)

5. Plant protection

(a) Identification of pests and diseases.

(b) Suitable pesticides/fungicides to control the pests and diseases.

(c) Operating sprayers and dusters.

(d) Precautions in handling the chemicals.

(e) Prophylatic spraying.

9. Do you require special training on the following crops. Indicate your priority.

(i)	Cultivation of Jowar	Yes/No
(ii)	Cultivation of Pulses	Yes/No
(iii)	Cultivation of Groundnut	Yes/No
(iv)	Cultivation of Ragi	Yes/No
(v)	Cultivation of Maize	Yes/No
(vi)	Cultivation of Chamai	Yes/No
(vii)	Cultivation of Paddy	Yes/No
(viii)	Cultivation of Medicinal crops	Yes/No

10. Do you require training in using the different agricultural implements?

Yes/No

11. Do you require exposure on the different procedures to get loans for cultivations?

Yes/No

12. Do you require exposure on the procedures of repayment of agricultural loans?

Yes/No

13. Are you interested in getting trained on some new crops suitable to the locality?

Yes/No

If yes specify

APPENDIX IV

ITEMS COLLECTED FOR THE KNOWLEDGE TEST WITH THE DIFFICULTY AND DISCRIMINATION INDICES

	Difficulty index	Discrimination index
A. JOWAR		
1. The normal seed rate required for planting one hectare of Jowar is	63.33*	0.1
2. The shootfly in Jowar can be controlled by using carbofuran (say true or false)	16.66	0.5
3. Atrazine is a pre-emergence weedicide for sorghum crop (say true or false)	0.00	0.0
4. The normal yield from a Sorghum crop from one hectare is	63.33*	0.1
5. State the chemical used for seed treatment of Jowar ?	6.66	0.2
B. RAGI		
6. Ragi crop matures in about 135 days (say true or false)	63.33*	0.1
7. The average yield of Ragi crops is	56.66*	0.0
8. What is the chemical used for treating the Ragi seeds before sowing ?	0.00	0.0
9. State the chemical used for the control of stemborer in Ragi crop?	10.00	0.3
10. P.R.202 is one of the promising varieties of Ragi crop (Say true or false)	3.33	0.1
C. PULSES		
11. The seed rate of Black gram is	66.66*	0.0
12. The normal productivity of Black gram is	60.00	0.0
13. T.9 is a short duration Black gram variety which can be grown as an intercrop in cotton field (Say true or false)	6.66	0.2
14. What is the seed rate for Green gram?	60.66*	0.2
15. State one fungicide that controls the leaf spot disease in Black gram?	26.66	0.8

	Difficulty index	Discrimination index
D. GROUNDNUT		
16. Name one high yielding Groundnut variety?	22.00	0.6
17. The normal duration of Groundnut crop is	63.33*	0.1
18. The tikka leaf spot of Groundnut can be controlled by spraying	23.33*	0.7
19. The leaf roller of Groundnut is controlled by	13.33	0.4
20. How much quantity of 'gypsum' should we apply during the pegging stage?	13.33	0.4
E. MAIZE		
21. The fertilizer rate recommended for Maize crop is	0.00	0.0
22. Seed rate for broadcasting for Maize crop is	53.33*	0.2
23. The duration of Maize crop is	60.00*	0.2
24. State one high yielding variety in Maize?	22.00	0.6
25. Please tell me the chemical to be sprayed for controlling mildow in Maize?	16.66	0.5
F. PADDY		
26. The seed rate for Paddy crop is	56.66*	0.3
27. Chemical used for seed treatment in Paddy is	23.33	0.7
28. In how many days to seedlings will be ready for transplanting after sowing in nursery?	53.33*	0.4
29. The rice earhead bug is controlled by	23.33	0.1
30. Blast disease of Paddy is controlled by	33.33	0.1
G. CHAMAI		
31. The normal duration of the Chamai crop is	63.33*	0.1
32. What is the normal yield that can be obtained from one acre of Chamai crop?	56.66*	0.8

	Difficulty index	Discrimination index
33. PM.2 is a high yielding variety of Chamai. (Say true or false)	0.00	0.7
34. The Chamai crop is capable of withstanding both drought and water logging conditions (Say true or false)	26.66	0.1
35. The crop is grown only in Tamilnadu and Kerala (Say true or false)	23.33	0.3
H. GENERAL		
36. What is the use of contour bunding?	50.00*	0.1
37. What practice do you adopt for moisture conservation?	10.00	0.3
38. Specify the size of stones used for contour bunds?	22.00	0.6
39. Contour bunds are to be constructed along the slopes (Say true or false)	22.00	0.0
40. What is the purpose of planting grasses on the top of contour bunds?	23.33*	0.7

*selected items.

TRAINING NEEDS IN AGRICULTURE OF 'IRULAS' OF 'ATTAPPADY'

By

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ABSTRACT OF THE THESIS
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ABSTRACT

The study on the training needs in agriculture of 'Irulas' of Attappady was carried out with the following objectives:

1. To identify the training needs in Agriculture of 'Irulas'.

2. To determine the level of knowledge of 'Irulas' on the cultivation of important crops.

3. To assess the type, duration, season, venue and frequency of the trainings required as perceived by the 'Irulas'.

4. To find out the association between the training needs and the socio-psychological characters of Irulas.

Irulas form the numerically dominant tribe of 'Attappady' valley of Palghat district, in Kerala State. A sample of 100 Irula farmers was selected from the four villages of Attappady using random and proportional allocation techniques. Personal interviews were conducted with the help of a well structured and pre-tested interview schedule. The data so collected

were analysed with the help of suitable statistical techniques. The salient findings of the study are as follows.

Nearly half of the respondents (46 per cent) perceived only low level of training need. Twenty four per cent perceived a high need for training while 30 per cent fell in the medium group, who perceived a medium level of training need. Because of the high illiteracy and poor exposure to training programmes, they perceived low level of training need. With regard to the perception of training needs for the important crops, Ragi ranked first and it was followed by training needs in Jowar, Pulses, Maize, Chamai, Groundnut and Paddy respectively. With regard to the perception of training needs in respect to the major operations in general, plant protection was perceived as the area having most important training need. Other important areas of training needs in the descending order of preference were intercultural operations, manuring, seeds and sowing and land preparation.

Perception of training needs in the descending order of importance with regard to the various operations in the cultivation of Ragi were: plant protection, intercultural operations, seeds and sowing, manuring and land preparation. The major areas of training needs in Jowar as perceived in the order were: seeds and sowing, plant protection, intercultural operations, manuring and land preparation. With respect to Pulses, the training needs were on: plant protection, manuring, intercultural operations, seeds and sowing and land preparation. With respect to Maize, plant protection, intercultural operations, seeds and sowing, manuring and land preparation were the training needs. The training needs perceived with respect to Chamai crop according to the descending order were: plant protection, intercultural operations, manuring, seeds and sowing and land preparations. With regard to Groundnut crop the preference was in the order of plant protection, intercultural operations, manuring, seeds and sowing and land preparation. In the case of Paddy, plant protection, intercultural operations, seeds and sowing, manuring and land preparation were perceived in the order of importance as the training needs.

Majority of the tribal farmers had only low level of knowledge (52 per cent) on the cultivation of important crops. Twenty nine per cent of the respondents had a high level of knowledge, and 19 per cent fell in the medium group of knowledge level.

Peripatetic training was the most preferred type of training. Film show was the most preferred method of training. A shorter duration of two days was preferred for training by the respondents. The months of April-May were preferred on the most suited for institutional training, whereas the months of September-October were preferred for peripatetic training. The preferred venues for training were ITDP Head Quarters at Agali, Soil Conservation Office at Kottathara and Krishi Bhavan, Agali. The tribal farmers preferred to have training once a year.

It was found that status of land tenancy, knowledge on the cultivation of important crops, and indebtedness were found to have significant negative relation with the training needs while the variables annual income, literacy status, attitude towards farming and economic motivation had significant positive association with the training needs. The variables

such as age, farm size, farming experience, social participation, cosmopoliteness and fatalism had no correlation with the training needs of the 'Irulas' of Attappady.

Knowledge on the cultivation of important crops had highest direct effect on the training needs, followed by status of land tenancy and indebtedness. Economic motivation, attitude towards farming, indebtedness, status of land tenancy, literacy status and knowledge on the cultivation of important crops showed high indirect effects through other crucial variables.

The crucial variables through which indirect effects were channelled were: status of land tenancy, knowledge on the cultivation of important crops and indebtedness.