

A STUDY OF FACTORS ASSOCIATED WITH
THE ADOPTION OF HYBRID COTTON
BY THE SMALL FARMERS

By

ABUBAKAR M. SHAIKH

B. Sc. [Agri.] Hons.

A Thesis submitted to the

MAHATMA PHULE KRISHI VIDYAPEETH

(AGRICULTURAL UNIVERSITY)

RAHURI, DISTRICT:- AHMADNAGAR

[MAHARASHTRA STATE]

in partial fulfilment of the requirements for the degree

of

MASTER OF SCIENCE (Agriculture)

in

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DEPARTMENT OF AGRICULTURAL EXTENSION

Post-Graduate School, Rahuri.

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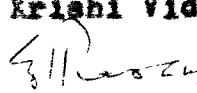
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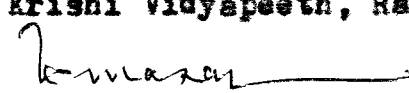
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This is to certify that the thesis entitled
"A Study of Factors Associated with the Adoption
of Hybrid Cotton by the Small Farmers" submitted
to the Faculty of Agriculture, Mahatma Phule
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the results of a piece of bonafide research carried
out by Shri A.M. Shaikh under my guidance and super-
-vision and that no part of the thesis has been
submitted for any other degree or publication.



Rahuri,

(K.R. Kadam)
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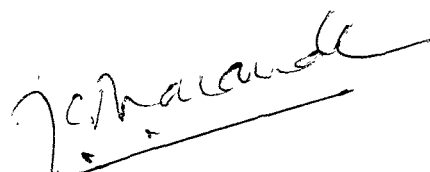
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C e r t i f i c a t e

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CHAPTER-I

INTRODUCTION

CHAPTER-I

I N T R O D U C T I O N

The success of any strategy designed to have increased agricultural production mainly depends upon the participation of the entire farming community in the development programmes. Looking to the "operational land holding" in India, it is observed that out of 50 million operational holdings, about 75.00 per cent have less than 3.00 hectares owned or rented land, out of which one-fourth households have a small parcel of land of less than one acre. The area cultivated by these small farmers amounts to 20.00 per cent of the total cultivable area. Unless this sector of farming community is organized and made viable to contribute its right to have increased agricultural production, nothing substantial can be achieved in the endeavour of development of the country. Otherwise, it will upset the process of orderly and peaceful change in rural economy and even frustrate the national efforts to step-up agricultural production with social justice.

The number of small farmers is increasing over a time, mainly because of the break up of the traditional joint families. Subdivision of land due to increasing population and law of inheritance are also reasons for this. In Maharashtra, the number of cultivators rose from 52 lakhs in 1952 to 87 lakhs in 1961, breaking the bulk of cultivated area into small pieces. The direct impact of this process of division of farms is the creation of smaller and smaller

holdings which fall short of an economic size. In general, holdings of less than two hectares are not economic as they do not provide adequate employment to the available family and bullock labour.

The farmers from this group of small holders are economically backward and hence they do not dare to adopt new agricultural technology for increasing the farm production. As a result, the benefits of the agricultural innovations and development plans are harvested by the upper class of farmers only. It is thought that any development programme planned for rural masses should be aimed at enabling all sections of rural population to reap its advantages. The participation of small farmers in the agricultural development programmes is, therefore, essential, as they constitute 70.00 per cent of the total farms and the area acquired by them is quite significant from the point of view of total agricultural production.

Generally, it is observed that the small farmers are compelled to grow cereals only as they have to depend upon their own land for producing the food grains required to meet their consumption needs. Another thing is that this sector is away from new technology as it demands investment for inputs like improved seeds, fertilizers, plant protection measures and such others. Irrigation water and improved implements also come in their way.

Because of these difficulties, the small farmers

cannot reap the profits as compared to those farmers holding large area. Due to political and social dominance in the rural area, the new development programmes have benefitted mostly the richer sections at the cost of small farmers, even though these programmes have been designed for the small farmers. The extension agency employed in the Community Development Programme also seems to be working for big farmers only. Because of these factors the poverty of small farmers and gap between small and big farmers is increasing.

If this big section of the cultivating population is always kept out of the orbit of the agricultural and other development programmes and the fruits of these programmes are harvested by a small portion of the society only, it will increase the inequalities in the income levels of the different sections of the society and generate social and economic tensions in the rural area.

The best answer to improve this condition of small farmers with their existing land holdings is to adopt new strategy of agriculture, based on high yielding varieties and package of practices as the new agricultural technology is neutral to scale of farming. A small farmer from Japan can produce higher physical output per unit of land than the relatively larger farms in neighbouring countries. In Germany also it has been observed that even middle and small farms can be raised to modern levels of production

techniques. The farm management surveys recently conducted in India have also revealed that smaller, produce more per acre as compared to larger farms if modern inputs and technical know-how are provided to him.

The Government has also diverted its allied efforts to help this huge mass of small farmers by launching special development programmes like "Small Farmers Development Agency" (SFDA), "Marginal Farmers and Agricultural Labours" (MFAL) and "Integrated Area Development Project" (IADP). In "Drought Prone Area Development Programme", special provision has been made for small and marginal farmers. These projects are extending all kinds of assistance to the small and marginal farmers for adopting new agricultural technology.

With the availability of irrigation water due to major and minor irrigation projects and availability of new agricultural technology, many farmers are growing cash crops, especially short duration ones, like cotton in the Deccan Canal area of the state. It is the major area growing irrigated cotton having superior fibre properties. The hybrids like Varalaxmi and Savitri have resulted in tremendous increase in the cotton yields even upto 30.00 quintals per hectare in this region. It had its impact on the small farmers from this area too. They are now becoming aware of immense potential of this new agricultural technology. Few of them are trying to adopt these hybrid cotton

varieties; however, as yet, large mass of the small farmers is either reluctant or unable to adopt this new technology.

Some research studies have been conducted by the research workers to know about the characters and adoption behaviour of the small farmers. However, almost all of them have studied the adoption in respect of cereals and dry land agriculture. But the studies on adoption behaviour of the small farmers in respect of cash crops are very few. Therefore, the present investigation entitled "A Study of Factors Associated with the Adoption of Hybrid Cotton by the Small Farmers" was undertaken.

Importance of the study :

The present study was undertaken with the general objective of studying the various behavioural characteristics of the small farmers and their influence on adoption of hybrid cotton by these farmers.

It is expected that the present study would be useful to the Government, extension and private agencies, policy makers, planners and those who are engaged in the task of the uplifting the small farmers.

The small farmers which constitute the main bulk of the farming community are the Clientele of the extension agency. It is imperative that an extension agent should possess knowledge about the characteristics and problems of small farmers which influence their adoption behaviour.

Objectives of the study :

The specific objectives of the study were :

- 1 To know the association of personal, socio-economic and psychological characteristics of the small farmers with the adoption of hybrid cotton.
- 2 To know the level of knowledge of small farmers regarding the improved technology of cultivation of hybrid cotton.
- 3 To know the sources of information used by the small farmers at different stages of adoption of hybrid cotton.
- 4 To understand the reasons for non-adoption of hybrid cotton by the small farmers.

Limitation of study :

The present study was conducted in Malshiras Development Block of Solapur District and as such its findings would be of limited use. Application of the results in other areas will, however, depend upon the socio-economic conditions existing in those areas.

This study being of local and exploratory type, the findings will have to be tested in other parts of the country to judge its validity on a general and universal scales.

The study was limited to adoption of hybrid cotton by small farmers and hence the findings might not be entirely applicable to adoption of other farm practices.

Chapter Opener Page

CHAPTER-II

REVIEW OF
LITERATURE

CHAPTER -II

R E V I E W O F L I T E R A T U R E

Review of literature is always a stepping stone for an investigator to frame his research project and to have basis for interpretation of findings of a study. The literature reviewed for the present study has been presented in this chapter in four parts viz., (i) Definition of small farmers, (ii) Personal, social and psychological characteristics of small farmers in relation to adoption of improved agricultural practices, (iii) Sources of information used by the small farmers in the adoption process, and (iv) Reasons for non-adoption of hybrid cotton by the small farmers.

I SMALL FARMER

Nanavati (1951) has defined small farmer as one who struggles for a scanty living as a part-time worker, because the holding is much below, the economic family holding proving subsistence to the family from the farm.

According to Rogers (1965), small farmer is one who is more or less a subsistence farmer but seldom completely self sufficient because of uneconomic holding.

More appropriate and practicable definition accepted by the Government of Maharashtra (1965) reads as the cultivator who cultivates land personally, with holding upto five acres and with land revenue assessment not exceeding Rs. 10.00 and whose total farm and non-farm income does not exceed Rs. 1800.00 per annum is small farmer.

According to survey report of the Nalgonda district administration (1969), the farmer who is having 5 or less than 5 standard acres of land is a small farmer.

Rath (1970), defined small farmer as one whose total resources position; farm as well as non-farm does not enable him to keep him and his family at a sustained minimum level of subsistence; it appears that on the basis of the certain available data, farmers with ten acres of land in dry region would be called as small farmers.

Daulat Singh (1973) stated that small farmer is one who supplements his meagre farm income by adopting some subsidiary occupation.

Gangawar and Chakhar (1975) stated that a small farmer can be defined as one where bulk of the labour force comes from the same household, production is consumed on the farm and/or traded in local markets and farmers do not live much above culturally determined subsistence levels.

Chanderbhan and Sharma (1976) explained that generally the marginal farmers are those who have less than 5 acres of agricultural land. The increase in population and operation of law of inheritance have further embellished the rank of marginal farmers.

Generally, land and income are the two criteria used, either separately or in combination for defining the small farmer by agricultural universities. The fourteen agricultural Universities have defined the small farmer on area

of land (1976). The area assigned ranges from 1.25 to 17.5 acres.

According to Institute of Agriculture, Mandalay, Burma and University of Philippines, small farmer is that class of agricultural producer whose net income is below the national average farm income.

Tamil Nadu Agricultural University defined the small farmer as one who receives a net income of Rs. 2400.00 per year.

According to Bangladesh Agricultural Institute, Dacca, those who operate a farm of 4 acres or less and who do not have other sources of income are small farmers.

Bogor Agricultural University, Bogor, Indonesia defined those farmers as small farmers who have insufficient land and insufficient income.

Mahatma Phule Krishi Vidyapeeth, Rahuri (India) defines small farmer as one whose ownership of land is below 5 acres and income below Rs. 2400.00 per year.

II CHARACTERISTICS OF SMALL FARMERS

(a) Age :

✓ Gross (1949) reported that non-adopters are younger than acceptors of improved agricultural practices by about 4 to 6 years.

According to Lionberger (1956), there were some young, low income farmers getting started in farming while those above 60 years were cutting down or expecting to cut down their farm operations. The age structure of low income farmers as revealed by number of studies was in the line with that of low income rural people in general.

It was found by Burkett and Thompson (1965) in their study of low incomes of rural people observed that 20 per cent of household heads were from the age group of 65 years and above, while nearly 19 per cent of households were below 35 years of age.

Fliegel (1966) reported that the percentage of low income farmers was 16.00, who were belonging to the age group of 65 and above years. However, he indicated that these old low income farmers were active in their farming. Only 7.00 per cent of low income farmers were 30 years or younger in their age.

Laxminarayan (1965) did not find significant association between the age of the small farmers and their adoption behaviour.

Salvi (1971) found that the age of low income farmers was significantly but negatively related to their incentives or adoption of agricultural innovations.

Gangappa (1974) reported that all the variables except age under study were significantly associated with the adoption of improved practices of hybrid jowar.

Salunke and Thorat (1975) in their study revealed that the adoption behaviour of small farmers failed to show significant relationship with their age.

Rogers (1952) observed that, in general, younger farmers tend to be more inclined to adopt improved agricultural practices while Lionberger (1960) showed that middle aged farmers had higher adoption score than either of the other two age groups.

(b) Education :

Lionberger (1948) in his missouri study pointed out that nearly 11 per cent of the low income farmers had completed less than five years of schooling as against eight per cent for all the farmers.

Copp (1956) indicated that the formal education is positively related with adoption of recommended practices.

Fliegel (1960) observed that low income farmers have less education, are less likely to project plans in future and less likely to utilize such key means of gaining greater control over circumstances as credit and modern farming information and practices.

Bose (1961) reported that those who adopted more number of practices were literates.

Rahudkar (1962) reported that education is an important factor in adoption of improved farm practices and except

education none of the socio-economic characters was significantly related to adoption of improved farm practices.

✓Khaladkar and Toke (1963) observed that there was a definite relationship between the formal education of the farmers and their knowledge about recommended practices of cotton cultivation.

✓Kadam (1974) also reported that the laggards were comparatively less educated than innovators and early adopters of cotton.

✓Yadava (1964) reported that there was a continuous increase in adoption of innovations as the educational level of the farmers increased. The secret behind high proportion of literates adopting innovations was that they were able to read.

Salvi (1971) found that education was positively related with incentives of the low income farmers for adoption of agricultural innovations, but education was negatively related to their disincentives for adoption of agricultural innovations.

Gangappa (1975) reported that education was significantly associated with the adoption of improved practices for jowar cultivation by small farmers.

(c) Caste :

Rahudkar (1962) concluded that the undeveloped caste

farmers had low agricultural development than the developed ones. He further added that for small farmers, living conditions were poor, risk taking ability was less and aspirations and incentives were few, but social rights rituals, customs and traditions were predominant.

Patel (1965) revealed that majority of small farmers belonged to Jat community. They had poor knowledge of agriculture and had lesser contacts with extension agents, and naturally there was low adoption of improved practices amongst them.

Mulay and Ray (1965) concluded that in adoption of the improved practices, the support of caste group was an important factor.

Jha and Shaktawat (1972) reported that caste of the farmers was not significantly related to adoption of hybrid bajra.

Salunke and Thorat noted that in case of small farmers the adoption behaviour failed to show significant relationship with their caste.

(d) Size and type of family :

John (1943) observed that a bigger family size was favourable to co-operative soil conservation activities.

Cummings (1950) reported that there was lack of relationship between a farmer's family size and adoption.

Raheja (1959) observed that the size of family and type of family were not associated with the change in attitude and behaviour of the farmers.

Beal (1954) mentioned that the family size contributed significantly to the members' participation in their local co-operatives according to the specific conditions.

Salvi (1971) in his study observed that family size did not show any significant relationship with incentives for adoption of agricultural innovations.

Salunkhe and Thorat (1975) reported that adoption behaviour of small farmers was significantly related to their family size.

(e) Social participation :

Gross (1949) stated that the farmers accepting improved practices had higher social participation than those who did not accept.

Coleman (1955) was of the view that the extent and nature of social contacts with the community was important in diffusion of new ideas. He found that participation in farm organizations and co-operatives was associated with early adoption of new practices.

Copp (1957) noted that formal social participation-membership in farm organizations and churches were associated significantly with number of practices adopted. He

also observed that there was a significant association between the activity of farmers in community affairs and adoption.

Hopper and Stangland (1958) found that, with few exceptions social participation was positively associated with the acceptance of improved farm practices.

Rahudkar (1964) concluded that the farmers participating in social and economic organisations by holding some official position had done more agricultural improvement, but small farmers had less social participation than big farmers.

Sriballebh (1964) observed that the small farmers generally have low status in society and at the same time their representation in formal organizations is inadequate. He further pointed out that membership in rural organization affects the adoption in positive direction.

Ratanchand and Gupta (1966) reported that the adoption of improved practices increased with increase in the social participation. Similar observation was made by Ziaulkarim and Mahboob (1974).

Salvi (1971) found that there was significant and positive relationship between social participation and incentives of low income farmers for adoption of agricultural innovations, while there was negative relationship between social participation of low income farmers and their disincentives for adoption of agricultural innovations.

Kadam (1974) observed that social participation increased progressively from laggards to innovators in about all rural institutions i.e. Gram Panchayats, Co-operative Banks and others except that of Panchayat Samitis.

(f) Annual income :

Fliegel (1957) found that income of the farm family was directly related to adoption of improved farm practices.

Hildebrand and Parthenheimer (1958) observed that relatively high proportion of the farmers with high net worth were somewhat more willing to innovate than those in an intermediate net worth position.

Shaw (1958) revealed that small farmers adopted inferior cultivation practices because of their meagre income.

Fliegel (1967) indicated that there was strong association between a farmer's economic status and his adoption behaviour.

Salvi (1971) found a significant and positive relationship between annual income of low income farmers and their level of adoption.

Sandhu (1971) reported that small farmers were not economically viable units and hence were unable to follow the package of practices of new agricultural technology.

(g) Size of holding :

The farmers with very small size of holdings may be reluctant to adopt new agricultural technology, because size of holding is related to the level of income and in turn to the adoption of new agricultural technology. Therefore, it is many times stated that size of holding is associated with the adoption of new agricultural technology.

Ryan and Gross (1949) in their study revealed that early adopters had larger farms and higher income.

Coleman (1955) noticed that farmers with larger holdings were most often contacted by extension agencies and they were also found to adopt those practices than operators with small holdings.

- Ratanchand and Gupta (1966) reported that farmers owning more land adopt more improved practices. It was noted that none of the innovators belonged to the minimum size grouping of upto 2 hectares.

Rai (1967) observed that the size of farm was positively related to adoption of improved agricultural practices.

- Sinha (1970) observed that the farmers of very small size farms were low adopters compared to very large, large, medium and small farm size groups of farmers.

- Bhattacharya (1972) investigated that there was direct relationship between land holding and adoption of improved methods of cultivation.

Singh and Choubey (1974) pointed out a strong positive correlation between the operational farm size and the adoption of high yielding wheat varieties.

Anonymous (1973) at Center for Management in Agriculture, Ahmedabad reported that the extent of adoption of high yielding varieties increased with an increase in the size of holding.

Kadam (1974) observed that the innovators had comparatively larger holdings than early adopters and laggards. The size of holding decreased from innovators to laggards.

Raut (1974) reported that there was a significant relationship between size of holding and adoption of new agricultural technology by small farmers.

(h) Socio-economic status :

Copp (1956) suggested that there was a positive relationship between level of living and adoption of agricultural innovations by the farmers.

Mayo and Hay (1958) stated that socio-economic status which is closely related to the level of living was found to be significantly related to adoption.

Ratanchand and Gupta (1966) reported that the adoption index increased with the increase in the economic status of the farmers.

Gogala Parthasarathy (1971) pointed out that the

social status of the small farmers place them in a weaker position in respect of their access to institutions of finance.

Salvi (1971) reported that low income farmers' level of living does not bear any significant relationship with incentives for adoption.

- Jha and Shaktawat (1972) reported that there was a significant and positive relationship between the socio-economic status of farmers and their adoption behaviour.

Sawant and Thorat (1972) reported that high socio-economic status of an individual makes him venturesome and thus he accepts earlier as compared to other members of the social system.

- Supre and Deshpande (1972) revealed that socio-economic status plays an important role in adoption behaviour of farmers.

- Wagh (1974) observed a strong positive relation of socio-economic status of the small farmers with the adoption behaviour of small farmers.

(1) Risk orientation :

Moni and Sehgal reported ⁽⁷⁾ that risk as characteristic of farm practice was most important factor in determining the adoption of practice. It means that practice with no risk was adopted quickly than others.

Ranjit Singh and Sohal (1971) observed that progressive outlook, economic gain and willingness to take risk are real discriminators between adopters and non-adopters.

Savant and Thorat (1972) observed that farmers with high income level can afford to take risk in adopting new farm practices.

Gogala Parthasarathy (1971) reported that small farmers hesitate to adopt the new practice on wide scale mainly because of lack of knowledge and high risk of practice. He further pointed out that the shift of the small farmers from traditional paddy varieties to new varieties was very slow because of the high risk involved in it.

(j) Cosmopolitanness :

Ryan and Gross (1943) in their study observed that Iowa hybrid corn innovators travelled more often to urban centres than did the average farmers.

Ray (1967) reported that the farmers under high urban influences were more educated, had high economic status and high contacts with extension agency and adopted improved farm practices quickly.

Fliegel and others (1968) stated that urban contacts facilitate adoption and help to promote change.

Haut (1974) reported that there was statistically significant association between cosmopolitanness and adoption behaviour of small farmers.

- Wagh (1974) reported that cosmopolitanness can help in developing awareness and knowledge and also help in the process of adoption. Cosmopolite nature of small farmers had significantly influenced their adoption behaviour and also extent of incentives used.

(k) Aspirations :

Early adopters have higher aspirations for education, occupation than late adopters. This was generalized by Rogers and Shoemaker (1962).

✓ Singh and Schal (1966) observed that the level of aspirations had significant effect on acceptance of crop production plans. It was significantly noted that none of the respondents having higher acceptance of crop plans was from the category of low aspirations level.

✶ Anonymous (1973) reported that majority of the small farmers (68 per cent) did not want their sons to be farmers. More than 66 per cent of small farmers had aspirations about the education of their children upto high-school level and about 56 per cent of them wanted their children to select the jobs like primary teachers, village level workers, clerks and soldiers.

Wagh (1974) reported that there was a significant association between the level of aspiration of the small farmers about their sons and their level of adoption.

Sharma and Nair (1974) observed that farm size, risk

orientation, aspiration and attitude were the important variables that affected the adoption of high yielding varieties.

Khalache (1977) reported that the largest number of farmers had low aspiration about the education of their sons and daughters.

(1) Attitude :

Choukidar and George (1971) on the basis of their study reported that farmers had favourable attitude towards the "High Yielding Varieties Programme".

Sharma and Nair (1974) observed that farm size, risk orientation, aspiration and attitude were important variables that affected adoption of high yielding varieties.

Shah, Bhatnagar et al. (1973) revealed that there was association between psychological variables i.e. attitudes and agricultural productivity. Attitudes were significantly associated with agricultural productivity in almost all the districts in Northern India.

Deokar (1976) found that there was significant association between the attitude and the level of productivity achieved by the farmers.

III SOURCES OF INFORMATION USED BY THE SMALL FARMERS

Wilkening (1951) reported that farmers with upper socio-economic levels use agricultural agencies as source

of information while those of lower socio-economic levels use other farmers and dealers of agricultural commodities as their main source of information.

Coleman (1951) reported that farmers with highest socio-economic status and operators of large farms were contacted more by extension agents. Contacts with extension workers increased with increase in social status.

Date (1957) reported that extension workers had unsatisfactory contacts with farmers possessing smaller size of holdings.

Emery and Cesar (1958) noticed that education and status differences between District Agricultural Officer and small farmers were wide, therefore, small farmers preferred to contact commercial dealers.

Tiwari (1964) found a positive association between the contacts of the farmers with the extension personnel and adoption of agricultural practices.

Singh and Jha (1967) reported that the non-institutionalized sources were preferred at awareness, interest and evaluation stages whereas institutionalized sources were preferred at trial and adoption stages. The village level worker was considered to be the most important source of information at all the stages of adoption.

Singh and Dhaliwal (1965) observed that the persons with higher educational and economic status receive greater

attention from the extension agency, because the less educated and poor farmers are denied the opportunity of enough extension contacts.

Lakshmana and Satyanarayana (1967) found that neighbours and others, including village leaders played an important part as sources of information at different stages of adoption.

Lakshminarayana (1972) reported that the active and functional sources of information of new farm ideas are fellow villagers and change agents working in the villages in case of small farmers.

Jha and Shaktawat (1972) reported that farmers degree of contacts with the extension agency was found to have positive and significant relationship with adoption of bajra.

— Mathur et al. (1974) reported that farmers with middle and lower socio-economic status use more neighbours and friends as information sources, specially at the initial stages of decision making.

Anonymous (1978) observed that Gramsevak received highest rank (94.00 per cent) as the source of information by the farmers, followed by neighbouring farmers (76.00 per cent) and local leaders (70.00 per cent) respectively.

Gangappa (1975) observed that small farmers consulted more formal and informal sources than mass media sources.

The sequential order of consultancy of information sources by small farmers was Gramsevak, neighbours and demonstrations followed by other sources.

- Singh et al. (1976) reported that the more credible and accessible media for small farmers are the localite sources such as progressive farmers, neighbours, friends and relatives.

- Kalamegan and Radhakrishna Menon (1977) reported that small farmers from progressive village give high credibility to personal cosmopolite sources (Extension Agency, Village Level Workers and Extension Officers), while small farmers from less progressive village give more credibility to personal localite sources.

Knowledge :

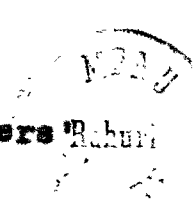
Mathur (1970) observed that there was tremendous gap between knowledge production and knowledge utilization.

Kadan (1974) reported that lack of technical knowledge was the most common reason for non-adoption in both the categories of the farmers, namely early adopters and laggards in case of cotton.

Malhotra et al. (1974) reported that land holding, membership participation and knowledge test were significantly correlated with the adoption.

Govindappa (1975) reported that the small farmers

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knowledge was low and the adoption of high yielding varieties was also low. The lack of adoption was related to lack of confidence due to lack of knowledge.

Balasubramaniam and John Knight (1977) concluded that majority of the farmers had low level of knowledge about high yielding varieties of paddy. In many cases, the farmers were found to have inadequate and incorrect knowledge about recommended seed rate, plant protection, seed treatment, spacing and fertilizer doses.

IV REASONS FOR NON-ADOPTION

Bhattacharjee (1950) concluded that the prominent needs of the small farmers were investment and working capital. This was the major handicap in the way of their improvement by way of adoption of improved practices.

Shaw (1958) in his study revealed that small farmers adopted inferior cultivation practices because of their meagre income.

- Singh (1963) reported the reasons for non-adoption of improved farm practices by the small farmers as the lack of knowledge, resources, innovativeness, prospective price and lack of attractive market.

Prasad (1967) pointed out that the high prices of new seed discourage small farmers to grow high yielding varieties. He further reported that 42.2 per cent of the

non-adopters of improved seeds did not adopt it due to high cost and its unavailability in time.

Singh (1968) carried out investigation in I.A.D.P. block of Sahabad and found that lack of timely and adequate irrigation was the most important factor reported by farmers as reason for non-adoption of high yielding varieties.

Venkatappiah (1969) reported that insecurity of their tenure was biggest handicap in the way of adoption of new technology.

Gogala Parthasarathy (1971) reported that the major obstacles to shift to commercial crops were pests and uncertainty of crops and market.

Sandhu (1971) reported that small farmers were not economically viable units and hence were unable to follow the package of practices of new agricultural technology.

Kadam (1974) reported that lack of technical knowledge was the most common reason for non-adoption in both the categories of the farmers namely early adopters (49.32 per cent) and laggards (62.60 per cent). This was followed by high cost of seed and cultivation, insufficient irrigation facilities and no guarantee of yield.

Raju (1975) reported that fragmentation of holding, insecurity of tenure, lack of sufficient credit facilities for inputs and arrangements for marketing and storage were

the common difficulties standing in the way of small farmers in deriving the benefits of the improved technology.

- Chanderbhan, et al. (1976) reported that the most important reasons for non-adoption of improved seeds and fertilizers by small farmers were lack of irrigation water, seeds being not available in time and their high cost.

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CHAPTER-III

M E T H O D O L O G Y

CHAPTER-III

M E T H O D O L O G Y

This chapter gives an idea about "where", "how" and "when" the study was carried out and, meaning of the important terms used in the thesis.

Location of Research Site :

The study was carried out in Malshiras development block of Solapur district of Maharashtra State. This block is situated on the western side of the district. Pune-Pandharpur State highway passes through this block. River Nira flows through the Northern part of this block from North-west to North-east. This river forms the Northern border of the block.

Area and Population :

The block occupies an area of about 1522 sq km equivalent to 376136 hectares, comprising of 75 villages. About 37.00 per cent of the sown area of this block is irrigated. Canal and well water are the main sources of irrigation. Out of the total irrigated area nearly 51.00 per cent is under canal irrigation, 42 per cent under well irrigation, while remaining seven per cent area is irrigated by the water from other sources like lifts, bandharas, etc. The population of the block is 2,26,000 consisting of 1,17,000 males and 1,09,000 females. The density of the population is 149 per sq km and the literacy percentage is 28.39 per cent (Socio-economic Review and District Statistical Abstract, 1975-76).

Soil and Climate :

The soils of this block are mainly deep black, black and shallow (murnad). There is some hilly area in the block locally known as "Gunnad" hills. The soils alongwith the bank of Mira river are fertile. Percentage of shallow and medium black soils is comparatively more in the block. Climatically this area is a rain shadow area. The monsoon ranges from middle of June to end of September. There are two peaks in the rainfall pattern of the block. The first in June-July and second in September with a drought period in between. The average rainfall ranges from 450 mm to 525 mm per year. There is a large variation between the distribution and extent of rainfall in different years.

Cropping Pattern :

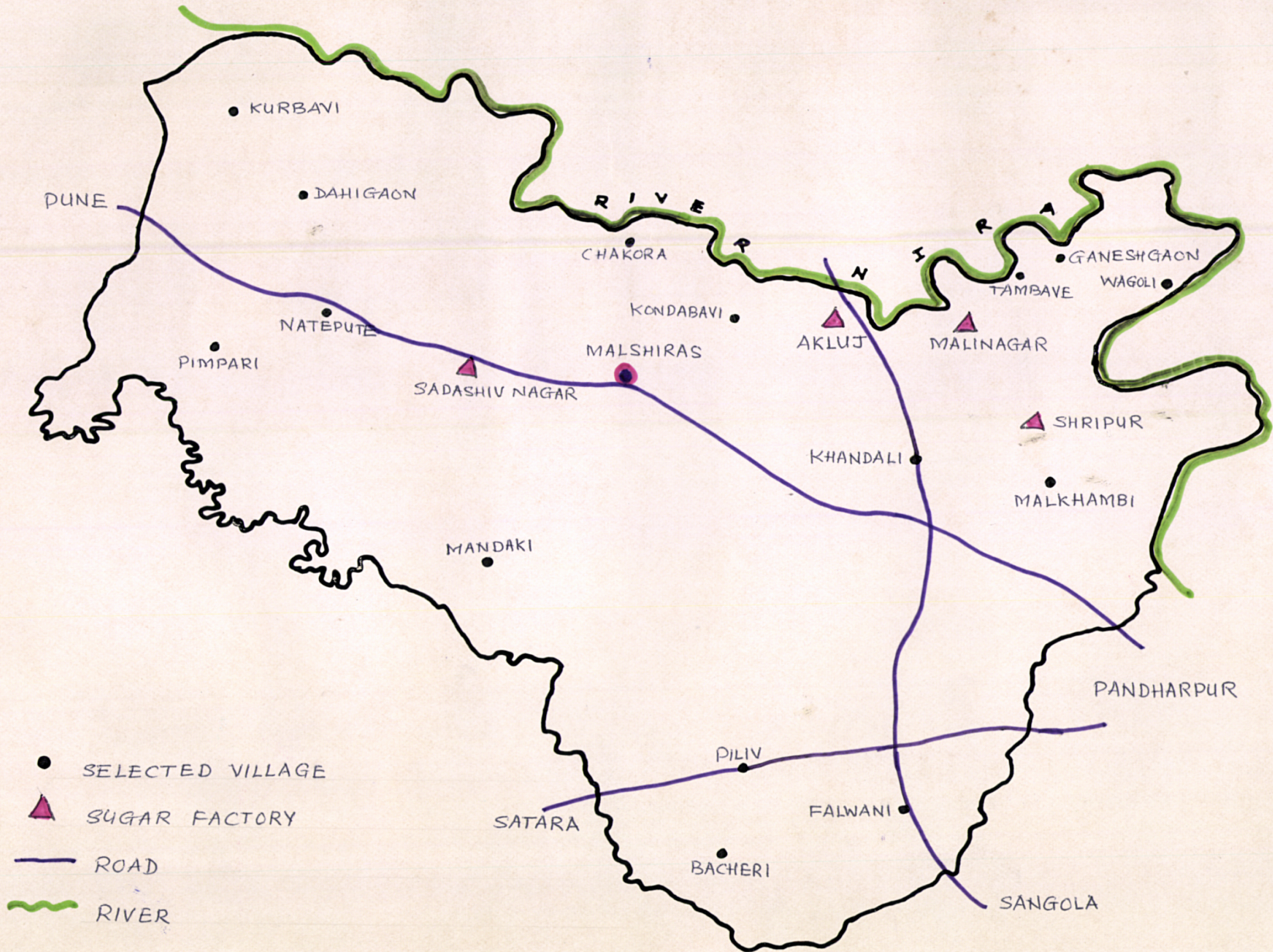
The major food crop grown in this block is jowar, however, due to irrigation facilities of "Mira Right Bank Canal", area under cash crops like sugarcane, cotton, groundnut and vegetables is increasing.

Industrial Development :

Most of the irrigated area of this block has been brought under sugarcane cultivation. As such three Co-operative and one private sugar factories are working effectively in the block. The Brahan Maharashtra Sugar Factory Ltd., Shripur has established a plant which manufactures rectified spirit and liquor from the molasses available from these sugar factories.

Fig. 1

MAP OF MALSHIRAS DEVELOPMENT BLOCK



Sampling Procedure :

The study was conducted in Malshiras taluka of Solapur district comprising of seventy five villages. The list of all the villages was obtained from the Block Development Officer and the villages were then arranged alphabetically. Out of these villages, 15 villages were selected by using nth method of random sampling. Every fifth village was selected for the study.

Selection of Farmers :

A list of cotton growing small farmers from the selected villages was prepared with the help of Gramsevaks of these villages. By using nth number method of random sampling, 180 cotton growing small farmers were selected from the total 360 cotton growing small farmers from these villages.

Designing of the Schedule :

A special interview schedule based on the objectives of the study was designed after a detailed study of the available literature on the topic. The schedule was prepared in local language (Marathi) in order to get accurate responses. Contrasting statements, questions having dual meanings, leading questions were avoided. The care was also taken to avoid questions which might hurt the prestige of the farmers. The language of the questions was kept simple for easy understanding of the farmers. The

questions were asked on various socio-economic, psychological and personal characteristics of the farmers which were considered to have a possible association with the adoption of hybrid cotton. Questions were also asked about the sources of information used by the small farmers for getting information about hybrid cotton, knowledge of the farmers about the cultivation of hybrid cotton and the reasons for non-adoption of hybrid cotton by the small farmers.

Pre-testing of the Schedule :

The schedule so designed was pre-tested by interviewing ten respondents who did not belong to the fifteen villages included in the study, in order to have clarity of the questions. Some minor changes were made in the schedule in light of the difficulties encountered by the small farmers in replying the questions during pre-testing.

Procedure for Collection of Data :

The author personally interviewed the farmers included in the sample. The help of Gramsevaks, local leaders, and secretaries of co-operatives was sought for establishing the rapport with the small farmers. The importance and objectives of the study were clearly explained to all the farmers. They were assured that the information furnished by them would be kept confidential and would be used for the research study only.

Author attempted to contact the selected farmers at their homes or on the farms to get the information. The interviews were conducted in a friendly and informal manner. Out of 180 small farmers, 150 farmers could be interviewed. Rest of the farmers were not available at the time of interview. Most of them were out of the village due to one or the other reasons.

Duration of the Study :

The work of the data collection was started in the second fortnight of June 1978 and was completed by the end of July 1978. The total period required for data collection was one and half month.

Compilation of Data :

Whenever necessary, the qualitative data were quantified by using statistical methods. Different scores were worked out for finding out the nature of association between the independent and dependent variables.

Working of Scores :

(1) Adoption level :

The extent of the adoption of hybrid cotton with the recommended package of practices was measured by working out "adoption intensity index" by using the formula developed by Singh and Choubey (1974) with certain modifications.

Seven recommended cultivation practices of hybrid

cotton were considered for working out the adoption intensity score. Each of the small farmer was assigned score on the basis of the intensity of adoption of these practices. The weightages were given as under :

Sr. No.	Cultivation practice	Weight	Proportions
1	Use of high yielding varieties of cotton	1	$\frac{\text{Actual area}}{\text{Potential area}} \times \text{weight}$
2	Seed rate per hectare	1	$\frac{\text{Actual used}}{\text{Recommended}} \times \text{weight}$
3	Spacing	1	$\frac{\text{Actual used}}{\text{Recommended}} \times \text{weight}$
4	Seed treatment	1	$\frac{\text{Quantity used}}{\text{Recommended}} \times \text{weight}$
5	Intercultivation practices	1	$\frac{\text{Practices followed}}{\text{Recommended}} \times \text{weight}$
6	Fertilizers	1	$\frac{\text{Actual used}}{\text{Recommended}} \times \text{weight}$
7	Plant protection	1	$\frac{\text{Actual used}}{\text{Recommended}} \times \text{weight}$

Proportion of each practices was calculated and multiplied by the corresponding weight. Then the proportions of all the practices were summed up and divided by total number to calculate mean. The resultant value was multiplied by

100.00 and the resultant score was taken as adoption intensity score of the small farmer. Finally the small farmers were grouped into two categories by applying statistical procedure.

- (i) Low adopter : (Score 1 to 60)
- (ii) High adopters : (Score 61 and above).

2. Social participation score :

Social participation score of the small farmers was worked out by assigning one score to each small farmer having membership in one social organization. Score two was assigned to the office bearers. The total score of each small farmer was calculated, and by applying statistical procedure the small farmers were grouped into two groups as under :

- (i) Low social participation - (Score 1 and 2)
- (ii) High social participation - (Score 3 and above)

3. Cosmopolitaness score :

Cosmopolitaness is the tendency of an individual to be in contact with outside social system, with a belief that individual's all needs cannot be satisfied within his own community or social system. In this study, cosmopolitaness was studied by exposing small farmers to seven names of the places or institutions. The small farmers were asked as to whether they had visited these places or otherwise. The small farmers visiting these places once or seldom were

allotted one score and score two was assigned for visiting these places frequently. The total score of each small farmer was worked out and finally by applying statistical procedure, they were grouped into two categories as under :

- (i) Low cosmopolitaness - (Score 1 to 7)
- (ii) High cosmopolitaness - (Score 8 and above)

4. Risk orientation score :

For calculating risk orientation, six different questions regarding education of their children, taking loan for agricultural development and giving security to other farmers for their loan, were asked to the small farmer. The small farmer willing to take risk was assigned one score for each question while score zero was assigned to the questions where he was not ready to take risk. In this way, the total score of each small farmer was worked out and by applying statistical procedure small farmers were grouped into two groups as under :

- (i) Low risk orientation - (Score 1 to 3)
- (ii) High risk orientation - (Score 4 and above)

5. Attitude score :

Six statements related to different aspects of cultivation of hybrid cotton were included in the schedule. The attitude towards each of the statements was rated on two point scale. Score one was assigned for positive attitude

and score zero for negative attitude. The total attitude score of each small farmer was calculated and by applying statistical procedure the small farmers were categorised into two groups as under :

- (i) Negative attitude - (Score 1 to 7)
- (ii) Positive attitude - (Score 8 and above).

6 Aspiration score :

It is assumed that small farmers, in general, have less aspirations about themselves, their occupation, education of their children and occupation of their sons and daughters. It adversely affects the adoption of agricultural practices by them with respect to the crops, general agricultural development and livestock improvement. With this view in mind five questions regarding aspirations of small farmers about their own position in social organizations, education and occupation of their sons and daughters were asked to the small farmers. For calculating aspiration score, each question was rated on a three point scale. Score three was assigned for having high aspiration, score two and one was assigned for medium and low aspirations respectively. Finally, the total score of each small farmer was worked out and after applying statistical procedure small farmers were grouped into two groups as under :

- (i) Low aspirations - (Score 1 to 8)
- (ii) High aspirations - (Score 9 and above)

7 Socio-economic status score :

The socio-economic status score of the small farmers was computed by utilizing the socio-economic status scale developed by Trivedi and Pareek (1963). It was used in order to find out the socio-economic background of the small farmers. On the basis of the score obtained the small farmers were grouped into three groups viz.,

- (i) Low socio-economic status -(Score 0 to 20)
- (ii) Medium socio-economic status-(Score 21 to 30)
- (iii) High socio-economic status -(Score 31 and above).

8 Knowledge score :

For calculating knowledge score, seven questions concerning to the cultivation practices of hybrid cotton recommended by the Department of Agriculture (M.S.) were included in the schedule. For correct response by the small farmer score two was assigned while score one was assigned for partially correct response and score zero was assigned for incorrect response. In this way, the total score of each small farmer was worked out and by applying statistical procedure, the small farmers were grouped as under :

- (i) Low knowledge - (Score 1 to 8)
- (ii) High knowledge - (Score 9 and above)

Meaning of the Terms Used :

1 Adoption -

It is the continued use of recommended farm practices.

2 Adopter -

A farmer using continuously the recommended farm practices of hybrid cotton.

3 Non-adopter -

A farmer, who has not taken up the recommended practices of hybrid cotton upto the time of study. The farmers who had tried the hybrid cotton previously but had later on rejected were also taken to be non-adopters.

4 Source of information -

This term refers to the various information channels used by the small farmers for getting information about hybrid cotton cultivation.

5 Knowledge -

The term 'knowledge' is operationalized as the body of information possessed by a farmer in respect of the cultivation of hybrid cotton.

6 Lower castes -

Dhangar, Muslim, Balutedars, Ramoshi and Harijans are considered as lower castes for the study.

7 Higher castes -

Maratha, Brahmin and Jain castes are considered as higher castes for the study.

Statistical analysis :

The data were transferred from interview schedule to primary tables and then to the secondary tables. The Chi-square test was employed to find out the nature of association between each of the independent variables with the dependent variable, included in the study.

The following formula was used.

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

where,

- χ^2 = Chi-square
- \sum = Sum of overall classes
- O = Observed frequencies
- E = Expected frequencies

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CHAPTER-IV

P R E S E N T A T I O N
O F D A T A

CHAPTER-IV

P R E S E N T A T I O N O F D A T A

This chapter deals with the analysis and interpretation of data. In order to have an investigation at a glance, the results of the present study are presented in a tabular and graphical form in the following order.

I. The first part deals with showing the distribution of the small farmers by their personal, socio-economic and psychological characteristics, such as age, education, caste, size of family, size of land holding, annual income, socio-economic status, attitude, knowledge, aspirations, social participation, cosmopolitanism and risk orientation. At the same time the data showing the nature of association between adoption of hybrid cotton and each of the above mentioned independent variables are also presented.

II. The second part includes information regarding sources of information used by the small farmers at various stages of adoption, their knowledge about cultivation of hybrid cotton and the problems faced by the small farmers in adoption of hybrid cotton.

Age :

Age is a crucial factor in human life. It indicates the day to day human activities and hence an attempt was made to study the age of the small farmers. Distribution of the small farmers according to their age is presented in Table-1.

Table 1. Small farmers by their age

Sr. No.	Age groups	Number	Per cent N = 150
1	Upto 30 years	22	14.67
2	31 to 45 years	73	48.67
3	46 and above years	55	36.66
Total		150	100.00

It can be seen from the above table that, the largest percentage of the small farmers i.e. 48.67 were from the age group of 31 to 45 years. There were 36.66 per cent of the small farmers in the age group of 46 and above, while the lowest number of small farmers i.e. 14.67 per cent belonged to the age group of upto 30 years.

Table 2. Nature of association between adoption of hybrid cotton and the age of the small farmers

Sr. No.	Farmer categories	Age (Years)			Total N=150
		Upto 30 N=22	31 to 45 N=73	46 and above N=55	
		Per cent			
1	Non-adopters	36.36	68.49	81.82	68.67
2	Adopters	63.64	31.51	18.18	31.33
Total		100.00	100.00	100.00	100.00

Chi-square = 15.08

D.F. = 2

Significant at 0.01 per cent level

Fig. 2. Nature of Association Between Adoption of Hybrid Cotton and Age of the Small Farmers

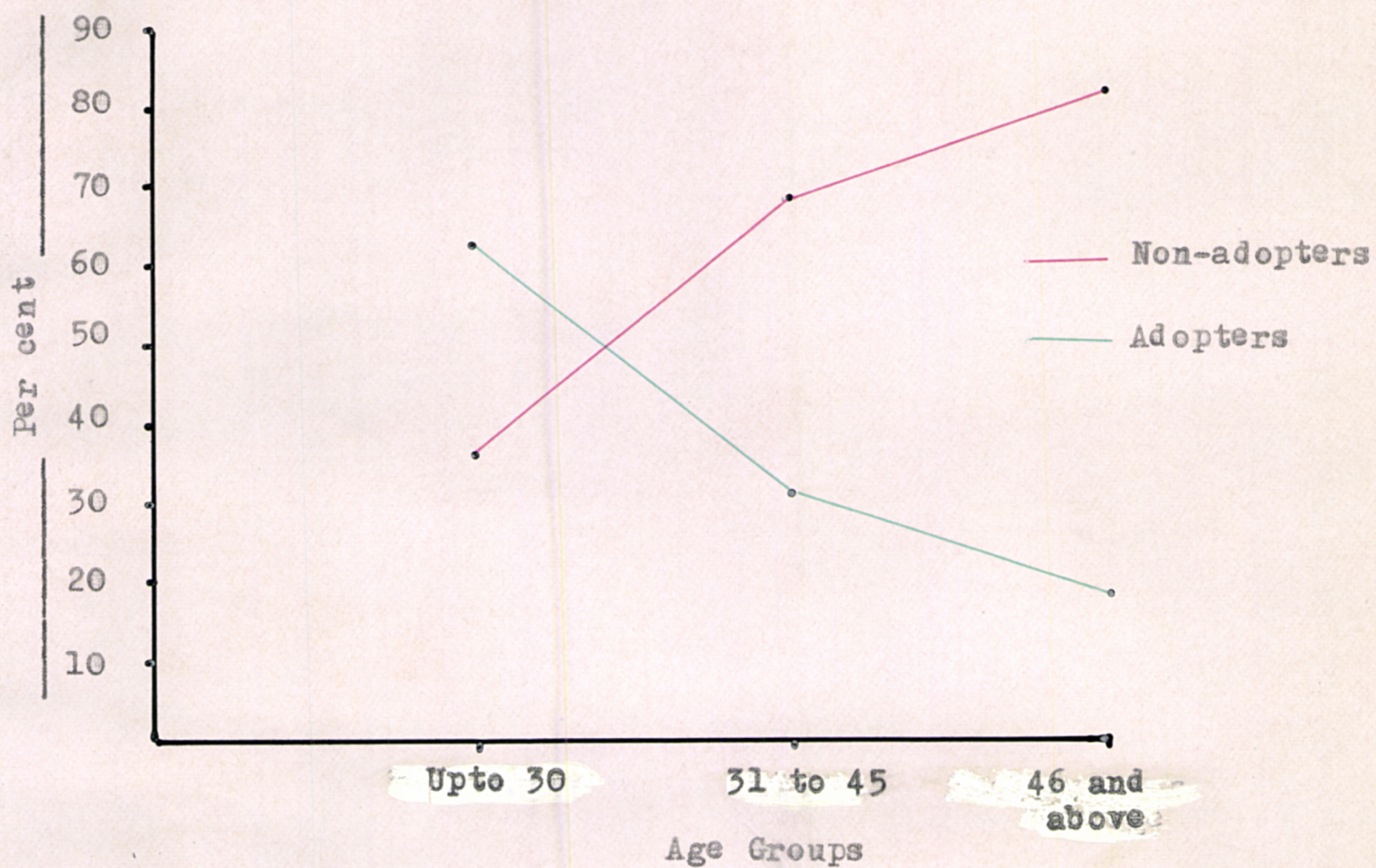
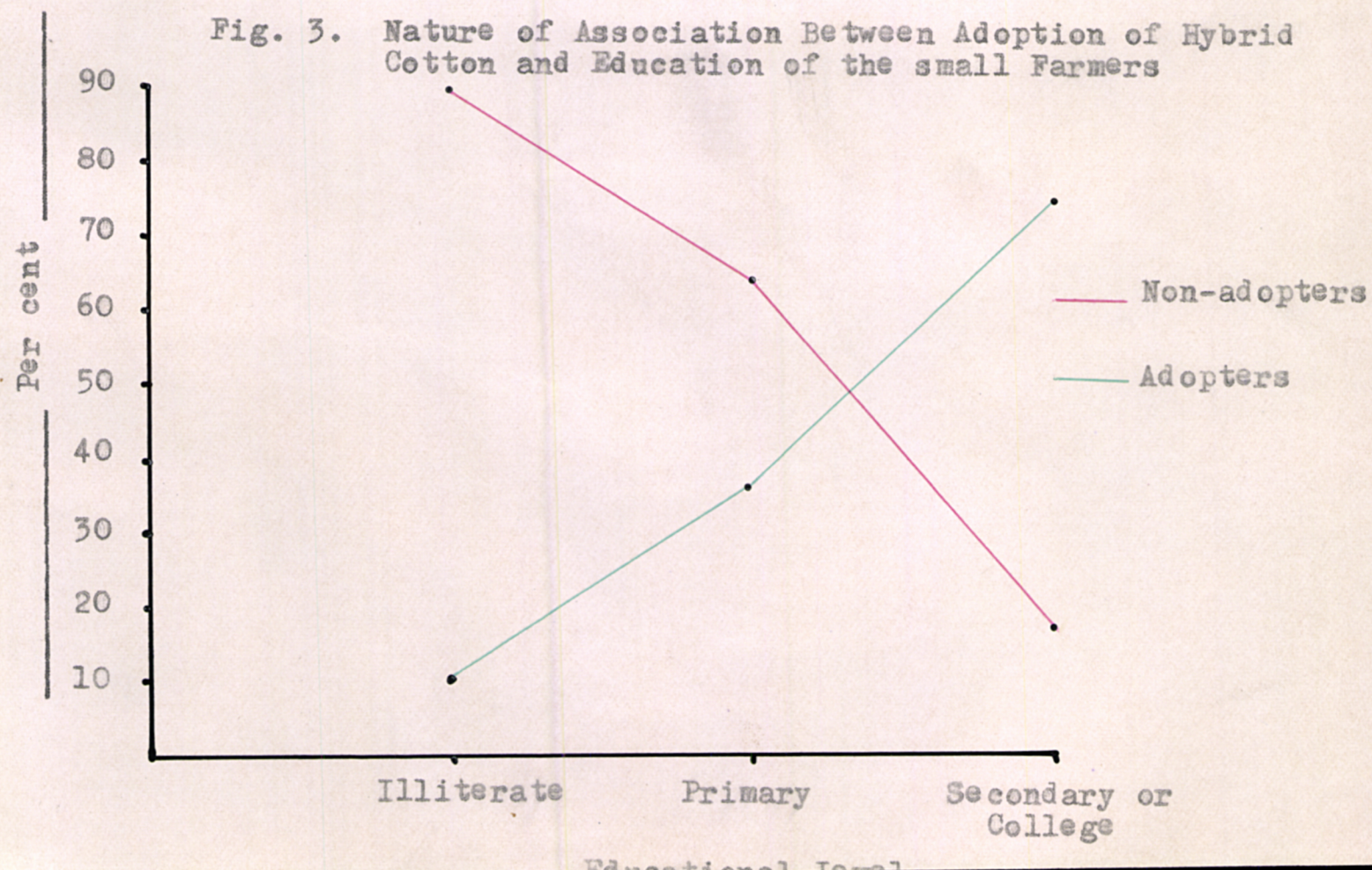


Fig. 3. Nature of Association Between Adoption of Hybrid Cotton and Education of the small Farmers



The calculated chi-square value was found to be significant at one per cent level of probability indicating thereby that there was statistically significant association between adoption of hybrid cotton and the age of the small farmers. The adoption did not increase with the increase in age.

Education :

The level of formal education attained by an individual tends to influence the extent to which he adopts the improved technology. The distribution of the small farmers by their formal educational level is given in Table-3.

Table 3. Small farmers by their education

Sr. No.	Education groups	Number	Per cent N =150
1	Illiterate	47	31.33
2	Primary education	92	61.33
3	Secondary or College education	11	7.34
Total		150	100.00

The above table reveals that majority of the small farmers (61.33 per cent) had received primary education while 31.33 per cent of them had not received any formal education. The proportion of the small farmers receiving secondary or college education was very small i.e. 7.34 per cent.

Table 4. Nature of association between adoption of hybrid cotton and the educational level of the small farmers

Sr. No.	Farmer categories	Level of education			Total
		No formal education N=47	Primary education N=92	Secondary or college education N=11	
Per cent					
1	Non-adopter	89.36	63.04	27.27	68.67
2	Adopters	10.64	36.96	72.73	31.33
Total		100.00	100.00	100.00	100.00

Chi-square = 19.45

D.F. = 2

Significant at 0.01 per cent level

The above table reveals that there was a statistically significant association between education of the small farmers and adoption of hybrid cotton as tested by the 'chi-square' test. This shows that educated small farmers were more likely to be adopter than the uneducated ones.

Caste

Castes are social classes whose membership is determined by birth and between which there is no vertical mobility. In other words caste is a close class system which determines the role and status of a person. In this study an attempt was made to study the caste in relation to adoption of hybrid cotton. The distribution of small farmers by their castes is given in table-5.

Table 5. Small farmers by their castes

Sr. No.	Caste groups	Number	Per cent N=150
1	Low castes	90	60.00
2	High castes	60	40.00
	Total	150	100.00

Above table indicates that 60.00 per cent of the cotton growing small farmers were from lower caste group while 40.00 per cent of them were from higher caste group.

Table 6. Nature of association between adoption of hybrid cotton and the caste of the small farmers

Sr. No.	Farmer categories	Caste		Total N=150
		Lower N=90	Higher N=60	
		Per cent		
1	Non-adopters	72.23	63.34	68.67
2	Adopters	27.77	36.66	31.33
	Total	100.00	100.00	100.00

Chi-square = 1.34

D.F. = 1

Not significant at 0.05 per cent level

Chi-square value calculated at 0.05 per cent level of significance indicated that there was no significant association between adoption of hybrid cotton and caste of the small farmers. This indicates that adoption of hybrid cotton was not dependent on caste.

Size of family :

Size of family, here, refers to the total number of individuals living together under common roof and having blood ties with each other.

Table 7. Small farmers by their size of family

Sr. No.	Family size groups	Number	Per cent N = 150
1	Small 1 to 5 members	38	25.33
2	Medium 6 to 8 members	72	48.00
3	Large 9 and above members	40	26.67
Total		150	100.00

It is seen from the above table that about half of the small farmers (48.00 per cent) were from the family size of 6 to 8 members, followed by 27 and 25 per cent, having family size of upto 5 members and 9 and above members, respectively.

Table 8. Nature of association between adoption of hybrid cotton and the size of the family of the small farmers

Sr. No.	Farmer categories	Size of family			Total N=150
		Small (Upto 5 members) N=38	Medium (6 to 8 members) N=72	Large (9 and above members) N=40	
		Per cent			
1	Non-adopters	57.89	68.06	80.00	68.67
2	Adopters	42.11	31.94	20.00	31.33
Total		100.00	100.00	100.00	100.00

Chi-square = 4.41

D.F. = 2

Not significant at 0.05 per cent level.

The chi-square test indicated that there was no statistically significant association between the size of family and adoption of new agricultural technology. Size of the family was independent of the adoption of hybrid cotton.

Type of family :

Table 9. Small farmers by their type of family

Sr. No.	Types of family	Number	Per cent N = 150
1	Individual family	87	58.00
2	Joint family	63	42.00
	Total	150	100.00

It can be seen from the above table that 58.00 per cent of the small farmers had individual families, while 42.00 per cent of them had joint families.

Table 10. Nature of association between adoption of hybrid cotton and the type of family of the small farmers

Sr. No.	Farmer categories	Type of family		Total N=150
		Joint family N=63	Individual family N=87	
----- Per cent -----				
1	Non-adopter	71.43	66.67	68.67
2	Adopter	28.57	33.33	31.33
	Total	100.00	100.00	100.00

Chi-square = 0.37

D.F. = 1

Not significant at 0.05 per cent level.

Inference can be drawn from the above table that, there was no statistically significant association between the type of family and adoption of hybrid cotton. Both, type of family and adoption were independent of each other.

Total land holding :

Size of holding plays a very important role in all the aspects of agriculture. Size of holding here, refers to the number of hectares of land owned by the farmers, may be irrigated, unirrigated or both.

Table 11. Small farmers by their total land holding

Sr. No.	Land holding groups	Number	Per cent N =150
1	Upto 1 hectare	44	29.33
2	1.1 hectare and above upto 2 ha.	106	70.67
Total		150	100.00

Above table shows that majority of the small farmers (70.00 per cent) had more than one hectare owned land whereas about 30.00 per cent of them had less than one hectare owned land.

Table 12 indicates that, there was strong statistically significant association between the land holding of the small farmers and their adoption of hybrid cotton.

Table 12. Nature of association between adoption of hybrid cotton and the land holding of the small farmers

Sr. No.	Farmer categories	Land holding		Total N=150
		Upto 1 hectare N=44	1.1 hectare and above. N=106	
----- per cent -----				
1	Non-adopter	84.09	62.26	68.67
2	Adopters	15.91	37.74	31.33
Total		100.00	100.00	100.00

Chi-square = 6.89

D.F. = 1

Significant at 0.01 per cent level.

It is interesting to note that the percentage of the small farmers from adopters category was increased with an increase in the size of holding. The reverse position was observed in case of the small farmers from the non-adopters category.

Socio-economic status :

In order to understand the socio-economic background of the small farmers, the socio-economic status scale developed by Trivedi and Fareek (1963) was used in this study. The distribution of the small farmers according to their socio-economic status is presented in Table 13.

Fig. 4. Nature of Association Between Adoption of Hybrid Cotton and Land Holding of the Small Farmers

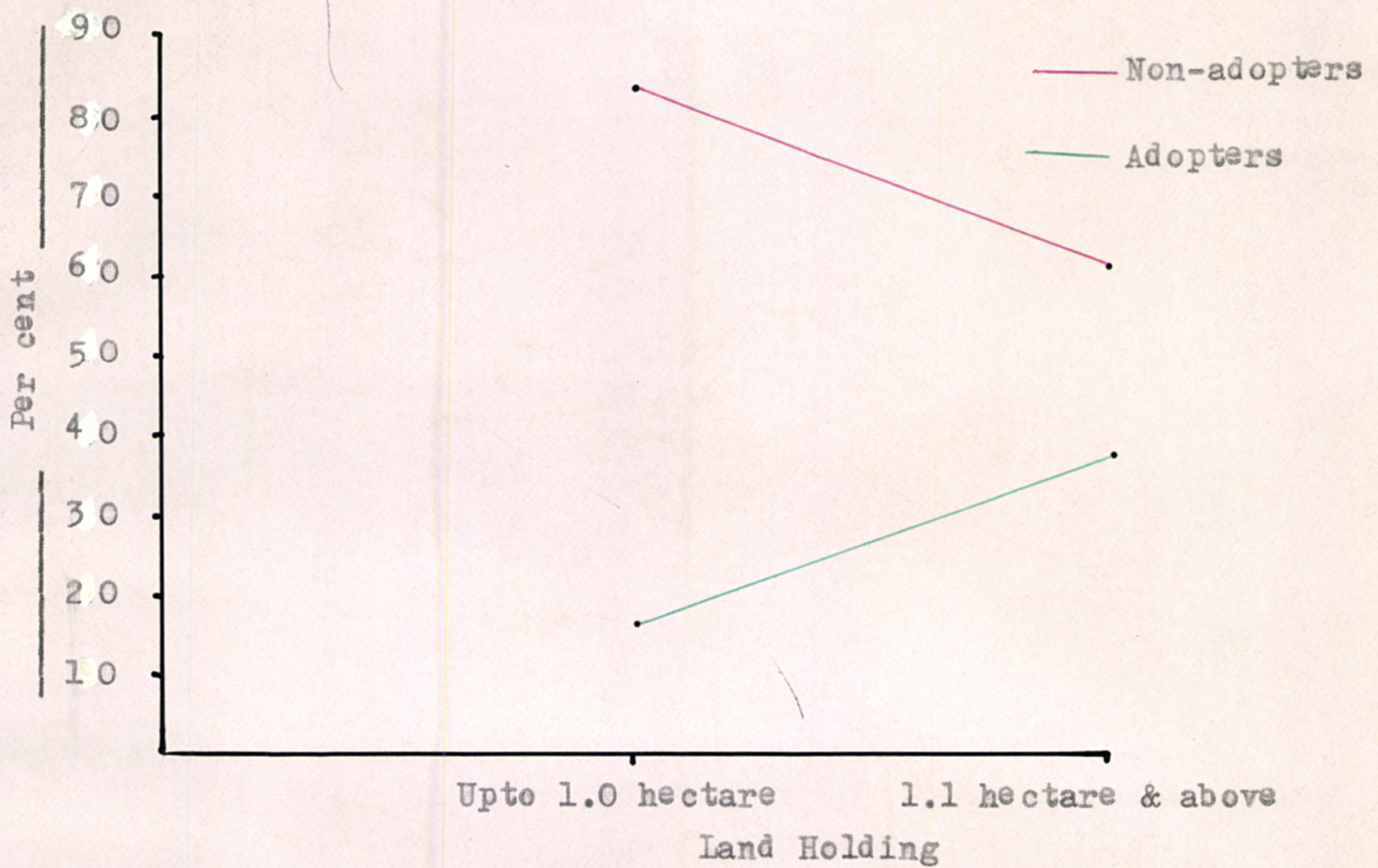


Fig. 5. Nature of Association Between Adoption of Hybrid cotton and Socio-economic Status of the Small Farmers

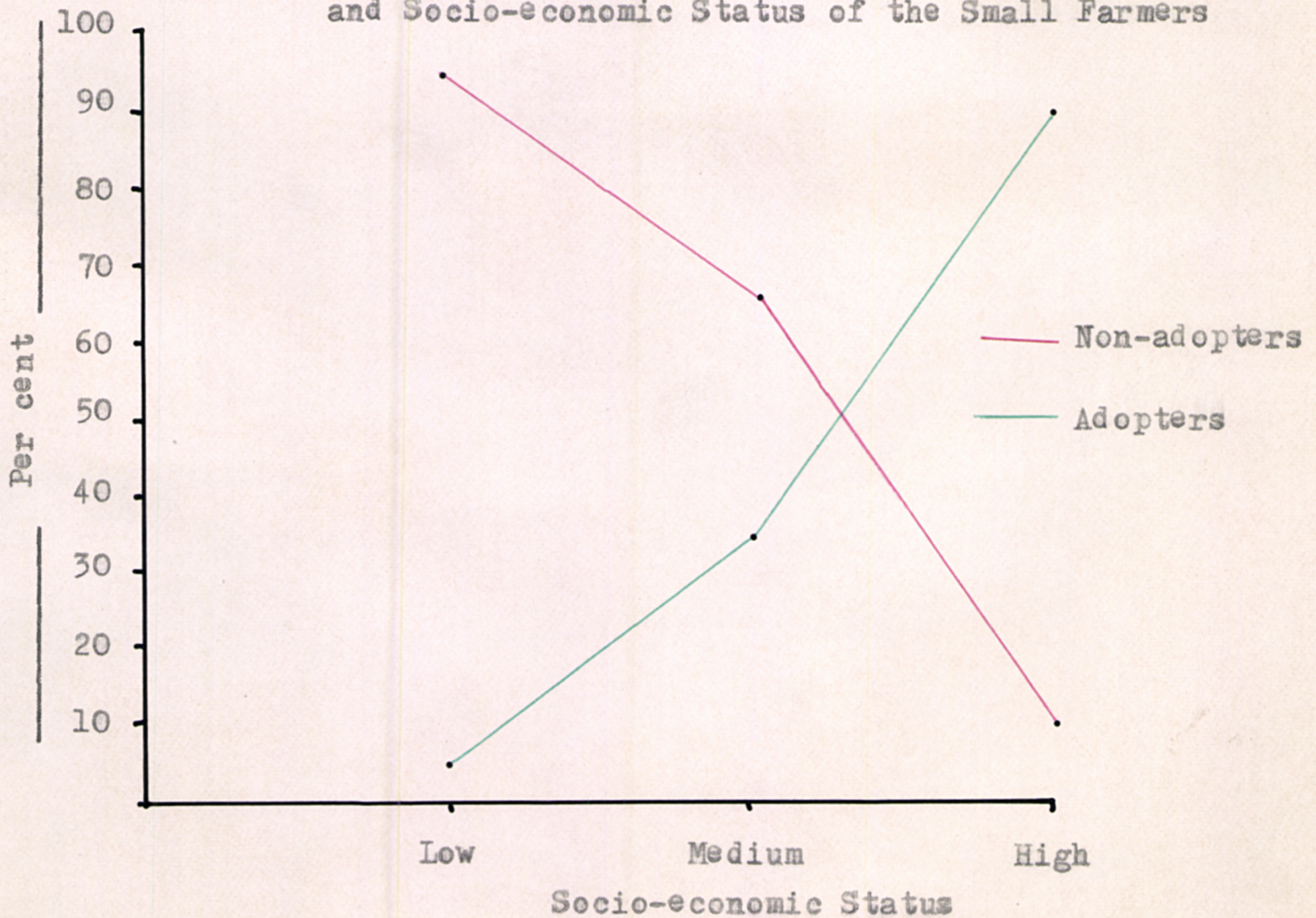


Table 13. Small farmers by their socio-economic status

Sr. No.	Socio-economic groups	Number	Per cent N=150
1	Lower socio-economic status (Score upto 20)	71	47.33
2	Medium socio-economic status (Score 21 to 30)	49	32.67
2	High socio-economic status (Score 31 and above)	30	20.00
Total		150	100.00

From Table-13, it will be seen that 47.33 per cent of the small farmers were in the lower socio-economic class indicating their low standard of living. About 32.67 per cent of the small farmers were from middle socio-economic class while only 20 per cent of them were from high socio-economic class.

Table 14. Nature of association between adoption of hybrid cotton and the socio-economic status of the small farmers

Sr. No. categories	Socio-economic status			Total N=150
	Low N=71	Medium N=49	High N=30	
----- Per cent -----				
1 Non-adopter	95.77	65.31	10.00	68.67
2 Adopters	4.23	34.69	90.00	31.33
Total	100.00	100.00	100.00	100.00

Chi-square = 62.03

D.F. = 2

Significant at 0.01 per cent level.

It can be seen from the above table that there was strong statistically significant association between socio-economic status of the small farmers and adoption of hybrid cotton. With the increase in socio-economic status, adoption was also found to be increasing.

Annual total income :

Annual income here, refers to the total income received by the farmer's family from farm and non-farm sources of income. It was observed that none of the small farmers had annual income of more than Rs. 2000.00.

Table 15. Small farmers by their total income

Sr. No.	Total income groups	Number	Per cent N = 150
1	Upto Rs. 1000	94	62.67
2	Rs. 1001 and above	56	37.33
	Total	150	100.00

Table 15 indicates that majority of the small farmers i.e. 63.00 per cent had annual total income upto Rs. 1000, whereas only 37.00 per cent small farmers had more than Rs. 1000 total annual income.

Table 16. Nature of association between adoption of hybrid cotton and annual income

Sr. No.	Farmer categories	Annual income (Rs.)		Total N=150
		Upto 1000 N =94	1001 and above N =56	
————— Per cent —————				
1	Non-adopter	87.23	37.50	68.67
2	Adopters	12.77	62.50	31.33
Total		100.00	100.00	100.00

Chi-square = 40.33

D.F. = 1

Significant at 0.01 per cent level.

From the chi-square value, it will be observed that there was a statistically significant association between the annual income of the farmers and adoption of hybrid cotton. The higher the annual income, the greater the possibility that the farmers would be adopters of hybrid cotton.

Cosmopolitaness

Cosmopolitaness of an individual indicates the extent and nature of his contacts with external agencies at different localities and at different positions. The information in respect of the cosmopolitaness of the small farmers is presented in Table 17.

Table 17. Small farmers by their cosmopolitaness

Sr. No.	Cosmopolitaness groups	Number	Per cent N =150
1	Low (Score 1 to 7)	104	69.33
2	High (Score 8 and above)	46	30.67
Total		150	100.00

It can be seen from Table 17 that majority of the small farmers (69.33 per cent) were less cosmopolite in nature possessing the score upto seven. Only 30.67 per cent of the small farmers were more cosmopolite in nature. It was noticed that weekly bazaar was the main place where small farmers had larger contacts. This was followed by sugar factory and fields of fellow farmers.

Table 18. Nature of association between adoption of hybrid cotton and the cosmopolitaness of the small farmers

Sr. No.	Farmer categories	Cosmopolitaness		Total N=150
		Low N=104	High N=46	
----- per cent -----				
1	Non-adopters	90.38	19.57	68.67
2	Adopters	9.62	80.43	31.33
Total		100.00	100.00	100.00

Chi-square = 74.37

D.F. = 1

Significant at 0.01 per cent level.

A strong associationship between the cosmopolite nature of the small farmers and adoption of hybrid cotton was observed as indicated by the above table. The highest proportion of the small farmers (80.43 per cent) from the adopters group was cosmopolite in nature whereas, the maximum number of small farmers (90.38 per cent) from the non-adopters category were localite in nature.

Social participation

Social participation refers to the membership and/or holding of an official position in any of the voluntary organisations. It was hypothesized that the small farmers who participated in a more number of voluntary organisations would tend to be active and informed about farming and would tend to adopt improved agricultural practices of hybrid cotton early.

Table 19. Small farmers by their social participation

Sr. No.	Social participation groups	Number	Per cent N = 150
1	Low (Score 1 to 2)	109	73.67
2	High (Score 3 and above)	41	26.33
Total		150	100.00

Above table shows that about $3/4^{\text{th}}$ of the small farmers (73.00 per cent) had low social participation. The percentage of small farmers who had high social participation score was on 26.33. None of the small farmers studied was office bearer of any social organization.

Table 20. Nature of association between adoption of hybrid cotton and the social participation of the small farmers.

Sr. No.	Farmer categories	Social participation		Total N=150
		Low N=109	High N=41	
----- Per cent -----				
1	Non-adopters	89.91	12.19	68.67
2	Adopters	10.09	87.81	31.33
Total		100.00	100.00	100.00

Chi-square = 83.60

D.F. = 1

Significant at 0.01 per cent level.

It can be seen from the above table that there was statistically highly significant association between social participation and adoption of hybrid cotton. Higher the social participation, higher was the adoption of hybrid cotton by the small farmers.

Aspirations

Aspiration is an indicator of the projecting behaviour of an individual in the particular social, economic, psychological and physical situations. On the basis of the scores obtained by the respondents they were grouped into two groups as presented in Table 21.

Table 21. Small farmers by their aspirations

Sr. No.	Aspiration groups	Number	Per cent N = 150
1	Low (1 to 8 scores)	65	43.33
2	High (Score 9 and above)	85	56.67
Total		150	100.00

Table 21 reveals that 56.67 per cent of the small farmers had high aspirations regarding themselves and their children. These aspirations were mainly about their own occupation and the education of their children. About 43.00 per cent of the small farmers had low aspirations.

Table 22. Nature of association between adoption of hybrid cotton and the aspirations of small farmers

Sr. No.	Farmer categories	Aspirations		Total N=150
		Low N=65	High N=65	
		Per cent		
1	Non-adopter	86.15	55.29	68.67
2	Adopters	13.85	44.71	31.33
Total		100.00	100.00	100.00

Chi-square = 16.31

D.F. = 1

Significant at 0.01 per cent level.

It is evident from the above table that there existed statistically significant association between the level of aspirations of the small farmers and adoption of hybrid cotton. It is interesting to note that the small farmers who had higher aspirations had adopted the hybrid cotton to the maximum extent.

Risk orientation

Risk orientation of an individual refers to his capacity to bear risk in bringing about the change in the traditional practices by switching over to newly introduced innovations.

Table 23. Small farmers by their risk orientation

Sr. No.	Risk orientation groups	Number	Per cent N = 150
1	Low	113	75.33
2	High	37	24.67
	Total	150	100.00

Above table indicates that majority of the small farmers (75.33 per cent) had low risk bearing capacity. Only 24.67 per cent of them had high risk bearing capacity.

Table 24. Nature of association between adoption of hybrid cotton and the risk orientation of small farmers

Sr. No.	Farmer categories	Risk orientation		Total N=150
		Low N=113	High N=37	
————— Per cent —————				
1	Non-adopters	88.50	8.11	68.67
2	Adopters	11.50	91.89	31.33
	Total	100.00	100.00	100.00

Chi-square = 83.74 D.F. = 1

Significant at 0.01 per cent level

The calculated chi-square value was found to be highly significant at one per cent level of significance indicating thereby that, there was statistically highly significant association between risk orientation of the small farmers and adoption of hybrid cotton by them. It

A strong significant associationship between the attitude of the small farmers towards hybrid cotton and its actual adoption was observed. It can therefore be inferred that adoption was dependent on positive attitude of small farmers towards hybrid cotton.

Knowledge

Knowledge of the improved agricultural technology is very important and pre-requisite for the adoption of modern agricultural technology. It was hypothesized in the present study that small farmers with high knowledge of improved agricultural technology of hybrid cotton would tend to adopt hybrid cotton immediately. The distribution of the small farmers according to their knowledge about hybrid cotton cultivation is presented below.

Table 27. Small farmers by their knowledge

Sr. No.	Knowledge groups	Number	Per cent N=106
1	Low knowledge	51	48.00
2	High knowledge	55	52.00
	Total	106	100.00

Out of the 150 small farmers studied, 106 small farmers knew hybrid cotton varieties. Above table evinces that out of these 106 small farmers more than half had high knowledge about hybrid cotton cultivation

while 48.00 per cent of them had low knowledge about hybrid cotton cultivation.

Table 28. Nature of association between adoption of hybrid cotton and knowledge of the small farmers

Sr. No.	Farmers categories	Knowledge		Total N=106
		Low N =51	High N = 55	
		————— Per cent —————		
1	Non-adopters	90.20	23.64	56.66
2	Adopters	9.80	76.36	43.34
Total		100.00	100.00	100.00

Chi-square = 47.48

D.F. = 1

Significant at 0.01 per cent level.

It is evident from the above table that there existed a statistically significant association between the knowledge about the cultivation of hybrid cotton of the small farmers and adoption of hybrid cotton. Higher the knowledge about hybrid cotton higher was the adoption.

Adoption level

Adoption of an innovation is one of the major means by which farmers can improve their economic position. It involves behavioural changes on the part of farmers and is influenced by different factors. In the present study it was observed that out of total 150 small farmers studied, only 47 were adopters of hybrid cotton. Their distribution is presented in Table 29.

Table 29. Small farmers by their adoption level

Sr. No.	Adoption level groups	Number	Per cent N = 47
1	Low adopters	27	57.47
2	High adopters	20	42.53
	Total	47	100.00

Above table reveals that nearly 58.00 per cent of the adopters of hybrid cotton were low adopters while, 42.53 per cent were high adopters.

Sources of information

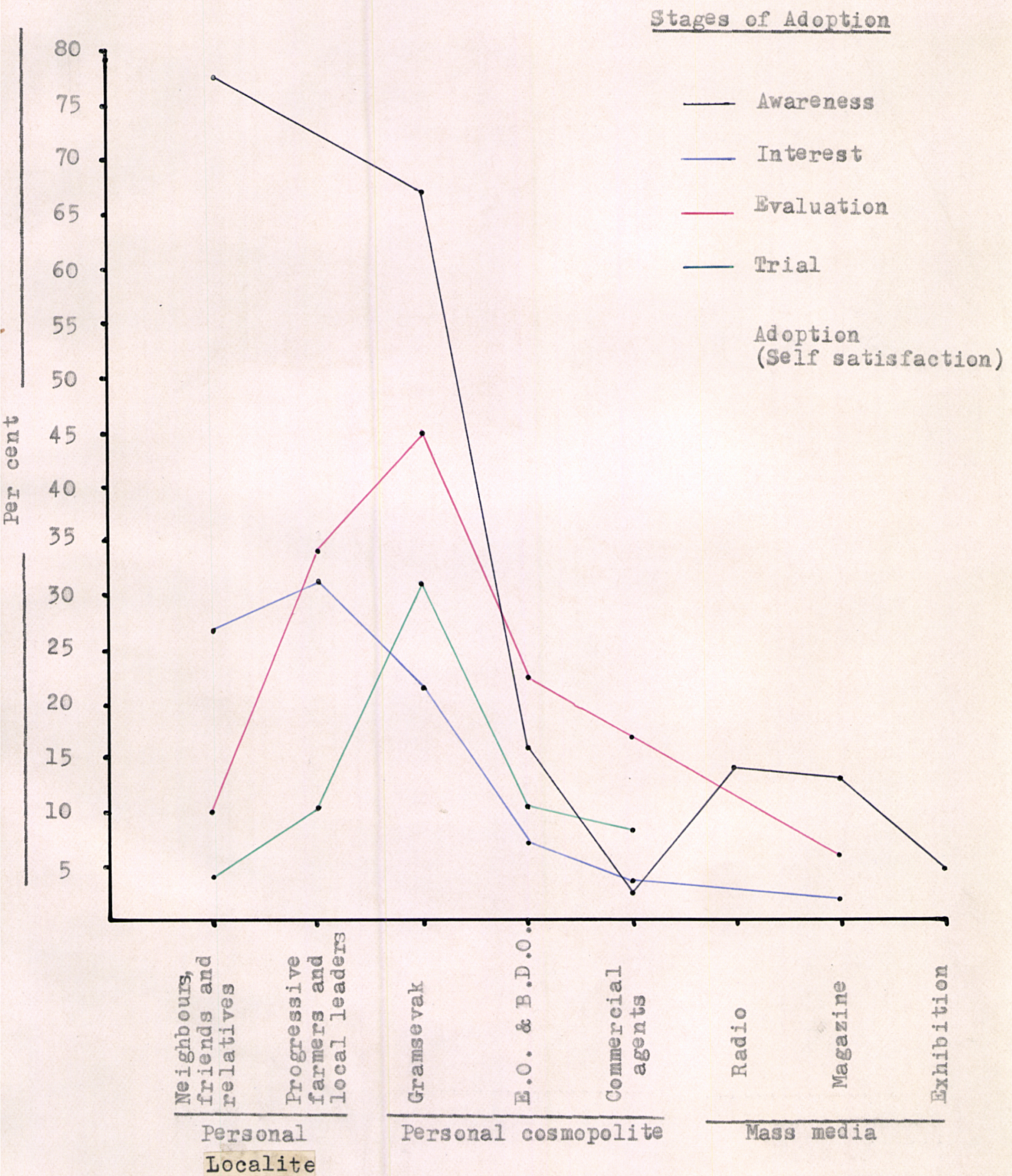
It is generally observed that majority of the farmers enquire about the innovations during the early stages of adoption viz., awareness and interest; further it is also observed that only those who intend to adopt that innovation pass through the later stages of adoption namely, evaluation, trial and final adoption. Therefore, the data in respect of the sources of information used at the awareness and interest stages has been presented for 106 small farmers who were knowing the hybrid cotton varieties. The data about the information sources used at evaluation, trial and adoption stages has been presented for 47 small farmers only, who had actually adopted the hybrid cotton.

Table 30 reveals that during the awareness stage, neighbours, friends and relatives (78.30 per cent), progressive farmers (72.98 per cent) and Gramsevak (67.98 per cent) were the most important sources of information through which small farmers obtained the information about hybrid cotton. Extension Officer as a source of information was mentioned by only 16.00 per cent of the small farmers followed by radio and magazines, their percentage being 14.00 each. The influence of commercial agents and exhibitions, etc. as the sources of information was very less while newspapers, meetings and discussions had no influence at all.

About 31.00 per cent of the small farmers reported that at interest stage they got information from the progressive farmers and local leaders. Nearly 28.00 per cent of the small farmers obtained the information about the cultivation of hybrid cotton from neighbours, friends and relatives. Gramsevak as a source of information was mentioned by only 21.70 per cent of the small farmers followed by Extension Officers, its percentage being 7.55. The influence of magazines and commercial agents was very less while radio, exhibition and newspapers had no influence at all, ^{at} the interest stage.

At the evaluation stage it was noticed that more number of adopters used Gramsevak (44.64 per cent) and progressive farmers and/or local leaders (34.00 per cent) as the major sources of information through which they

Fig. 6. Small Farmers by their Sources of Information



they sought the information about hybrid cotton. Extension Officers and commercial agents as the sources of information were reported by 23.40 per cent and 17.00 per cent of the small farmers respectively. The effect of friends, relatives, neighbours and magazines was negligible.

At the trial stage of adoption, nearly 32.00 per cent of the adopters mentioned that Gramsevak was the main source of information. Extension Officers, progressive farmers and local leaders as the sources of information were used by nearly 11.00 per cent small farmers each respectively. Only 8.52 per cent and 4.26 per cent of the small farmers obtained information from commercial agents and friends, neighbours and relatives.

At the adoption stage self decision and satisfaction of the small farmers and availability of the inputs played important role as reported by almost all the adopters.

A bird's eye view of table 30 shows that there was a dominance of personal localite sources over personal cosmopolite and mass media sources at the initial stages of adoption. However, the influence of personal cosmopolite sources was found to be increasing and dominating over the personal localite and mass media sources in latter stages of adoption.

Table 31. Nature of information about hybrid cotton sought by the small farmers at interest stage.

Sr. No.	Nature of information	Number	Per cent N=47
1	Availability of seed	8	17.02
2	Rate/quintal	13	27.66
3	Profit/hectare	8	17.02
4	Yield/hectare	32	68.09
5	Expenditure/hectare	25	53.19
6	Pest and diseases	15	31.91
7	Planting method	7	14.89
8	Duration of crop	2	4.26

Considerable proportion of the adopters (68.09 and 53.19 per cent) sought the information about yield of hybrid cotton varieties and the expenditure required for the cultivation of these varieties (68.09 and 53.19 per cent respectively) at the interest stage. About 30.00 per cent of the small farmers each sought the information at this stage about pest and diseases and selling rate of cotton. The information about the availability of seeds and profit per hectare was obtained by 17.00 per cent of the adopters. Seven adopters enquired about planting method of hybrid cotton while only 2 adopters enquired about duration of hybrid cotton.

Reasons for non-adoption of hybrid cotton by the small farmers :

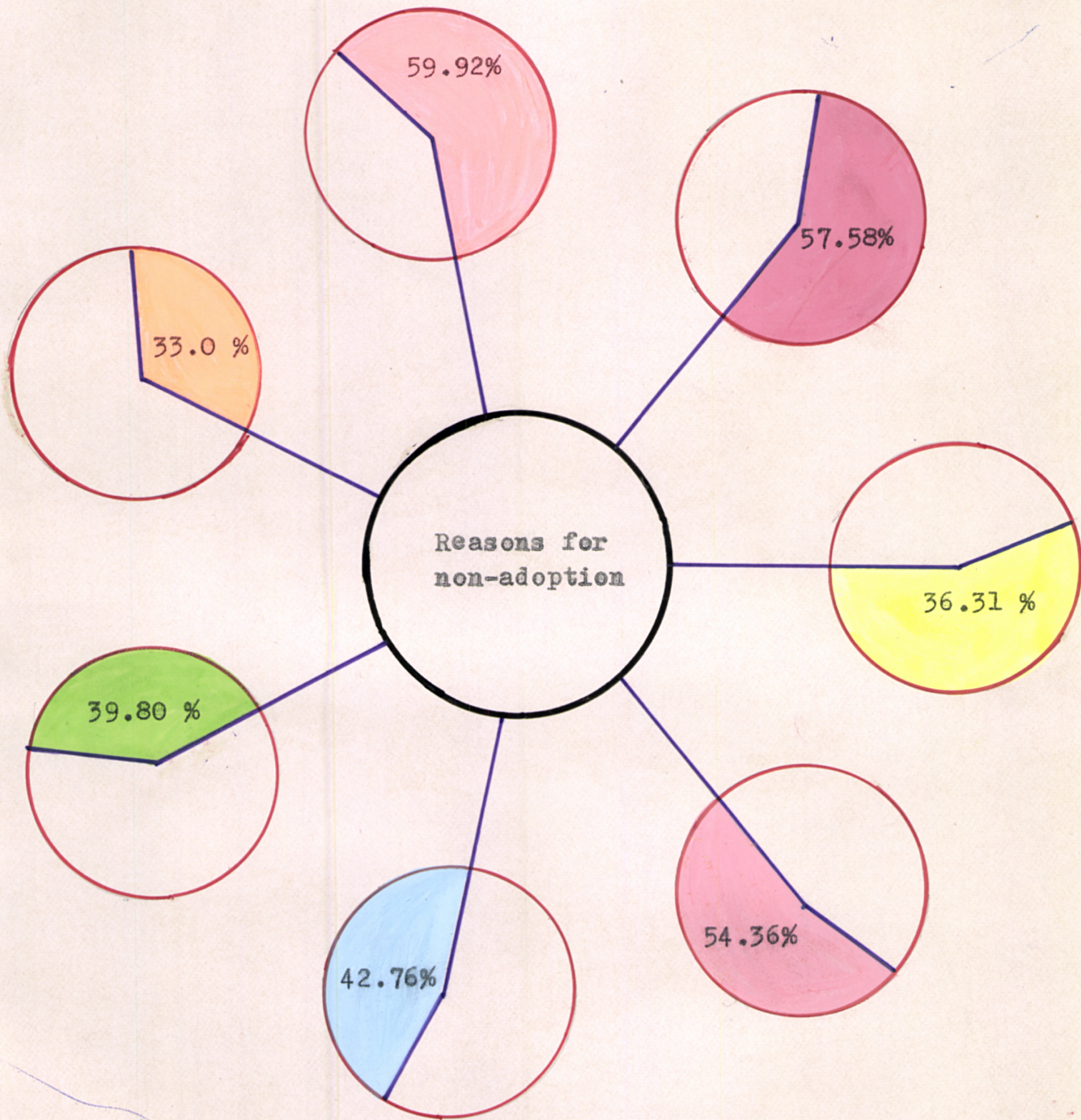
The information pertaining to the difficulties and problems faced by the small farmers while adopting the hybrid cotton varieties was collected. The data pertaining to the problems faced by them are presented in following table.








Table 32. Reasons for non-adoption of hybrid cotton by the small farmers

Sr. No.	Reasons for non-adoption	Number	Per cent N=103
1	Inputs are very costly	61	59.22
2	Crop loans are not available in time	59	57.58
3	Plant protection appliances are not available in time	58	56.31
4	Inadequate supply of irrigation water in summer season	56	54.36
5	Lack of knowledge about hybrid cotton varieties	44	42.76
6	Inadequate supply of loan	41	39.80
7	Inputs are not available in time	34	33.00

The above table indicates that about 60.00 per cent of the non-adopters had faced the problems like high prices of inputs required for cultivation of hybrid cotton and non-availability of loan and plant protection appliances in time. Fifty-four per cent of the small farmers reported that inadequate supply of irrigation water

Fig. 7. Small Farmers by their Reasons for Non-adoption



-  Costly inputs
-  Non-availability of loan in time
-  Non-availability of plant protection appliances
-  Lack of irrigation water in summer
-  Lack of knowledge
-  Inadequate supply of loan
-  Non-availability of inputs in time.

in summer leads to non-adoption. The difficulties viz., lack of knowledge about hybrid cotton varieties and inadequate supply of loan were expressed by about 40.00 per cent of the small farmers. About one-third (33.00 per cent) of the small farmers mentioned that non-availability of the inputs in time was the reason for their non-adoption of hybrid cotton.

Chapter Opener Page

CHAPTER-V

DISCUSSION

CHAPTER-V

D I S C U S S I O N

Small farmer is a talk of the day as they constitute 70.00 per cent of the total operational land holders. This numerically strong but economically weaker portion of the Indian society is still using the traditional methods of cultivation; due to one or the other reasons. The new farm technology is usually adopted by big farmers early. The benefits derived by these farmers help in motivating the small farmers around them to adopt this new technology after some lapse of period. Availability of irrigation water and other inputs like credit, fertilizers, plant protection appliances and such others, which are now available to small farmers through the co-operatives have resulted in having a positive impact on the small farmers to adopt new farm technology. These farmers have started growing cash crops, especially short duration crops like cotton and vegetables.

However, still small farmers are facing numerous problems in adopting high yielding varieties mainly for the limitations of the small size of their land holding and the resources available with them. Some socio-personal factors have also bearing on this. Therefore, the investigation entitled "Study of Factors Associated with the Adoption of Hybrid Cotton by the Small Farmers" was felt to be essential.

In this chapter the results in respect of characteristics of the small farmers viz., socio-personal, economic

and psychological and the nature of association between these characters of the small farmers and adoption of hybrid cotton has been presented. Further, the data regarding sources of information used by the small farmers at different stages of adoption and the reasons for non-adoption of hybrid cotton by them is also discussed.

1 Age :

In the present study, it was found that 63.34 per cent of the small farmers belonged to the age group of upto 45 years, whereas, only about 37.00 per cent of them were from the age group of 46 and above years. The association between age and adoption of hybrid cotton by small farmers was found to be statistically significant. It is therefore, concluded that the young small farmers adopt agricultural technology earlier and to larger extent than older small farmers. This might be due to the fact that young men are enthusiastic, energetic, creative and progressive in nature. The farmers who are older in age are likely to be orthodox, conservative and traditional minded. Therefore, they did not give favourable response to new farming ideas.

This finding is in confirmation with the findings of Salvi (1971) who stated that age of low income farmers was significantly negatively associated with adoption of agricultural innovations.

2 Education :

Out of the total small farmers studied, nearly one-third (31.33 per cent) had not received any formal education. Maximum percentage of small farmers (61.33 per cent) had received primary education upto seventh standard whereas only 7.34 per cent had received secondary or college education. Thus, it was observed that educational level of small farmers was low which might have influenced adversely on the adoption of hybrid cotton as was evinced by the fact that out of 150 small farmers studied, only 47 were adopters, rest being non-adopters. This may be due to the fact that higher educational facilities are not available at village level and they may not afford to send their children for higher education in cities due to poverty.

A statistically significant association was noticed between adoption of hybrid cotton and formal education of small farmers. This might be due to the fact that education brings about change in the farmers knowledge, attitudes and skills. Educated farmer can read the literature and grasp modern techniques earlier. Similar findings were reported by Copp (1956), Salvi (1971) and Gangappa (1975).

3 Caste :

The caste of an individual decides the nature of activities carried out by him. Caste has been frequently described as a static institution, inimical to economic development.

When the caste of the small farmers was studied, it was observed that 60.00 per cent small farmers were from lower castes, while only 40.00 per cent small farmers were from higher castes. It was hypothesized that small farmers from high caste would adopt improved technology early as reported by Mulay and Ray (1965) and Raut (1974). However, it was noticed that there was no statistically significant association between caste of the small farmers and adoption of hybrid cotton. It might be due to social mobility and education of the small farmers.

The finding is in conformity with the findings of Jha and Shaktawat (1972) and Salunkhe and Thorat (1975).

4 Size of family :

When the size of the family of farmers was studied, it was observed that 48.00 per cent of the small farmers were from the medium family size group having 6 to 8 members. There were 25.33 and 26.67 per cent of the small farmers from the small and big family size groups having upto 5 and more than 9 members respectively. The study did not show any statistically significant association between family size and adoption of hybrid cotton.

It was felt that the bigger size family would provide more labour required for hybrid cotton cultivation. However, the study has not confirmed it. It might be due to the small size of the farm possessed by the small farmers.

The findings agree with the findings of Cummings (1950). He reported that there was a lack of relationship between the farmers family size and adoption. The finding is also confirmed by the study of Salvi (1971).

5 Type of family :

About 60.00 per cent of the small farmers had individual families whereas 42.00 per cent of them had joint families. Statistically non-significant association was observed between the family type and adoption of hybrid cotton. This result confirms with the findings of Raheja (1959).

6 Total land holding :

It was observed that nearly 71.00 per cent of the small farmers had land holdings of 1.1 to 2.00 hectares, while about 29 per cent had land holdings upto one hectare only.

The farmers with very small size of holdings may be reluctant to adopt new agricultural technology, because size of holding is related to the level of income and in turn the income is related to adoption of new agricultural technology. Therefore, it is always stated that size of holding is associated with the adoption of new agricultural technology.

The present study also indicated that there was a strong statistically significant association between size

of holding and adoption of hybrid cotton. This may be due to the fact that small farmers cannot bear the risk of growing cotton on a very small piece of land where financial risk is involved.

The findings are supported by Sinha (1970) and Gangappa (1974).

7 Annual income :

Annual income decides living standard of a farmer. The income level influences the degree of influence and prestige in society and adoption behaviour of the farmer. A better economic position enables a farmer to take risk in trying new farming techniques. The study denoted that 63.00 per cent of the small farmers had annual income upto Rs. 1,000.00 whereas only 37.00 per cent had income of above Rs. 1,000.00.

A highly significant association between the annual income and adoption of hybrid cotton was observed. This might be due to fact that farmers with high annual income can spend more for the inputs needed for adoption of new agricultural innovations. The small farmers with comparatively better financial position can take the risk involved in trying an innovation and incur the expenses required, while those having low annual income cannot afford to do so as the failure in that attempt may affect their family maintenance. This finding is in the line with the findings of Shaw (1958), Salvi (1971) and Sandhu (1971).

8 Socio-economic status :

Socio-economic status is an important determinant in bringing about change in the total outlook and occupation. It determines the social and economic status of an individual in the society. In the present investigation, it was noticed that 47.33 per cent of the small farmers were in lower socio-economic class while, 32.67 per cent and 20.00 per cent small farmers were in middle and high socio-economic class respectively. Statistical analysis showed the significant association between socio-economic status of the small farmers and adoption of hybrid cotton. It might be due to the fact that socio-economic status depends on socio-economic factors like income, farm resources, irrigation facilities, position in formal organisations, etc. The adopters of hybrid cotton might be having more contacts with the outside world and extension agency and that is why these farmers might have taken the risk to adopt hybrid cotton varieties. This finding confirms with the findings of Ratanchand and Gupta (1966) and Wagh (1974).

9 Social participation :

The study revealed that 72.67 per cent of the small farmers had low social participation score and only 26.33 per cent small farmers had high social participation score. It might be because of the low socio-economic status and poverty of the small farmers which, influences the social

participation of the individuals especially in the developing countries like ours.

The study also showed statistically strong significant association between social participation and adoption of hybrid cotton. The result may be due to the fact that social participation develops wider outlook which leads to higher contacts with the outside world and extension agents. So they might have been convinced about the hybrid cotton varieties. Similar findings were reported by Rahudkar (1964) and Salvi (1971).

10 Cosmopolitaness :

Cosmopolitaness is the degree to which an individual has contacts with outside world. It was observed that nearly two-third of the small farmers were in low cosmopolitaness group. Increased number of small farmers in low cosmopolitaness group might be due to poor economic condition, low education, low extension contacts and low social participation of the small farmers.

Chi-square test had shown strong and statistically significant association between cosmopolitaness of the small farmers and adoption of hybrid cotton, indicating that cosmopolitaness of the small farmers had strong bearing on their adoption. This finding is supported by finding of Fliegel and others (1968) and Wagh (1974).

11 Aspirations :

An effort was made to study the association between aspirations of small farmers and adoption of hybrid cotton. It was interesting to note that about 57.00 per cent of the small farmers had high aspirations regarding their own and their children's occupation. They had also high aspirations about education of their sons and daughters. Only 43.00 per cent had low aspirations about themselves and their children.

Further, it was observed that there was statistically significant association between the level of aspirations of the small farmers and adoption of hybrid cotton. High aspirations of the small farmers might be motivating them to improve their economic condition and thereby adopt improved agricultural practices.

Similar findings were observed by Singh and Sehgal (1966) and Sharma and Nair (1974).

12 Risk orientation :

Risk orientation of an individual refers to his propensity to take risk in bringing about the change. In case of farmers, it refers to their risk bearing capacity to accept new farm techniques. Risk bearing farmers are ready to bear credit and other risks in adopting new agricultural innovations. With this view, the nature of association between risk orientation and adoption of hybrid cotton by small farmers was studied.

More than three-fourth of the small farmers (75.33 per cent) had low risk orientation while, only about one-fourth of them had high risk orientation.

Chi-square test showed that, there was statistically significant association between risk orientation of the small farmers and adoption of hybrid cotton. The small farmers who had high risk orientation might be possessing higher educational level, high socio-economic status, high social participation and more extension contacts. These factors might have stimulated them to adopt new agricultural technology. This finding is in line with that of Gogala Parthasarathy (1971).

13 Attitude :

The study denoted that more than three-fourth (75.47 per cent) of the small farmers had positive attitude towards hybrid cotton cultivation. The percentage of farmers having negative attitude was only 24.47 per cent. This may be due to fact that majority of the small farmers might have contacted with friends, relatives, progressive farmers. They might have also observed the experiences of other big farmers.

The study showed statistically strong significant association between attitude of the small farmers towards hybrid cotton cultivation and adoption of hybrid cotton. Similar finding was reported by Choukidar and George (1971).

14 Adoption :

It was observed that out of the 47 adopters of the hybrid cotton, 57.47 per cent were low adopters, while nearly 43.00 per cent were high adopters of hybrid cotton. This might be due to the fact that due to poor knowledge about hybrid cotton cultivation and high cost required for plant protection and fertilizers some of the adopters might have not used the recommended practices of hybrid cotton cultivation.

Sources of Information Used by Small Farmers at Various Stages of Adoption :

Adoption is a complex process which involves obtaining knowledge about new idea or a practice, complex decision making in respect of that practice and actual use of that practice. While adopting any new idea or practice individual passes through different stages of adoption. The adoption stages given by Rogers (1962) viz., awareness, interest, evaluation, trial and adoption were considered for the purpose of present study. Different information sources are used at each of these stages. Some times the individual would drop certain stages of adoption and step up towards adoption of that practice. It depends upon the potential and urgency of an innovation and ability of the change agents to carry that practice to the farmers. The different sources of information used by the small farmers at each of the stages of adoption of hybrid cotton are discussed below :

(a) Awareness stage :

It was observed that 55.33 per cent of the small farmers obtained information about hybrid cotton through friends and neighbours, 51.33 per cent through progressive farmers and 47.33 per cent through Gramsevak. The use of extension officers, radio and magazines by the small farmers as the sources of information was negligible. This indicates that personal localite sources like friends, neighbours, relatives and progressive farmers played an important role at the awareness stage of adoption. This can be attributed to the face to face and intimate contacts and less social distance between small farmers and these agencies. These results are supported by Singh and Jha (1967) and Mathur, et al. (1974).

(b) Interest stage :

At this stage, it was observed that 33.00 per cent of the small farmers depended on progressive farmers and local leaders, followed by 29.00 per cent of them who depended on friends, relatives and neighbours for additional information about hybrid cotton. Twenty three per cent small farmers sought information from Gramsevak. The influence of other sources of information was very less at this stage. These results show that personal localite sources were more influential at interest stage also. This might be due to the fact that small farmers might have regular close contacts with these local persons.

The increase frequency of their contacts with these change agents might have more impact on the small farmers in adoption of hybrid cotton. This finding coincides with the finding of Lakshmana and Satyanarayana (1967).

An attempt was also made to know the nature of information sought by the adopters at the interest stage. It was observed that about 68.00 per cent of the adopters enquired about the net profit per hectare possible through the cultivation of hybrid cotton over the local ones. More than 53.00 per cent of them enquired about expenditure/ha involved in the cultivation of hybrid cotton. The information on plant protection measures and availability of hybrid cotton seed was sought by about 30.00 per cent of the adopters.

It seems that majority of the adopters had enquired about the economic aspect of hybrid cotton. This might be because of poor financial position and high risk involved in adoption of hybrid cotton.

(c) Evaluation stage :

At evaluation stage individuals study the merits and demerits of a particular practice, for this he consults different sources of information. The study indicated that Gramsevak ranked first as a source of information at the evaluation stage followed by progressive farmers and local leaders. Extension officers and commercial agents were ranked third and fourth respectively. The impact of

neighbours, friends and relatives was comparatively less at this stage. In general, it was found that adopters had given priority to technical and knowledgeable persons like gramsevak, extension officers and progressive farmers during evaluation stage. It is obvious that during evaluation stage more deep information about the technical aspects of an innovation is required. Extension officers, gramsevaks and progressive farmers might have proved their worth for the adopters of hybrid cotton at this stage.

(4) Trial stage :

At the trial stage new practice is tried on a small scale. If he gets satisfied in his own situation he adopts it on a larger scale. The present study had shown that gramsevak as a source of information was most used source (31.91 per cent) at this stage. Extension officers and progressive farmers ranked second in supplying information at trial stage. Very few farmers obtained information from neighbours, friends and commercial agents. This indicates that at this stage also small farmers had contacted technical and experienced persons. Similar findings were reported by Singh and Jha (1967).

Further it was also observed that nearly 66.00 per cent of the adopters had adopted hybrid cotton from the experience of other farmers. They did not conduct any trial. This stepping up might be due to their belief on fellow farmers. Only 34.00 per cent of the adopters conducted trial prior to actual adoption of hybrid cotton.

(e) Adoption stage :

When the individual is convinced and self satisfied about an innovation after conducting small scale trial in his own situation, he adopts that innovation on large scale. It was observed in the present study that almost all the small farmers reported that self experience and self satisfaction was the main source of information for their adoption of hybrid cotton. This indicates that, when one gets satisfied about the innovation, it leads him to adopt that innovation.

The finding of the present study confirms with the finding of Rogers, who stated that experience with the innovation gained at the trial stage was reported as the most important source of information by 95.00 per cent of the respondents at the adoption stage.

Knowledge :

Knowledge of an innovation is considered to be pre-requisite for the acceptance of an innovation. Productivity of the farms of the farmers depends upon their knowledge about the cultivation practices of different crops. With this view in mind the association between knowledge of the farmers regarding hybrid cotton cultivation and adoption of hybrid cotton was studied.

It was noticed in the present study that almost all non-adopters (96.00 per cent) had low knowledge about

hybrid cotton cultivation. Among the adopters about 88.00 per cent had high knowledge about hybrid cotton cultivation while only about 12.00 per cent had low knowledge. A statistically highly significant association was observed between knowledge level of those small farmers who were having some knowledge about hybrid cotton and adoption of hybrid cotton. This can be attributed to a common observation that knowledgeable persons tend to get more knowledge through continuous contacts with the change agents and outside world and adopt the new technology at an earlier.

The observation confirms with the studies carried out by Kadam (1974) and Govindappa (1975).

Reasons for non-adoption of hybrid cotton by the small farmers :

With the availability of irrigation facilities due to major and minor irrigation projects and the availability of new agricultural technology, many farmers have started growing cash crops like sugarcane, cotton, vegetables, etc. The small farmers are also not exception to this. They have also been inclined towards growing such paying crops. However, it is generally observed that the number of the small farmers, adopting new agricultural technology is very small. Keeping this in mind, an attempt was made to collect the information about the reasons for non-adoption of hybrid cotton by the small farmers. The information so obtained is discussed below.

Out of the total 150 small farmers studied, 103 were non-adopters of hybrid cotton. The most important reasons stated by about 60.00 per cent of the non-adopters were high cost of the inputs, non-availability of loan in time, and inadequate supply of irrigation water in summer season. Similar findings were reported by Prasad (1967) and Singh (1968).

About 40.00 per cent of the non-adopters stated that inadequate supply of loan and lack of knowledge about hybrid cotton cultivation were the major reasons for their non-adoption of hybrid cotton. This finding is in conformity with the finding of Raju (1975).

One-third (33.00 per cent) of the non-adopters pointed out that non-availability of inputs like seeds and fertilizers was the root cause for non-adoption of hybrid cotton. Similar observations were made by Chanderbhan Sharma and Sisodia (1976).

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CHAPTER-VI

SUMMARY,
CONCLUSIONS AND
IMPLICATIONS

CHAPTER-VI

SUMMARY, CONCLUSIONS AND IMPLICATIONS

Nearly 70 per cent of the agricultural holdings are operated by small farmers in our country. This large number of small and marginal farmers is living far below the poverty line. According to Naidu (1976), the per capita consumption was hardly Rs. 37.00 per month in 1971-75. Therefore, all round development of the small farmers is the need of the day. It can be achieved by helping these farmers to improve their farm conditions by changing their total outlook from traditional to modern techniques of farming. Adoption of improved farm technology by the small farmers is of vital importance to-day.

For the development of this huge mass, Government, social reformers and private organisations have diverted their all sided efforts towards this direction. As an indirect impact of the big farmers who are adopting modern cultivation techniques, a few of the small farmers are trying to adopt the new innovations in agriculture. But still, a large mass of the small farmers is either reluctant or unable to adopt the new technology. Some research studies have been conducted by the research workers to know about the adoption behaviour of the small farmers. However, almost all of them have studied the adoption in respect of cereals and dry land agriculture. But the studies on adoption behaviour of the small farmers in respect of cash crops are very few. Therefore, present

investigation entitled "A study of factors associated with the adoption of hybrids cotton by the small farmers" was undertaken.

The study was carried out in 15 randomly selected villages from Malshiras taluka of Solapur District. The general objective of the investigation was to study the various characteristics of the small farmers and their influence on the adoption behaviour of the small farmers. An attempt was also made to study the various sources of information used by the small farmers at the different stages of adoption and various reasons for non-adoption of hybrid cotton by them.

Villages and small farmers were selected from the Malshiras taluka of Solapur district by random selection method. The farmers were interviewed with the help of a specially constructed schedule and the required data were collected. The qualitative data were quantified wherever necessary. Percentages were also worked out to present the characteristics of the small farmers. Chi-square test was used to find out the association between the characteristics of the small farmers and adoption of hybrid cotton by them. The study indicated that there was statistically significant association between adoption of hybrid cotton and all the independent variables studied except caste, type of family and size of family.

Conclusions :

The conclusions of the study are :

- 1 The maximum percentage of small farmers (48.67 per cent) were in the age group of 31 to 45 years. Only 14.67 per cent of the small farmers were found to be in the age group of upto 30 years. Age had shown significant association with the level of adoption of the small farmers.
- 2 The study pointed out that majority of the small farmers (61.33 per cent) had received primary education. Nearly 32.00 per cent of the small farmers had received no formal education while only 7.34 per cent small farmers had received secondary or college education. There was strong statistically significant association between the education of the small farmers and adoption of hybrid cotton by the small farmers.
- 3 It was observed that 60.00 per cent small, cotton growing farmers were from lower caste group while 40.00 per cent of them were from higher castes. Statistically non-significant association was observed between caste of the small farmers and adoption of hybrid cotton.
- 4 About half of the small farmers belonged to the medium sized families consisting of 6 to 8 members. The association between the family size and the

adoption of hybrid cotton was found to be statistically non-significant.

- 5 Majority of the small farmers viz., 58.00 per cent had individual type of families. Type of family had failed to show any significant association with the adoption.
- 6 More than 70.00 per cent of the small farmers had land holdings between 1.1 to 2.00 hectares. Statistically significant association was observed between the size of holding and adoption of hybrid cotton.
- 7 Nearly 63.00 per cent of the small farmers had annual income of upto Rs. 1000. Only 37.00 per cent of them had annual income of more than Rs. 1000. The study showed statistically significant association between the annual income and adoption of hybrid cotton.
- 8 Highest percentage (47.33 per cent) of small farmers were found to be belonging to lower socio-economic status. A statistically significant association was observed between the socio-economic status of the small farmers and adoption of hybrid cotton by them.
- 9 It was observed that nearly 73.00 per cent of the small farmers had low social participation. The association between the social participation and

adoption of hybrid cotton was found to be statistically significant.

10 Majority of the small farmers (69.33 per cent) were less cosmopolite in nature while only about 30.00 per cent of them were more cosmopolite in nature. Statistically significant association was observed between the cosmopolitaness and adoption of hybrid cotton.

11 Nearly fifty seven per cent of the small farmers had high aspirations regarding themselves and education and occupation of their children while about 43.00 per cent of them had low aspirations. The association between aspirations level and adoption was found to be statistically significant.

12 More than three-fourth of the (75.33 per cent) small farmers had low risk orientation. The risk orientation of the small farmers had significantly influenced their adoption behaviour.

13 About 75.00 per cent of the small farmers had positive attitude towards hybrid cotton varieties, while only 24.00 per cent had negative attitude towards hybrid cotton. Statistically significant association was observed between the attitude of small farmers towards hybrid cotton and its adoption by them.

- 14 It was found that the association between knowledge of the small farmers about hybrid cotton cultivation and adoption was statistically significant.
- 15 The present investigation indicates that about 60.00 per cent of the adopters of hybrid cotton varieties were not using other recommended package of practices of hybrid cotton cultivation.

Role played by the information sources at different stages of adoption :

- 1 The present investigation showed that there was a dominance of personal localite sources viz., local leaders progressive farmers, neighbours, relatives and friends in the initial stages of adoption. The influence of personal cosmopolite sources viz., Gramsevaks and Extension Officers was increased in later stages of adoption. The utility of mass media sources of information to the small farmers was very negligible.
- 2 About the reasons for non-adoption of hybrid cotton by the small farmers, the study indicated that the major reasons indicated by about 60.00 per cent non-adopters were high cost of the inputs, non-availability of loan in time and inadequate supply of irrigation water in summer season.

Implications :**I Action implications :**

The author hopes that this research study would be highly useful in understanding the characters of small farmers and their reasons for non-adoption. Based on the findings, the following implications are drawn :

- 1 Top priority should be given to spread of education in the rural areas and special attention should be given to educate the weaker section of the society.
- 2 Special efforts are necessary in increasing the social participation and cosmopolitanness of the small farmers to broaden their outlook.
- 3 The national planners and policy makers should pay more attention towards strengthening of the agricultural extension agency for diffusion of new agricultural technology among the small farmers.
- 4 The study pointed out that scanty use of mass media by the small farmers. It is, therefore, essential to establish villages libraries in rural areas.
- 5 Small farmers still depend upon local sources for agricultural guidance. Therefore, special attention is required to be given by the extension agency towards the small farmers. The short duration training classes for the local leaders and progressive

farmers should be arranged frequently to enrich their knowledge about agriculture.

6 Irrigation department should render better administrative services to the farmers in respect of regular supply of irrigation water. There should be co-ordination between Department of Agriculture and the Irrigation Department to have a smooth schedule of irrigation as per the recommendations made for a particular crop.

7 Government authorities should pay more attention towards timely supply of inputs through co-operatives to the small farmers.

II Research implications :

Due to the usual limitations of the student researcher all the aspects of the small farmers in relation to their adoption behaviour could not be studied. The study was conducted in a limited area that is in the Malshiras Development Block only. The following suggestions are, therefore, made for further research on the basis of present study.

- 1 Studies similar to the present need to be replicated in other parts of the state and country as a whole.
- 2 The studies regarding characteristics of small farmers in relation to their adoption of cash crops

are limited. If more studies are conducted in this area, the same would be helpful for generalisations about adoption behaviour of the small farmers.

- 3 A study similar to the present one needs to be repeated after some years in the same research area in order to find out whether small farmer's level of adoption has been raised.



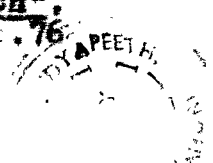
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* Originals not seen

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A P P E N D I X - I

4. Socio-economic status :

Please give following information.

(a) Land holding- (Score one for each acre)		(b) House	Score
		1) One room	1
		ii) Two rooms	2
		iii) Three rooms	3
(c) House type	Score	(d) Caste	Score
1) Kaccha	1	1) Higher (Maratha, Brahmin, Jain)	2
ii) Puccha	2	ii) Lower (Balutedars, Dhangar, Muslim, Parit, Harijans, etc.)	1
(e) Material possession		(f) Farm power	Score
1) Bullock cart	1	1) No bullock	0
ii) Bicycle	1	ii) One pair	2
iii) Radio	1	iii) Two pairs	4
iv) Improved agricl. implements (Score one for each implement)	1	iv) Cil engine or 6 elec. engine (motor)	
(g) Occupation	Score	(h) Education	
1) Balutedari and agriculture	1	(Score one for one year of schooling)	
ii) Agriculture and labour	2	(i) Family type	Score
iii) Business and agriculture	3	1) Nucleus	1
iv) Service and agriculture	4	ii) Joint	2
v) Agriculture	5	(j) Family size	Score
(k) Social participation		1) Upto 5 members	1
1) Membership of one organisation	1	ii) More than 5 members	2
ii) Membership of more than one organisation	2	(l) Animals	Score
iii) Office bearer	3	1) Cow/buffalow (Score two for each animal)	
		ii) Calf (Score one for each calf)	

5. Cosmopolitanness

Which of the following places have you visited ?

Sr.No.	Place	Yes/No	If yes, number of times visited	
			Seldom	Frequently
1	Market place			
2	Taluka place			
3	Sugar factory			
4	Agril. Exhibition			
5	Plots of progressive farmers			
6	Demonstration plots			
7	District place, Bombay etc.			

6. Aspiration : (Please give your opinion about following)

- a) What position you would like in the co-operative society or dairy society of your village to prove your work efficiency ?
Member/Director/C'man
- b) What is your expectation about the education of your son ?
7th Std./SSC/Graduate
- c) What is your expectation about the education of your daughter ?
4th Std./7th Std./SSC
- d) Which of the following occupations you would like, your son should select in future ?
Police, Factory worker, Peon, Clerk, Farmer, Secondary School Teacher, Doctor, Professor, Businessman.
- e) Which of the following occupation you would like, your daughter should select in future ?
No service, Primary School Teacher, Nurse, Clerk, Doctor, Professor.

7. Risk orientation (Please give your opinion on the following statements).

- a) It is better to adopt new farming techniques after most of the farmers have gained successful experience about them
Yes/No

- b) It is not objectionable to take loans, in absence of own capital for the improvement of agriculture Yes/No
- c) Would you conduct the district trial of new cotton hybrid RHR 253 on your farm ? Yes/No
- d) Would you like to give security to your neighbours for their loan taken for agricultural development ? Yes/No
- e) Higher education has become very costly now. In spite of this would you spend the required amount for the education of your sons and daughters ? Yes/No
- f) Would you like to switch over to a business other than agriculture, if that business proves more profitable than agriculture? Yes/No

8. Attitude : (Please give your opinion about following statements)

- a) Hybrid cotton cultivation requires more expenditure than the local cotton varieties Agree/Disagree
- b) Hybrid cotton cultivation is not profitable because these varieties are susceptible to pest and diseases Agree/Disagree
- c) Staple length of hybrid cotton varieties is more than local varieties Agree/Disagree
- d) Cultivation of hybrid varieties is the best way to increase production Agree/Disagree
- e) Ixmi and Nimbkar-1 are better yielder than hybrid cotton varieties Agree/Disagree
- f) Quality of hybrid cotton is not superior than local varieties Agree/Disagree

9. Sources of information

- a) Do you know H-4, Varalaxmi and RHR-253 hybrid cotton varieties ? Yes/No
- b) If yes, when did you come to know of them first ? Before years
- c) From whom did you get this information first ?

- (i) Personal localite sources - Neighbours, friends, relatives, local leaders and progressive farmers
 - (ii) Personal cosmopolite sources- Gramsevak, Agril. Extension Officer and Block Dev. Officer, Commercial agents.
 - (iii) Mass media - Radio, Farm magazine, Newspapers, Meetings, Exhibitions, others (if any).
- (d) (1) After knowing these varieties, did you get additional information about them from any one of the above mentioned media ? Yes/No
- (ii) If yes, from which media ? _____

- (iii) What information ? _____

- (iv) Why do you obtain additional information ?
- a) Yield of old varieties was very low.
 - b) Low per quintal rate of cotton
 - c) Casually
 - d) Because of the advice of extension worker.
- (e) (1) Have you cleared the doubts from any one of the above sources when you thought on all the aspects of these varieties ? Yes/No
- (ii) If yes, from which sources ? _____, _____, _____
- (f) (1) Prior to adopting these varieties on large scale, have you tried on a small scale ? Yes/No

- (ii) If yes, on how much area Area _____
- (iii) Have you obtained any additional information about the techniques of cultivation of these varieties when you tried them on small scale ? Yes/No
- (iv) If yes, from which source ? _____, _____, _____
- (v) What was your experience about the yield and quality of these varieties
 Superior than old varieties
 Not superior than old varieties.
- (g) (i) Have you started regular cultivation of these hybrid cotton varieties on large scale ? Yes/No
- (ii) If no, give the reasons.

- (iii) Have you obtained any information while cultivating these varieties of hybrid cotton Yes/No
- (iv) If yes, from which source? _____, _____, _____

10. Knowledge and adoption : (Please give the information of the following).

Sr. No.	Item	Knowledge		Adoption			
		Complete	Medium	No	Complete	Medium	No
1	<u>Varieties</u> Laxmi, Nimbkar-1, H-4, Varalaxmi, RHR-253						Which variety you have used ?
2	<u>Seed rate/acre</u> 1 kg/acre						Please give quantity of seed you have used
3	<u>Spacing</u> 4 X 3.5 ft.						Please give your spacing.

10. (Contd....)

Sr.No.	Item	Knowledge		Adoption	
		Complete	Medium ; No	Complete	Medium ; No
4	<u>Seed treatment</u>				
	(i) Mercury compound			Which treatment you have given?	
	(ii) Carbofuron				
5	<u>Intercultivation</u>				
	(i) Thinning One plant/hill			How many plants you have kept?	
	(ii) Gap filling Dibbling of seed/ transplanting			Which method you have used?	
6	<u>Fertilizers</u>				
	At the time of sowing 8:20:20			Which fertilizer dose you have used ?	
	After one month 16:0:0				
	At the time of flowering 16:0:0				
7	<u>Plant protection</u>				
	(i) Carbofuron treated seed or 1st and 2nd spraying of 20% entrin				
	(ii) Endrin 20% + Copper oxychloride				
	(iii) Endrin 20% + 50% Carbaril + Copper Oxychloride				
	(iv) Rogar 30% + Copper oxychloride or endosulphan + Copper oxychloride				
	(v) Rogar 30% + Carbaril 50% + Copper oxychloride				
	(vi) -do-				
	(vii) (As per requirements)				



11. Reasons for non-adoption of hybrid cotton

- (a) Inputs (seeds, fertilizers and insecticides) are very costly.
- (b) Inputs are not available in time.
- (c) Non-availability of loan in time.
- (d) Inadequate supply of loan
- (e) Inadequate supply of irrigation water in summer season
- (f) Non-availability of plant protection appliances in time.
- (g) No knowledge about hybrid cotton varieties.

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