

TO STUDY THE IMPACT OF INSTITUTIONAL CREDIT AND ITS INFLUENCE IN THE BEHAVIOUR OF FARMERS IN ADOPTING HIGH YIELDING VARIETIES OF PADDY CULTIVATION

By

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THESIS

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DECLARATION

I hereby declare that this thesis entitled "To Study the Impact of Institutional Credit and its Influence in the Behaviour of Farmers in Adopting High Yielding Varieties of Paddy Cultivation" is a bonafide record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title, of any University or Society.


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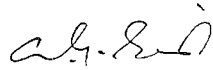
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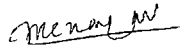


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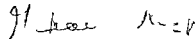
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LIST OF ABBREVIATIONS

Com. Bank	Commercial Bank.
Co-op. Bank	Co-operative Bank
H.Y.Vs.	High Yielding Varieties.
I.P.D. Unit	Intensive Paddy Development Unit.
L.M.B.	Land Mortgage Ban..

INTRODUCTION

INTRODUCTION

A number of distinctive features are characteristic of the agricultural sector of Kerala. The agricultural sector is more commercialized in the state than elsewhere and the food production has always been far short of Kerala's requirements. The production of food grains in 1962 was roughly 9,67,000 tons. The gap between food requirements and the level of production, thus worked out to over 50 per cent of total requirement in 1962. The land productivity is generally high in Kerala and compares very favourably with that in other states of India, and the agricultural practices in Kerala are relatively of advanced type. Rice, the principal food crop of the state is cultivated quite intensively.

The Techno-economic Survey of Kerala (1962) reported that in 1958-59, paddy covered 1.9 million acres out of 2.7 million acres under field crops. The production of rice in the same year was 9,39,000 tons, while the rice acreage fell by only 0.4 per cent during 1951-59. Its production during the same period raised up by over 31 per cent. The growing appreciation among farmers on the utility of fertilizers, improved seeds and better techniques of cultivation is largely responsible for this steady improvement.

Unlike in other states, the spread of High Yielding Varieties (H.Y.Vs.) of rice in Kerala is gradually regaining its lost ground after the severe setback suffered in 1974-75 due to the unprecedented incidence of pest and diseases. With nearly 2.34 lakh hectares, H.Y.Vs. covered merely 31 per cent of rice cultivated in the state during 1976-77. The area under H.Y.Vs during "Viruppu" season had registered further significant increase reaching nearly a third of the crop under them. Similarly there has been improvement in the area under H.Y.V. during 'Tunjai' season also with nearly 80 per cent of the crop under them. Though there has been some gains in the area under H.Y.Vs during "Andakan" season, the rate of spread continued to be low, hardly covering a quarter of the rice area. The area sown more than once declined to the extent of about 9,500 hectares and the distribution of area under crops showed only marginal changes in 1976-77 over the previous year. The most significant change has been the decline in the area under rice by about 22,000 hectares. In general the yield of various crops declined during this period. Among these crops rice stood out significantly. The decline in yield of rice was at the rate of 49 kg/ha. (Economic Review, 1977).

According to a survey conducted by the Bureau of Economic Studies, 89 per cent of the farmers needed

credit of different types and 82 per cent of the farmers needed short term credit in 1960. On the basis of the findings of the survey, the annual agricultural credit needs for the whole state was put at 452.8 crores. Against this, the total amount distributed through organized institutions in 1958-59 was only 52.49 crores. This left large gap which was probably met by moneylenders who generally charged high interest rates. Since the N.Y.V. programme would require large amounts of working capital for the various types of farm expenses, the need for expansion of rural credit facilities through organised institutions cannot be over stressed.

The Co-operative credit system in the state made modest progress during 1976-77. The average membership per society rose from 1331 to 1400. There had been significant increase in the average working capital per society which also rose by about 36 per cent.

During the same year the bank had succeeded in making a break through in its activities. Under its ordinary lending programme, the bank disbursed ₹. 6.91 crores as against ₹. 2.92 crores in 1975-76. The Small Farmer's Development Agency (S.F.D.A.) in the state made significant progress. Short term loans amounting to ₹. 3.82 crores and other term loans amounting to

Rs. 4.12 crores were disbursed. Over 50,000 members were enrolled in the Co-operatives and . 2.08 lakhs were given over to the Co-operatives towards the risk fund.

Today the cultivators are responsive to new ideas and are willing to take up improved practices. However they have to be provided with necessary facilities such as irrigation, credit etc. to ensure satisfactory cultivation of the H.Y.V.

But the above statistical information gives the credit facilities and other input facilities were increasing stage by stage by different organised institution; even then, the rice production significantly declined and estimated 49 Kg/ha and the area of cultivation declined, was roughly 22,000 ha. in 1976-77.

With these basic problems, this study attempts to assess the adoption behaviour of farmers, growing H.Y.V. of paddy, utilizing the credit facilities in the area. The following objectives have been formulated for the study.

Objectives.

1. To study the adoption behaviour of the progressive and non-progressive farmers under the High Yielding Variety Programme of paddy cultivation.
2. To study the credit need and credit utilization in adopting the improved package of practices recommended for growing High Yielding paddy varieties.
3. To study the relationship of socio-economic characteristics that are related to adoption and credit utilization under the High Yielding variety programme of paddy cultivation.

Limitations of the study.

The study has been conducted in an Intensive Study Development Unit (I.S.D.U.) purposively selected in order to fulfill the following requirements.

- a. An area where credit institutions were widely operative, since a part of the study is on credit need and utilization by farmers.
- b. An area that is accessible and suitable for data collection by the interviewer.
- c. An area where a sizeable sample could be got under both progressive and non-progressive groups of farmers.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

This chapter comprises of review on the past research work done related to this study. The first section deals with progressiveness of farmers and adoption of package of practices of H.Y.V. of paddy by farmers.

The second section is about credit need and the credit utilization aspects pertaining to adoption of H.Y.V. of paddy by farmers.

The third section is a review on socio-economic characteristics in relation to the adoption of H.Y.V. of paddy by the farmers.

The fourth section is confined to the preference of credit institutions and the perception of source of credit for the adoption of H.Y.V. of paddy by farmers. Apart from this hypotheses developed for this study is also given in this chapter.

The review of literature pertaining to measurement of the variables are given in the chapter on materials and methods.

I. Adoption under the H.Y.V. programme of paddy.

Lionberger (1960) referred adoption as a person decides that the new idea, product or practice is good enough for full scale and continued use and also defined

as the full scale integration of the practice into the on-going operation.

Rogers and Shoemaker (1971) defined adoption as a decision to make full use of new idea as the best cause of action available.

First-Dilic, Fuza (1975) defined adoption as the mental process through which the potential beneficiary passes heading to his decision to adopt the novelty. The main characteristics of the adoption process is its being a mental operation, consisting of several phases.

Extent of adoption.

Roy (1960) reported that the factors associated with low level of adoption of improved agricultural practices were lack of irrigational facilities and high initial cost of agricultural innovation.

Kelkar and Sohoni (1965) found that 'low cost' of a practice did not necessarily provide strong incentive for adoption of a practice, while high cost of a practice whether initial or recurring proved quite a serious impediment in adoption.

Prasad (1967) opined that 42.2 per cent of the non-adopters of improved seeds did not adopt it due to high cost. It was also observed that supply of seeds was inadequate and not timely.

Rai (1967) found that educated farmers having bigger size of holding, adopted hybrid maize earlier than illiterates. He did not find relationship between age of farmers and adoption of improved practices.

Singh (1967) analysed the effect of size of holding and percentage of area irrigated on the adoption of H.V.V. by farmers. He measured the level of adoption with the help of "Adoption Quotient" developed by Chattopadhyay (1963). He reported that the level of adoption of H.V.V. of paddy, maize and wheat by farmers having different size of holding did not differ significantly. He found that even small farmers had high level of adoption of H.V.V. This was mainly due to liberalized short term loans advanced to farmers adopting H.V.V.

Choudhary (1965) found that middle age, higher education and big size of holding were favourable factors for adoption of package practices. He also reported that lack of timely supply of production requisites were the major obstacles to the adoption of improved practices recommended under the package programme.

Study by Bhaskoram (1970) depicted that farm size, education and position of farmers were positively

associated with the extent of adoption. There were however instances where farmers with small land holdings and less education were also found to be good adopters of some improved practices.

Salunkhe and Thorat (1975) found that the adoption behaviour of farmers however failed to show significant relationship with their caste, age, formal schooling, socio-economic status, value orientation and empathy.

Small farmers.

Patel (1965) revealed that a majority of small farmers are illiterate and some of them have to do service (Private or Government) as their secondary means of livelihood. They have poor knowledge of agricultural activities and lesser contact with the extension agents. Naturally, there was low adoption of improved farm practices among them and poor participation in social organisation. They however, participated more in Co-operative societies. Supply of inputs in time had been one of their most important problems.

Daulat Singh and Srivastava (1970) explained that small cultivators had three different sources, viz. Co-operative societies, Government and Traditional moneylenders. It has been observed that Co-operative loans were mostly utilized by small cultivators for their dietetic expenditure and not for the purpose for which it is sanctioned.

Chawdhari and Sharma (1970) revealed the inadequacy of the crop loan system, particularly in the context of socio-economic condition in which the small farmers find themselves, especially, those who are obliged to grow only cereals and pulses and not the commercial crops.

Desai and Naik (1971) stated again that it can be speculated that the demand for production credit for H.Y.Vs would go up in the future if relatively small and medium farmers take to cultivation of H.Y.Vs and/or the use levels of market inputs rise and adoption of recommended cultural practices for these crops increase and the rapid spread of H.Y.V. would require bringing relatively small and medium farmers within the fold of the H.Y.V. programme.

Khan (1976) concluded that there should be two sets of package of practices separately for big farmers and small farmers. In the case of former, our recommendations could bear the 'maximum' side because they will have the infrastructure, education, resource, risk taking willingness to adopt sophisticated innovations without much of the institutional supports, while the small farmer with little economic independence, would need credit to finance the new inputs and extension education to make use of them.

Progressiveness.

Rogers (1962) opined that the criterion for adopters' categorisation is innovativeness, which is the degree to which an individual is relatively earlier to adopt new ideas than other members of the social system.

Roy (1965), in his study on progressiveness of farmers included seven aspects viz. response to innovation, social participation, leadership capacity, attitude, use of information sources and rationality.

Sharma and Prasad (1971) concluded that in absolute terms per acre credit needs are little higher in relatively less progressive areas than in the progressive region. The availability of own cash at original level, growth in credits is higher in the progressive than in the less progressive areas.

Singh, Bhati and Jain (1971) reported that the large proportion of less progressive farmers borrowed money for the purchase of bullocks followed by fertilizers whereas in the case of their progressive counterpart, the majority obtained credit for investment in developing owned irrigation equipment.

Jaiswal and Dave (1972) referred that the 'Progressive farmers', 'innovators', 'agricultural leader', 'good adopter' etc. have been used as synonymous.

Again he conceptualized ^{that} "A progressive farmer" is one who in comparison with his fellow farmer, possesses better knowledge and a more positive conviction about improved agricultural practices and who is an early adopter of a greater number of agricultural innovations and whose total production and net-profit per unit area better than the norm of his farming community.

In this study, progressiveness has been conceptualized as follows: A progressive farmer is an upto-date in practicing latest technology in h.v.v. cultivation, by adopting the improved recommended package of practices. early adoption, leadership quality and frequent contact with extension agencies.

Adoption of package of practices of h.v.v.

Boy (1966) found that out of four practices, the adoption of improved varieties of wheat was found to be highest and green manuring, the lowest. Nitrogenous fertilizers and mould coara - plough were occupying the intermediate position. The bulk of farmers were low or non-adopters. In case of wheat, the respondents were medium to high adopters. The adoption of h.v.v. of wheat was found to be significantly and positively related to simplicity-complexity, cost of innovation, profitability, communicability, physical compatibility cultural compatibility and divisibility.

Desai and Naik (1971) explained that there is one more trend that while prices of food grains have been gradually falling, input prices have been increasing. If this trend persists, the spread of H.Y.V. and adoption of the package of practices would be adversely affected. This may tend to keep the demand for production credit for H.Y.V. depressed. And again he stated the reason that why did not have to incur debts for meeting expenses on H.Y.V. lay in the fact, that the intensity of the use of inputs - some of them critical from the point of view of the success of H.Y.V. and adoption of other cultural practices was much lower than prescribed, consequently lowering current expenses.

II. Credit need and utilization under H.Y.V. programmes of paddy cultivation.

Credit.

Forster and Leager (1950) defined credit as the power that a person possess to acquire goods or services without the immediate expenditure of money.

Credit need.

Sharma and Prasad (1971) conceptualized credit need as farmers need cash for buying annual inputs and carrying out operations on their farms.

Again he reported that credit needs are more on the irrigated farm than on the unirrigated farms. Improved technology production credit needs on the medium size farms work out to be the highest followed by the large farms and lowest on the small farms at the current and improved levels of technology respectively.

Ansari (1971) concluded that there was no need to provide 100 per cent credit for all the items. The recent survey indicated that the cultivators even in the H.Y.V. areas were financing from their own resources practically 100 per cent of their requirement for hired human and bullock labour as well as sufficient portion of other inputs.

Arwant Singh and Kehlon (1971) observed that small farmers obtained more short term credit because it was easy for them to obtain short term rather medium term loan and their owned funds were not sufficient to meet the operational expenses. The medium and large group farmers could meet most of their working expenses more as medium term bank loans.

Subramenyan (1975) reported that provision of credit made small farmers to introduce H.Y.V. in optimum crop plan and increased the area of H.Y.V. and credit requirement differed due to cropping pattern of different types.

The credit is an important input in the improved agricultural practices to meet their initial investments on seeds, fertilizer, irrigational facility, other improved equipments and implements. If farmers get the credit for such needs, he can adopt the recommended inputs and improved practices which positively influences the adoption behaviour of farmers.

Credit utilization.

With regard to the utilization of credit Agarwal (1971) found that 87 per cent is utilized for productive purposes and 13 per cent for unproductive expenditure. Another disquieting feature arises from the unsatisfactory repayment of the loans as scheduled.

Harwant Singh and Kahlon (1971) showed that as much as 65 per cent of the total production credit was utilized for purchase of chemical fertilizers and remaining amounts for casual labour, H.Y.V. seeds and insecticides as per the production loan.

Prasad (1971) found that the ratio of credit used for H.Y.V. to the credit used for the local varieties is higher as compared to the ratio in the respect to cash from expenditure, indicating the importance of credit in relation to the adoption of new technology.
In absolute terms credit for every item is more for the

H.Y.V. and the two items which are met mainly through credit are fertilizers and hired human labour charges with the adoption of new technology. It is noticed that the share of institutional credit in total credit is larger in respect of fertilizers.

Bharna and Prasad (1971) stated that farmers are using more cash input for H.Y.V. seeds, fertilizers, irrigation machinery and land development.

Singh et al (1971) showed that a larger proportion of the less progressive farmer borrowed money for the purchase of bullocks followed by fertilizers, whereas in the case of their progressive counterpart the majority obtained credit for investment in developing owned irrigation equipment. The second importance in the allocation of credit has been given to fertilizers on the progressive farms and to draught cattle on the less progressive farms. A considerable amount of total credit was devoted for meeting out the social ceremonies on the less progressive small and medium farms. Due to their low financial position and surplus family labour, small size farms of both the categories have begun to invest on non-farm ventures such as purchase of raw materials and some other purposes with the help of credit. However the progressive small and the less progressive small and medium farmers have also made use of credit for consumption.

In order to sustain the growth of the technological developments in agriculture, availability of credit in adequate amount is necessary and the utilization of the same for the inputs in farming in right manner will increase the yield of crops and enhances the economic condition of farmer. Hence it is postulated that farmers who is in need of credit, utilizes credit in the right manner and will tend to adopt the recommended practices under the H.V. programme of paddy cultivation.

III. Socio-economic characteristics of farmers.

Age.

Reddy (1962) found that age has no relationship with the adoption of farm practices. Pandit (1964) reported that age is positively associated with adoption of improved practices. Pareek, Kumar and Jain (1965) concluded that the age of the farmer was not a differentiating factor for adopters and non-adopters. Satanchand and Gupta (1966) indicated that the age of the farmers may not influence the adoption of improved farm practices by them. Rajendra (1968) found that age was not found to play an important role in the discriminating between the two groups of adoption. Joon, Jagadish Singh and Pana (1970) concluded that age was not the significant degree for cultivating H.V. and explained that their H.V. potential might have proved a strong

attraction for all segments of farming population, irrespective of their age. Jayarama Peddy and Bhaskar Peddy (1972) showed that age is not an influencing factor with regard to the adoption of improved agricultural practices and adoption of improved practices in jowar cultivation. Jha and Bhaktawat (1972) found that the farmers age was found to be negatively related to adoption of hybrid bajra. Ziaul Karim and Sahboob (1974) revealed that age and adoption of fertilizer was insignificant which indicated the existence of no relationship between the two variables.

Many authors have reviewed that younger farmers are very venturesome and adopt new practices in H.F.V. are more than older aged farmers. Hence it is postulated that there will be relationship between age and the extent of adoption and credit utilization by farmers.

Extent of holding.

Peddy (1962) reported that the rate of adoption of improved agricultural practices increased along with increase in farm size. Pandit (1964) stated that size of holding is positively associated with the adoption of improved practices. Patanchand and Gupta (1966) stated that the extent of holding was

positively related with adoption. Thakur (1966) found that size of holding was positively associated with the level of adoption of package of practices. Singh (1967) found that even small farmers had high level of adoption and %Y.V. This was mainly due to liberalized short term loan advanced to farmers adoption %Y.V. ajendra (1968) found that size of holding was not found to play an important role in the discriminating between two groups of adopters. Jaiswal, Roy and Singh (1970) revealed that size of holding had no significant influence in explaining the variation of the level of adoption of %Y.V. of all the three crops under his study. It was mainly due to the fact that the liberalized short term loan of Rs. 1,000/- per crop was advanced to farmers who adopted %Y.V. The loans were granted in kinds such as improved seeds, fertilizers, insecticides etc. Thus lack of capital resources was not a problem for the small farmers. It was therefore, natural that size of holding had no significant effect on the level of adoption of %Y.V. Grewal and Sohal (1971) found that progressive outlook and farm size were not significant in differentiating the speed of adoption of agricultural practices. Jayaramale and Bhasker Reddy (1972) found that as far as farm size concerned, the result showed that there was

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non-significant relationship between size of land holding and adoption of improved agricultural practices though it indicates a positive trend. Jha and Shaktawat (1972) found that size of holding was not significantly related to adoption behaviour of farmers in his study. Supe and Balode (1975) revealed that both knowledge and adoption level were not related to farm size. It may be due to the recent trend to intensive cultivation. Usually, large land holders follow extensive farm practices and therefore the relationship between farm size, knowledge and adoption of practice is not significant. Hence, it is postulated that there will be relationship between the extent of holding and the extent of adoption and credit utilization by farmers.

Education.

William Geddie (1959) means education as bringing up or training, instruction; strengthening of powers of body or mind; culture. Bose and Das Gupta (1962) reported that adopters of improved farm practices were better educated. The literate and better educated farmers are prone to accept innovation in agriculture more than those who are less educated. Paddy (1962), Pandit (1964), Patanchand and Gupta (1966), and Thakur (1966) were found that education was positively associated with the adoption of improved practices.

Jit Mohan, Jagadish Singh and Jina (1970), Sharma and
Singh (1974) found that education was not a significant
factor in H.V. cultivation and adoption. Formal education
helps an individual to know the world better and he is
prompted to seek for information which will increase his
knowledge. It is found that early adopters have more
years of education than the late adopters (Rogers and
Knoke (1971). Sude and Lalonde (1975) reported
that formal education of the farmer participants was
found to be significantly related to their level of know-
ledge but not to their level of adoption of practices.
Hence it is postulated that there will be relationship
between education and the extent of adoption and credit
utilization by farmers.

Risk perception.

Heady and Jensen (1954) pointed that the term risk
commonly refers to all outcomes which leads to losses or
deviations of realisation from expectation farming is
characterised by many risk situations, for ex. price,
rainfall, insects and diseases.

Basran (1966) found that sociological, psychological
and economic variables are important in explaining
farmers' attitude towards new ideas and techniques.
They have been using old varieties of seeds, traditional
implements for years and feel secure in the outcome

of these techniques. They have small land holdings and thus cannot take risks in trying new ideas with which they are not familiar. If the validity and usefulness of new ideas are established on local farms, people will be motivated to adopt the idea.

According to Romi and Johal (1975), risk turned out to be the most important factor in the adoption of the innovation.

Studies have shown that farmers perceive risk in the use of improved farm practices. This is more so with respect to the technology like the cultivation of M.V.V. where the farmers are not sure of their yield and outcomes. Individuals vary widely in their degree of risk preference. Hence, it is postulated that there will be relationship between risk perception and the extent of adoption and credit utilization by farmers.

Perception of cost of innovation.

Belker and Bonori (1965) found that the 'low cost' of a practice did not necessarily provide strong incentive for adoption of a practice while 'high cost' of a practice whether initial or recurring proved quite a serious impediment in adoption.

Salvi and Lawar (1966) revealed that there is no relationship between cost of a practice and its adoption

and suggest that high cost of a practice perhaps, is not a barrier to adoption. Costly practice involves more inputs but generally gives higher farm produce leading to better efficiency in farming. As a result more profits are gained by a farmer by adopting costly practice. This coupled with credit facilities now-a-days available to farmers fairly liberal scale, seems to be responsible for the cost attribute not functioning as a barrier to adoption.

Dasgupta and Upender (1969) concluded that lack of money is perceived by non-adopters as an important barrier for not making use of chemical fertilizers. But, Dasgupta and Upender (1975) found that cost was least important factor in the adoption of the innovation.

It refers to each initial investment plus recurring cost, expenses on it or another associated activities just necessary for putting the practice into adoption. Hence it is postulated that there will be relationship between farmers perception of cost of innovation and the extent of adoption and credit utilization by farmers.

Perception of profitability.

According to Mitra (1969) profitability is an important attribute influencing adoption of three selected practices.

Raghudharan, Madhakrishnamenon and Annamalai (1976) found that economic security in the case of low adopters found to influence the adoption of H.Y.V. of rice.

The perception of profitability can be conceptualized as that characteristic which places high importance on economic ends and alternatives. When farmers move from subsistence agriculture to exploitive agriculture the importance of economic value is bound to increase and thus be motivated towards economic profits. It is recognised that all behaviour are not economically motivated. Hence, it is believed that different individuals possess differing degree in their perception of profitability. Hence, it is postulated that there will be relationship between perception of profitability and the extent of adoption and credit utilization by farmers.

Social participation.

Reddy (1962) found that social participation was significantly associated with the rate of adoption of improved agricultural practices. Gupta (1968) stated that higher the social participation higher the adoption score. Patanchand and Gupta (1966) found that social participation is positively related with the adoption. Rajendra (1968) showed that social participation is significantly indiscriminating between two groups of early adopters and late adopters.

Cune and Valode (1975) found that farmers' participation was found to be significantly related to their level of knowledge but not to their level of adoption of practices. Surinder Pal Singh, Jassi, Shukla and Churana (1977) found that social participation did not show high adoption levels.

Social participation refers to the association of any individual with the formal or informal organisations. It is frequently demonstrated that it is having positive relationship with adoption. Association with such formal/informal organisations makes it possible for the farmer to get in contact with progressive farmers, extension workers and thereby increase his knowledge of new practices, which in turn will result in a high level of adoption behaviour. Hence, it is postulated that there will be relationship between social participation and the extent of adoption and credit utilization by farmers.

Caste.

Caste becomes very important in some village research studies. A few researchers indicate the importance of caste factor in adoption of improved agricultural practices.

Jose (1965) in his study revealed that caste structure in Dapur village influenced its agriculture and eventually the yield of rice. Rajendra (1966)

indicated that significant difference between the adoption indices of three caste viz. agricultural caste, lower caste and scheduled caste. The adoption level was the highest for a agricultural caste in this locality and it differed significantly from the adoption level of lower caste and scheduled caste. There was statistically no significant difference between the adoption levels of lower caste and scheduled caste.

Patanchand and Gupta (1966) indicated that the caste of the farmer does not have any relationship with the adoption of improved practices by them. Chaudhary (1962) showed that lower caste people's adoption of recommended farm practices was not significant. Chandra and Matham (1967) showed that caste has been figured an important factor of new farm ideas. Rajendro (1968) reported that caste was not found to play an important role in the discriminating between two groups of adopters. Jha and Shaktawat (1972) also found that caste of the farmers was not significantly related to adoption of hybrid bajra. This might be because it is not the caste but the economic status that matters in case of h.f... crop. Hence, it is conceptualized that there will be relationship between caste and the extent of adoption and credit utilization by farmers.

Occupation.

Sengupta (1970) found that although the entirely share croppers are the least of adopters, their counterpart, that is, the entirely owner cultivators are not the most of adopters. It therefore, suggested that besides interest on land operated, there might be some other variable or factor which had an influence on the adoption behaviour of farmers. The study further showed that the adoption index of the categories vary with the per cent of farmers within the category having agriculture as their main occupation. It would obviously suggest that main occupation of the farmer or the present income derived from farming is a factor for adoption. The main occupation is correlated with adoption in this study.

Danda and Danda (1971) found in their study that the literates in Basudha who have higher education beyond the secondary level rather than apathetic toward agriculture as such as most of them are engaged in some other economic pursuits. All literates beyond the secondary level are engaged in off-farm employment and practiced farming as a secondary occupation. This suggests that their off-farm job has some influence on their adoption behaviour.

People are engaged in agriculture as an occupation in different capacities. As agricultural occupation cannot sustain all of them equally all the year round, it was found that a host of independent and supplementary occupation as means of livelihood. So people for their high annual income other than their main occupation, were having agriculture as subsidiary occupation. Hence it is postulated that there will be relationship between occupation and the extent of adoption and credit utilization by farmers.

IV. Preference of credit institutions and perception of source of credit.

Rural credit survey (1969) estimated that over 93 per cent of the loans from sources like indigenous individual lenders as credit, even though so many credit institutions are established at village level. But in some areas, this is juxt-opposition, they are utilizing these institutions to the fullest extent.

Nuthiah (1970) stated that crop loans were designed to finance production operation for crops from the commencement of the preparatory tillage of land to the marketing of the final produce.

Mukerjee (1969) opined that small loans are also granted to cover the cost of harvesting and marketing

so as not to push the farmer into the arms of traders and agents who would finance him against forward or booked purchases of the harvest.

Surendranathan (1969) concluded that an integrated system can facilitate supervision of the use of credit as well as its repayment and can better withstand the competition of private moneylenders and traders. He also stated that the awareness of the fact that agricultural credit based on the productive capacity of the borrower is feasible and ought to replace credit based on the security of immovable property.

Murdia^{and} Chauhan (1971) suggested that banks shall adopt uniform loaning policy, precise and short loan application form, procedural difficulties can be solved by issuing pass books to all farmers showing their details and their land holding, loans issued etc. various institutional agencies may also be marked on the above pass book so that the need for getting no dues certificates for those who have not taken a loan from any other agency is avoided.

Sharma and Prasad (1971) revealed in their research study that farmers are using more cash inputs for H.Y.V. seeds, fertilizers, irrigation, machinery and land development. Consequently cash needs in agriculture have increased manifold. In order to sustain and grow the use of technological development in agriculture,

availability of credit in adequate amount is necessary.

Curbachan Singh and Landhu (1971) high lighted the delay in advancing loans, large gap between demand and receipt, high cost involved in the loans procedures and registration charges.

Singh et al (1971) reported that it is necessary that the scale of finance should be such as to cover at least the average out of pocket expenditure and should facilitate the changing technology.

Pathak and Jagan (1971) stated that commercial banks have been financing relatively affluent and larger farmers and felt that perhaps the factors like early adoption, title to property, economic position influenced the flow of credit to them from this institution.

Saikia (1971) in his study found that in the case of Land Mortgage Bank for long term loans, farmers found it very difficult to get the non-encumbrance certificate of the mortgaged land. The time lag between the date of application and the date of actual receipt of loan is very great. In most cases it took two to three years in obtaining loan.

Singh et al (1971) concluded that there is greater differences in the pattern of allocation of credit through the institutional agencies. The lower sector borrow

mostly from the moneylenders. However the Co-operative have been relatively more in favour of these smaller groups. His findings justify that there should be a separate institution of credit for the smaller groups of the farmers.

Haider Alikhan (1977) suggested that the small farmers are required to produce non-encumbrance certificate while borrowing from banks at a cost of about Rs.60/-. This is a costly and inconvenient procedure. A less expensive and credible declaration may be evolved.

As individuals differ in their behaviour, their preference towards any objects will also vary. The individual will act according to their likings under different situations. Here the different institutions lending credit like Co-operative bank, Commercial bank and Government agencies have varied procedures which will affect the farmers' preference towards a particular institution.

Hypotheses.

1. I.H.

Empirical hypothesis.

There is relationship between farmers' age and their extent of adoption and extent of credit utilization.

2. Extent of holding.

Empirical hypothesis.

There is relationship between farmers' extent of holding and their extent of adoption and extent of credit utilization.

3. Education.

Empirical hypothesis.

There is relationship between farmers' education and their extent of adoption and extent of credit utilization.

4. Risk perception.

Empirical hypothesis

There is relationship between farmers' risk perception and their extent of adoption and extent of credit utilization.

5. Perception of cost of innovation.

Empirical hypothesis.

There is relationship between farmers' perception of cost of innovation and their extent of adoption and extent of credit utilization.

6. Perception of profitability.

Empirical hypothesis.

There is relationship between farmers' perception of profitability and their extent of adoption and extent of credit utilization.

7. Social participation.

Empirical hypothesis.

There is relationship between farmers' social participation and their extent of adoption and extent of credit utilization.

8. Caste.

Empirical hypothesis.

There is relationship between farmers' caste and their extent of adoption and extent of credit utilization.

9. Occupation.

Empirical hypothesis.

There is relationship between farmers' occupation and their extent of adoption and extent of credit utilization.

MATERIALS AND METHODS

This chapter deals with the methodology used for the study. The procedure followed for the selection of the area, sample farmers and the empirical measures of the variables has been described in this chapter. The chapter also describes the procedure followed for collecting the data and the statistical measures used in the analysis of the same.

Location.

This study was confined to anacode Intensive Paddy Development (I.P.D.) unit situated in Poovachal of Nedumangal Taluk in Trivandrum District. The details of the area selected for the study are given below.

Selection of the area.

A list of I.P.D. units in Trivandrum District, that have issued more number of crop loans and subsidy/concessions from different credit institutions were obtained from B.C.C.I., Trivandrum. Among such I.P.D. units; namely, Ottasekharangalam, Anacode and Arayoor, Anacode I.P.D. unit was selected on the basis of the preliminary data collected from all the three I.P.D. units regarding, total number of paddy cultivators,

total crop loans issued for "mundakan season", extent of holding of farmers and their transaction with the credit institutions in that area.

Among these three I.P.D. units, Anacode I.P.D. unit was selected purposively due to wide coverage by credit institutions and credit facilities available. Accessibility for data collection was also considered. Four institutions offering credit facility to farmers viz. I.P.D. unit, Co-operative bank and Commercial bank and Land Mortgage bank were included in this study.

Selection of respondent.

Since the study also pertains to institutional credit, the farmers, who availed credit from the lending institutions for their H.V.V. paddy cultivation were sampled. Mundakan Season was taken as base season for the study, as the I.P.D. unit was not issuing loan in the Viruppu Season.

The addresses of the farmers were collected from the list maintained by I.P.D. unit office "loan registrar" for the "mundakan Season". The credit particulars of the same farmers from Co-operative Bank and Commercial bank in connection with their cultivation were collected. 125 respondents were selected purposively for the study.

Empirical measures.

The variable selected for this study was based on the review of literature as well as the preliminary data collected from the institutions and the pilot study. The hypotheses were developed to study the relationship of socio-economic characteristics in relation to adoption and credit utilization by farmers under the H.Y.V. programme of paddy cultivation. The variables and their measurement were done as follows.

Extent of adoption.

Several methods have been used to quantify the "Adoption behaviour" by various research workers. Notable among those who utilized a scale for measuring adoption were Marsh and Coleman (1955), Fliegel (1956), Emery and Geser (1958), Ramsey and others (1959).

Marsh and Coleman (1955) used a "Practice Adoption Score" computed as the percentage of applicable practices adopted.

Fliegel (1956) constructed an "Index of adoption" of farm practices using the correlation of several adoption variables. The factor analysed each of the 11 practices selected. Non-adoption was given a value of '0' and adoption, a score of '1'.

Chattopadhyay (1963) has constructed an "adoption Quotient" to measure farm practices adopted. He took into consideration the different variables like potentiality, extent, weightages and time in developing the adoption quotient with a formula as follows.

$$\text{Adoption Quotient} = \frac{\sum_{j=1}^N Y_j W_j}{\sum_{j=1}^N W_j} \times 100$$

$$\text{where } Y_j = \frac{t_p - t_i}{t_p - t_i} \left(\frac{e_j}{p_j} \right)$$

N = number of practices which the individual has the potentiality to adopt.

W_j = Weightage to be given to jth practice based on its difficulty of adoption determined from a list of differential weights of practice.

\sum_1 = Summation over each season from t_i to t_p.

t_p = Time of investigation.

t_i = Time of introduction of jth practice.

e_j = extent of adoption of any particular (jth) practice in a particular season.

p_j = Potentiality of any particular (jth) practice in that season.

Adoption of high yielding varieties of paddy was measured by the 'Adoption quotient' as developed by Chattopadhyay (1963) with slight modification, as used by Jaiswal and Jave (1972). The data regarding the extent of adoption of the selected practices in adopting high yielding varieties of paddy cultivation has been taken as the sum total of adoption of various cultivation practices recommended by the Kerala Agricultural University (Appendix I). In calculating the adoption quotient, the adoption of H.Y.V. in number of acres, practices followed pertaining to seed rate, nursery area, spacing, age of seedling, seed treatment, application of F.Y.M., use of N.P. & K. fertilizers and plant protection chemicals were taken into consideration. The measures of potentialities of adoption, H.Y.V. package of practices considered for the computation of adoption quotient were as follows.

I. Potentiality of adoption.

Potentiality of adoption of H.Y.V. of paddy is conceived as the maximum degree to which a farmer can extent his adoption, if he so wishes, depending on the maximum utilization of the resources he commands or can command. Potentiality for the different practices, which were taken into consideration for calculating the adoption of H.Y.V. of paddy were calculated.

II. Extent of adoption.

Extent of adoption is the degree to which a farmer has actually adopted a practice. When the extent of adoption equals the potentiality, adoption is maximum, and when the extent is nil, adoption is nil. In the present study extent of adoption for each practice was calculated.

Potentiality of Adoption.

Extent of holding.

The cultivator was asked to indicate his area under cultivation of paddy. This area in acres was taken as the potentiality for the use of cultivating For example if a farmer who has 5 acres of land felt that he could grow 3 acres with, the potentiality for using of paddy for the farmer was 3 acres.

Seed rate.

The quantity of seed required as per the recommended rate for covering the area which the farmer has put under H.Y. of paddy was taken as the potentiality for seed rate. For a farmer who has grown two acres of of paddy, the potentiality for seed rate was 40 lbs. as the recommended seed rate was 20 lbs/acre.

Nursery area.

The area in cents/acre was taken as the potentiality for the use of raising nursery. For example, if a farmer who has 2 acres of land growing *M.V.* the potentiality for raising the nursery area was 20 cents as recommended area was 10 cents/acre.

Spacing.

The spacing in centimeters was taken as the potentiality for use of spacing recommended for *M.V.* For example, if a farmer who is adopting space of 20 x 10 cms. for *M.V.* the potentiality for adopting space was 20 x 10 cms. as per the recommendation.

Age of the seedlings.

The number of days required for the age of the seedlings in the nursery was taken as the potentiality for age of the seedlings. If a farmer, who has pulled the seedlings from the nursery at the age of 25 days, then the potentiality for age of the seedlings was 25 days as the recommended age of the seedlings for *M.V.* of paddy.

Seed treatment.

The quantity of seed treatment chemical required as per the recommended dose for the area cultivated under *M.V.* of paddy was taken as the potentiality

for seed treatment. For a farmer who has grown two acres of H.Y.V. of paddy, the potentiality for seed treatment was 50 gms. of the chemical used as per the recommended dosage.

Manures.

The quantity of farmyard manure in kgs. was taken as the potentiality for covering the entire area as per the recommendations. For a farmer who has grown two acres of H.Y.V. of paddy the potentiality for farmyard manure required will be 4,000 kgs. as the recommended farmyard manure dose was 2,000 kgs/acre.

Chemical fertilizers.

The potentiality for adoption of fertilizers in terms of Nitrogen, Phosphorus and Potash was calculated as follows.

Potentiality = Recommended dose per acre x area in acres under H.Y.V. of paddy.

The recommended dose of N, P and K for H.Y.V. of paddy was 36:18:18 Kgs/acre respectively. For a farmer who has grown two acres of H.Y.V. of paddy, the potentiality for adoption of N, P and K was 72:36:36 Kgs. respectively.

Plant protection.

The recommendation with regard to plant protection was four prophylactic sprayings. The potentiality for adoption of plant protection was taken as four sprayings.

II. Extent of adoption.Extent of holdings.

The area in acres in which the farmer has cultivated paddy under ././. has been taken as the extent of adoption.

Seed rate.

The quantity of seeds used by the farmer has been taken as the extent of adoption of seed rate. The extent of adoption was considered as full when a farmer has used more than the required recommended quantity of seed.

Nursery area.

The area in cents used by the farmer has been taken as the extent of adoption of nursery area. The extent of adoption was considered as full when a farmer has raised more than the recommended area.

Spacing.

Actual spacing adopted by farmers has been taken as the extent of adoption of spacing. The extent of adoption

was considered as full when a farmer has adopted the recommended spacing. Adopting less or more spacing will be considered as low extent of adoption.

Age of the seedlings.

The number of days actually retained the seedlings in the nursery by a farmer was taken as the extent of adoption. The extent of adoption will be low, if it is low or exceeding the recommended 25 days.

Seed treatment.

The quantity of seed treatment chemicals used by the farmer has been taken as the extent of adoption.

Manuring.

Actual quantity of farmyard manure or green leaf manures applied by farmer has been taken as the extent of adoption. The extent of adoption was considered as full when a farmer has applied more than that of recommended amount.

Fertilizer.

The quantity of fertilizers used in terms of Nitrogen, phosphorus and Potash has been taken as the extent of adoption of different fertilizer elements. The extent of adoption was considered as full when a farmer has applied more than that of recommended amount.

Plant protection.

The extent of adoption of plant protection was calculated on the basis of number of sprayings and the area covered irrespective of whether it was prophylactic or curative. If a farmer had sprayed the entire area under I.V.V. of paddy four times as recommended, the extent of adoption was considered as full and if he had sprayed only once the extent of adoption was taken as 0.25. The modified formula for computing adoption quotient as given by Jaiswal and Dave (1972), was as follows.

$$\dots = \frac{e_1/p_1 + e_2/p_2 + e_3/p_3 + e_4/p_4 + e_5/p_5 + e_7/p_6 + e_7/p_7 + e_8/p_8 + e_9/p_9}{N} \times 100$$

where,

- e_1 = summation of the extent of adoption of I.V.V. of paddy.
- p_1 = summation of the potentiality for the adoption of I.V.V. of paddy.
- e_2 = summation of the extent of adoption of seed rate.
- p_2 = summation of the potentiality for the adoption of seed rate.

- e_3 = Summation of the extent of adoption of nursery area.
- p_3 = Summation of the potentiality for the adoption of nursery area.
- e_4 = Summation of the extent of adoption of spacing.
- p_4 = Summation of the potentiality for the adoption of spacing.
- e_5 = Summation of the extent of adoption of age of seedlings.
- p_5 = Summation of the potentiality for the adoption of age of seedlings.
- e_6 = Summation of extent of adoption of seed treatment chemical.
- p_6 = Summation of the potentiality for the adoption of seed treatment chemical.
- e_7 = Summation of extent of adoption of manuring.
- p_7 = Summation of the potentiality for the adoption of manuring.
- e_8 = Summation of extent of adoption of chemical fertilizers.
- p_8 = Summation of the potentiality for the adoption of chemical fertilizers.
- e_9 = Summation of extent of adoption of plant protection chemical.
- p_9 = Summation of the potentiality for the adoption of plant protection chemical.
- N = Total number of practices (ie. 9)

Progressiveness of the farmers.

According to Rogers (1962), "The criterion for adopters ie. innovativeness which is the degree to which an individual is relatively earlier to adopt new ideas than other members of the social system".

According to Roy (1965), in his study on progressiveness of farmers, included seven aspects viz. responses to innovation, social participation, leadership capacity, attitude, use of information sources and rationality.

Progressiveness scale as explained by Venkaterama Reddy et al (1974) consisted of 7 statements which included farmers' early adoption and adoption of improved package of practices, leadership capacity and frequent contact with the extension agencies were used for this study. (The statements selected for measuring the progressiveness of farmers is given in the Appendix II). Except their year of adoption and contact with extension agency all other statements were reted in two point scale as 'Yes' or 'No' to which, the score was assigned as '1' and '0' respectively. The year of adoption of H.Y.V. of paddy was assigned the score as '1' for each year from the year of inception of H.Y.V. programme. For the frequency of farmers' contact with extension agencies, different agencies like Agricultural Scientists,

Junior Agricultural officers, Fertilizer agents, Agricultural Demonstrators and Village Level workers were listed against the 3 point continuum, namely, frequently, sometimes and never with a score of 2, 1 and 0 respectively. The total score is summed up and farmers were classified into two groups, below mean and above mean as progressive and less progressive. These statements were tested during pilot study.

Credit need.

To assess the credit need of the farmer, the procedure explained by Johl and Kapur (1977) in his text was employed for the study. The credit need calculated by him was as follows.

Credit need = Total cost of cultivation for the crop he has grown - (minus) capital availability to him or owned fund he is incurring for cultivation.

For this a standard package of practice questions comprising all practices for paddy cultivation with the cost actually incurred were collected from the respondents along with the owned fund (given in Appendix III-question III), he spent on the farm cultivation for each practice, both were calculated and assessed the credit need of each respondent. This was finally summed up

for 125 farmers and their extent of holding cultivated in the Mundakan Season was summed up and the credit need of an individual farmer was calculated as follows.

Total credit amount need of 125 farmers (in rupees)
Total extent of holding cultivated by 125 farmers (in acres)
 during Mundakan Season.

will give the average per acre credit need of each farmer.

Credit utilization.

Credit utilization was assessed by simple check method through a frequency table, presenting the total credit availed by a farmer, as cash and in kind, as well as the total amount he spent on different practices were added up. If the farmer utilized the whole amount or more than that of his credit availed for Mundakan Season for cultivation, his utilization was full and others considered as utilized partial.

Socio-economic characteristics.

Age.

Age of the respondent was calculated at the nearest birthday in years, at the time of interview. Their age were classified as old, middle aged and young groups by finding out the standard deviation and mean for the whole respondents as such.

Extent of holding.

In this study farm size was measured in land units. The number of acres cultivated by an individual was taken as their extent of holding. This includes both paddy lands as well as area cultivated with other crops. The method followed for classifying the extent of holding was as per the S.F.D.A., Trivandrum, already classified with the standard of more than 5 acres as big farmers, 2.5 acres to 5 acres as small farmers and below 2.5 acres as marginal and Agricultural Labourers. Here their income level was excluded.

Education.

Based on their year of formal schooling, the respondents were classified as no formal education (to include illiterate, can read and write) and having formal education upto primary school, middle, high school and college level were given points from 0, 1, 2, 3 and 4 respectively.

Risk perception.

As explained by Mulay and Roy (1968), a five point rating scale ranging from strongly agree to strongly disagree was used to categorise the farmers under their risk perception in relation to the improved package of practices. This consisted of ten negative statements.

which are direct questions relating to their perception of risk. The response was scored as 0, 1, 2, 3 and 4 for strongly agree, agree, undecided, disagree and strongly disagree respectively. The farmers were classified into three categories namely, high, medium and low risk perception groups using the mean and standard deviation calculated from the total scores obtained.

Perception of Cost of Innovation.

The same scaling procedure followed by Mulay and Roy (1968), employed here for assessing the perception of Cost of Innovation by the farmers. Ten negative statements related to improved package of practices with direct questions reflecting the respondents' perception of cost of innovation against 5 point continuum viz. strongly agree, agree, undecided, disagree and strongly disagree assigning the score 0, 1, 2, 3 and 4 respectively, and the total score were summed up. The total score of individual respondents were obtained and with mean and standard deviation, they were classified as high, medium and low level of perception of cost of innovation groups.

Perception of profitability.

To assess the farmers' perception of profitability, ten negative statements relating to recommended package



of practices reflecting the perception of profitability with direct statements against a five point continuum viz. strongly agree, agree, undecided, disagree and strongly disagree with the score of 0, 1, 2, 3 and 4 respectively were assigned. The total score were categorised under high, medium and low perception of profitability using the mean and standard deviation for all scores obtained from each respondent.

Social participation.

The following criteria were used to assess the extent of participation by farmer as explained by Pareek, Kumar and Jain (1965) with slight modification. The membership and office holders in either a formal or informal organisation were considered and the position was given the score of 1 and 2 respectively. The organisation included in the schedule were Panchayat, Farmers' Club, Radio Rural Forum, Political, Religious, Education and Cultural activities as informal organisation, whereas Ela Committee, Co-operative Bank, Land Mortgage Bank, Commercial Bank as formal institutions.

Occupation.

Besides farming, any job they were holding in Government offices or any subsidiary occupations like running shop/other activities by the farmer was taken

into account as their subsidiary occupation. A score was assigned to each main and subsidiary occupation held by farmers.

Caste.

Based on their caste, the farmers were grouped into two under high and low caste with a score of 2 and 1 respectively. Here the forward caste farmers were classified under high caste group and the backward and scheduled caste farmers included the low caste group.

Preference of credit institution.

This is to assess the preference of credit institutions by farmers. Sandhu and Sinha (1970), used this technique for assessing the job preference between Teaching, Research and Extension. And Fareek, Kumar and Jain (1965) employed this technique in their study for assessing the curricular preference of the Post-Graduate Agricultural Students.

Procedure.

The institutions viz. I.P.D. unit, Co-operative Bank, Commercial Bank, Land Mortgage Bank and non-institutional sources like Relatives, Neighbours and Moneylenders were presented to the respondents in pairs in all possible combinations. In order to avoid

It is seen from the table 1 that 56 per cent of farmers fall within the middle range of the adoption score, namely 67 to 83. The table also reveals that 20 per cent of the farmers were under low adoption scores, whereas 24 per cent of them found to be within the high adoption range.

Table 2: Adopters categorised under H.Y.V. of paddy programme.

Adopter categories	Adoption scores	Number of farmers (N=125)	Farmers (percentage)
High adopters	>78.60	63	50.40
Low adopters	<78.60	62	49.60

Mean adoption score = 78.60.

The table 2 reveals that as much as 50.40 percent of the farmers fall under the category of high adopters under H.Y.V. programme of paddy cultivation. The remaining 49.60 per cent of them does not seem to adopt practices recommended in full under the programme.

Table 3: Progressiveness of farmers.

Progressiveness score	Number of farmers (N=125)	Farmers (percentage)
10-14	7	5.60
15-19	56	44.80
20-24	56	44.80
25-29	6	4.80

Table 3 indicates that 49.60 per cent of the farmers are above the mean progressiveness score. And 50.40 per cent of the farmers are found to be below the mean and hence the less progressiveness.

Table 4: Progressiveness of farmers and ^{their} categorisation.

Progressiveness	Progressiveness scores	Number of farmers (N=125)	Farmers (percentage)
Progressive farmers	>19.40	77	61.60
Less progressive farmers	<19.40	48	38.40

Mean progressiveness score = 19.40.

The table 4 depicts that a sizeable majority of the respondents are progressive farmers. As much as 61.60 per cent of them are in this category with a progressiveness score above the mean (19.40).

Table 5: Association between progressiveness and extent of adoption.

Progressiveness	Extent of adoption (N=125)		X ² value
	High adopters (N=63)	Low adopters (N=62)	
Progressive farmers	33	44	4.56*
Less progressive farmers	30	18	

*Significant at 0.05 level of probability.

FIG. 1. FARMERS' PROGRESSIVENESS AND THEIR EXTENT OF ADOPTION.

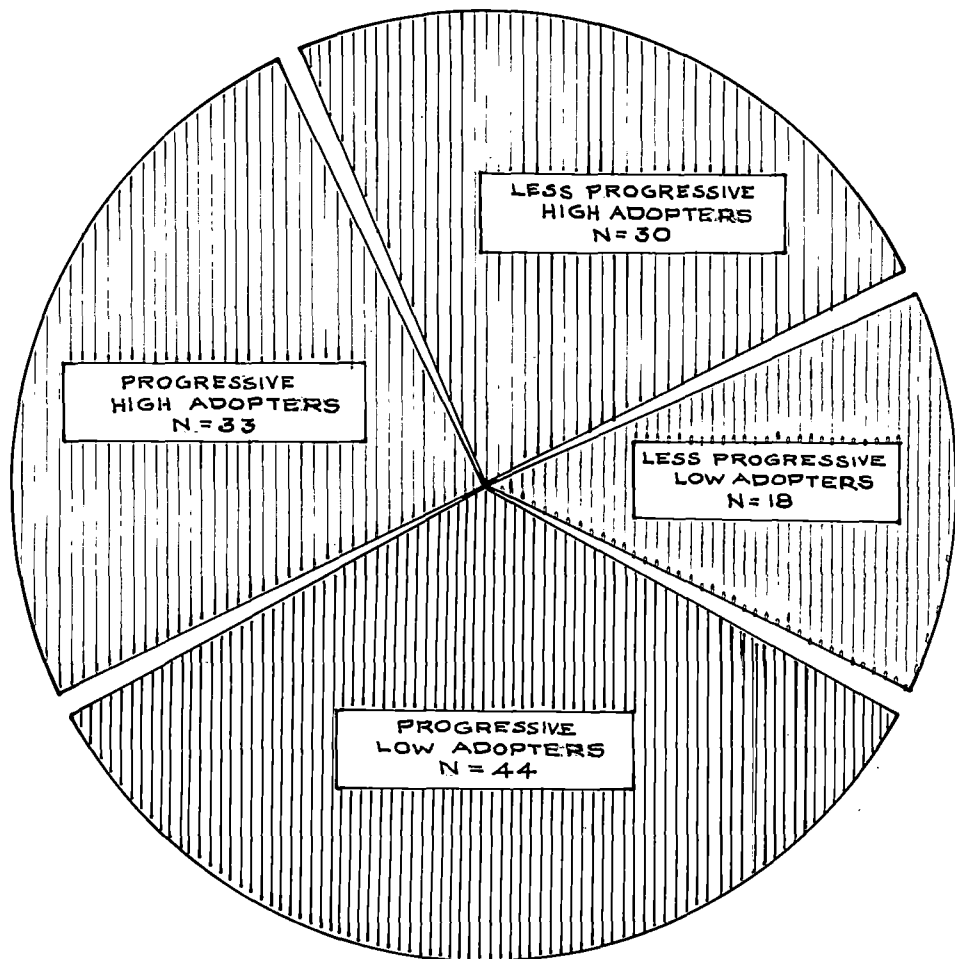


Table 5 indicates that significantly high relationship between progressiveness and extent of adoption of H.Y.V. of paddy cultivation by farmers. It is also seen from the table, that 44 farmers out of 125; though progressive are low adopters and at the same time 30 of them less progressive farmers are found to be high adopters (Fig.1) of the package of practices recommended under the H.Y.V. programme of paddy cultivation.

Section II

This section deals with the credit need and credit utilization of the farmers for adopting H.Y.V. of paddy.

Table 6: Average per acre credit need of the farmers.

Particulars	Average credit need/acre
Total credit need for 125 farmers = Rs. 2,21,101.00	Rs. 1,095.87
Total extent of holding for 125 farmers = 201.75 acres	

Table 6 shows the total credit need of 125 farmers for their extent of holdings totalled to 201.75 acres cultivated by them as Rs. 2,21,101.00 the average credit need of the farmer for cultivating an acre of H.Y.V. of paddy based on their package of practices and cost

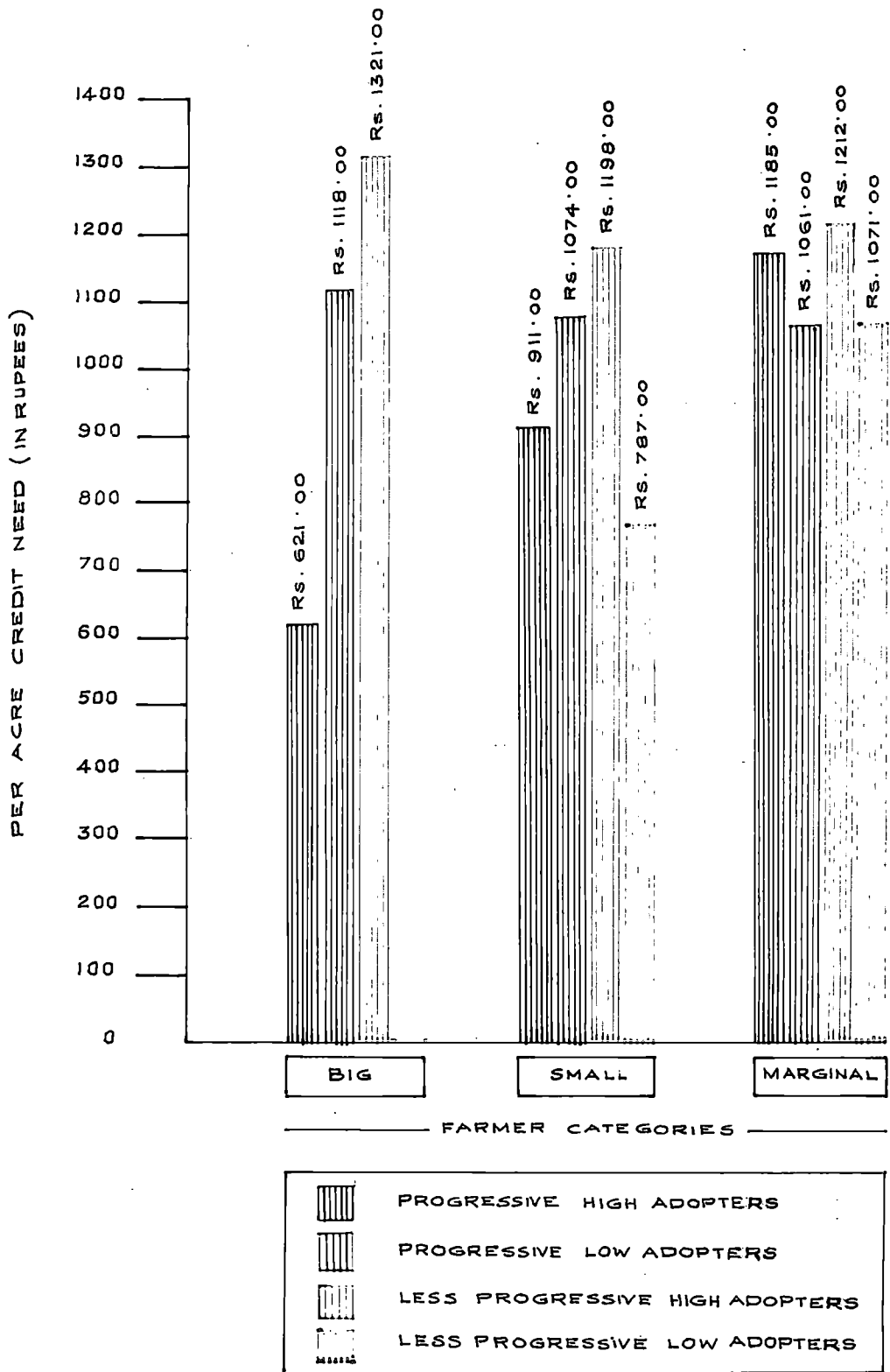
of cultivation was found to be Rs.1,095.87 irrespective of their progressiveness and level of adoption.

Table 7: Per acre credit need for different size of holdings with respect to the extent of adoption by farmers.

Farmers categories	Per acre credit need of farmers (Rs/acre)			
	Progressive farmers (N=77)		Less progressive farmers (N=48)	
	High adopters (N=33)	Low adopters (N=44)	High adopters (N=30)	Low adopters (N=18)
Big farmers (5 acres)	621.00 (one)	1,118.00 (one)	1,321.00 (one)	None
Small farmers (2.5 to 5 acres)	911.00 (two)	1,074.00 (six)	1,198.00 (five)	787.00 (two)
Marginal farmers (2.5 acres)	1,185.00 (thirty)	1,061.00 (thirty seven)	1,212.00 (twenty four)	1,071.00 (sixteen)
Average credit need/acre = Rs. 1,095.87.				

It is seen from the table 7 that the farmers belonging to progressive low adopters category and less progressive high adopters category holding paddy fields above 2.5 acres needs comparatively more credit/acre than others. Amongst the progressive big farmers the high adopters group needs least credit/acre (Rs.621.00), whereas the less progressive high adopters needs the maximum credit (Rs.1,321.00). Amongst the marginal farmers all the category need credit

FIG. 2. CREDIT NEED OF FARMERS.



close to the average, namely, k. 1,095.87/acre. High adopters within the marginal group needs more credit than the average (Fig. 2).

Table 8: Credit utilization by adopters based on their extent of adoption.

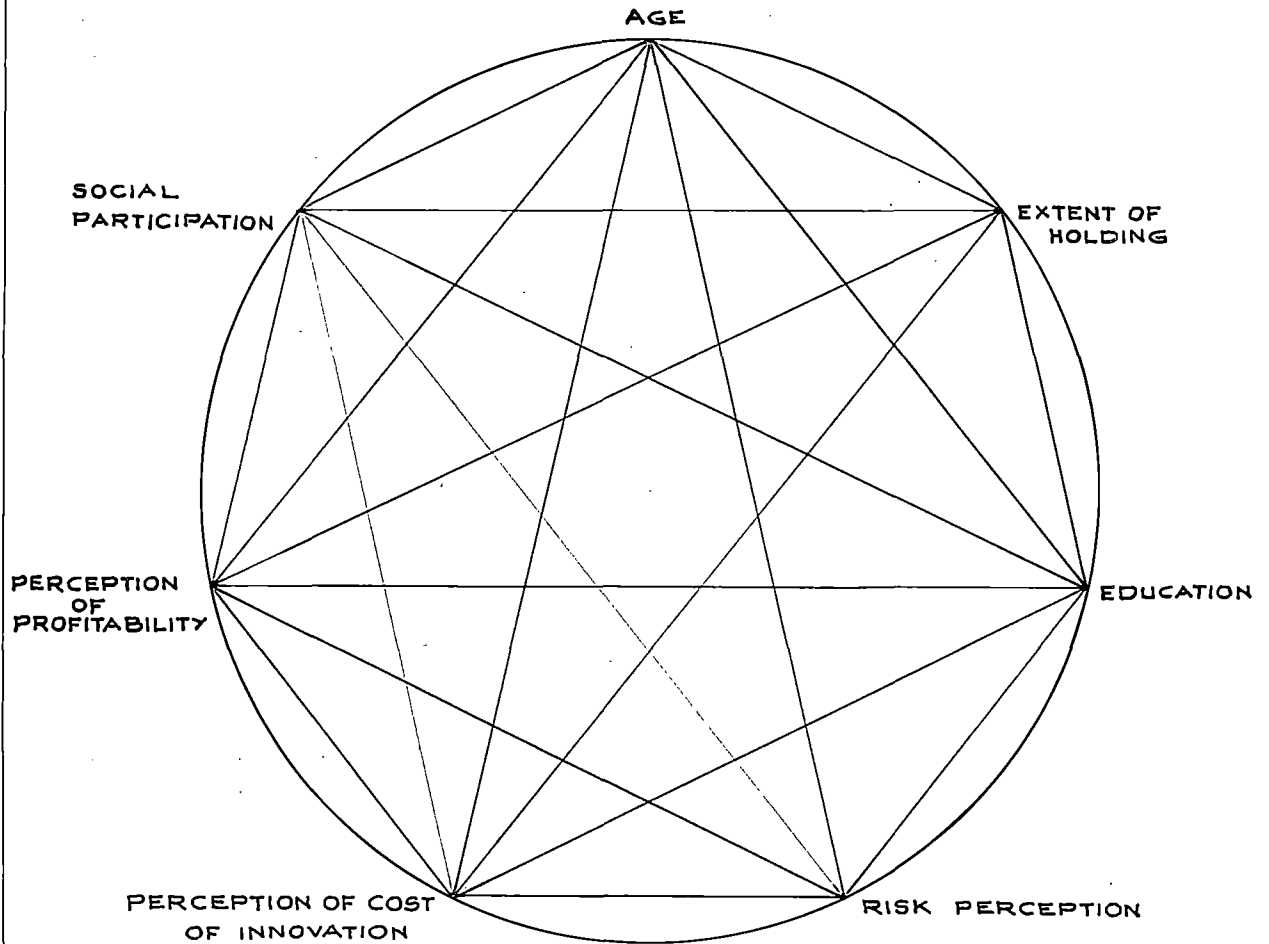
Credit utilization	Progressive farmers (N=77)		Less progressive farmers (N=48)	
	High adopters (N=33)	Low adopters (N=44)	High adopters (N=30)	Low adopters (N=18)
	Full	33	43	30	17
Partial	..	1	..	1

Table 8 shows that almost all the farmers except two irrespective of their progressiveness towards adopting H.Y.V. of paddy cultivation fully utilized the credit.

Table 9: Credit utilization by adopters based on their extent of holding.

Extent of holding	Progressive farmers (N=77)		Less progressive farmers (N=48)	
	Extent of credit utilization		Extent of credit utilization	
	Full (N=76)	Partial (N=1)	Full (N=47)	Partial (N=1)
>5 acres	66	..	40	1
2.5 to 5 acres	8	1	6	..
<2.5 acres	2	..	1	..

FIG. 3. INTER RELATIONSHIP BETWEEN SOCIO-ECONOMIC CHARACTERISTICS.



—————	POSITIVE SIGNIFICANT
=====	POSITIVE NOT SIGNIFICANT
- - - - -	NEGATIVE SIGNIFICANT
—————	NEGATIVE NOT SIGNIFICANT

Table 11: Interrelationship between socio-economic character variables.

Attributes	Age	Extent of holding	Education	Risk perception	Perception of cost of innovation	Perception of profitability	Social participation
Age	..	0.105	-0.241*	0.026	0.008	0.032	0.008
Extent of holding		..	0.228*	0.033	0.018	0.011	0.116
Education			..	0.146	0.134	0.094	0.201*
Risk perception				..	0.523*	0.383*	-0.083
Perception of cost of innovation					..	0.221*	-0.099
Perception of profitability						..	0.089
Social participation							..

*Significant at 0.05 level of probability.

Table 16: Relationship between perception of cost of innovation with extent of adoption and credit utilization.

Perception of cost of innovation	Progressive farmer (N=77)				Less progressive farmer (N=48)			
	Extent of adoption		Extent of credit utilization		Extent of adoption		Extent of credit utilization	
	High (N=33)	Low (N=44)	Full (N=76)	Partial (N=1)	High (N=30)	Low (N=18)	Full (N=47)	Partial (N=1)
10-14	9	1	10	..	2	2	4	..
15-19	10	30	40	..	20	12	31	1
20-24	14	13	26	1	8	4	12	..

Mean = 18.10

S.D. = 3.05

Perception of profitability.

Null hypothesis: The farmers perception of profitability has no relationship with their extent of adoption and extent of credit utilization.

The correlation coefficient value is 0.051, which is not significant at 0.05 level of probability. Hence the null hypothesis supports that there is no relationship between perception of profitability and farmers' extent of adoption and credit utilization.

Section IV

Table 21: Preference of credit institutions

'Z' matrix values

	Neighbours	Moneylender	L.M.B*	Relatives	Com.Bank*	Co-op.Bank*	I.P.D.*
Neighbours	..	+0.358	+0.358	+0.496	+0.643	+1.555	+2.054
Moneylender	-0.358	..	+0.322	-0.050	+0.643	+1.555	+2.326
L.M.B*	-0.358	-0.332	..	+0.100	+1.175	+1.881	+1.645
Relatives	-0.496	+0.050	-0.100	..	+0.412	+0.553	+1.751
Com.Bank*	-0.643	-0.643	-1.175	-0.412	..	+0.583	+1.341
Co-op.Bank*	-1.555	-1.555	-1.881	-0.553	-0.583	..	+1.751
I.P.D.*	-2.054	-2.054	-1.645	-1.751	-1.341	-1.751	..
Total	-5.464	-4.176	-4.111	-2.170	+0.949	+4.376	+10.868
Mean	-0.911	-0.696	-0.685	-0.362	+0.198	+0.729	+1.811
Add largest mean	0	0.215	0.226	0.549	1.069	1.640	2.722

L.M.B* - Land Mortgage Bank.

Co-op Bank* - Co-operative Bank.

Com. Bank* - Commercial Bank.

I.P.D.* - Intensive Paddy Development Unit.

Table 22: Preference of credit institutions by farmers as per scale values and their ranks.

Sl.No.	Source of credit institutions	Scale value	Rank
1.	I.P.D. Unit	2.722	1
2.	Co-operative Bank	1.640	2
3.	Commercial Bank	1.069	3
4.	Relatives	0.549	4
5.	Land Mortgage Bank	0.226	5
6.	Moneylender	0.215	6
7.	Neighbours	0.000	7

Table 21 shows the 'Z' matrix value for the preference of credit institutions, the mean 'S' value and the average scale values, are given for 125 farmers regardless of their adoption level and progressiveness. From these values, it can be seen in the table 22 that farmers in general prefer I.P.D. Unit, which is having the maximum scale value as 2.722, followed by Co-operative Bank and Commercial Bank (1.640) and (1.069) respectively securing 2nd and 3rd preference of farmers. Relatives which is a non-institutional source of credit supersedes the Land Mortgage Bank in their preference, as seen in scale value of 0.549 than that of the Land Mortgage Bank scale value of 0.226.

Table 24: Credit institutional preference pertaining to interest rate.

Credit institutions	Progressive farmers (N=77)		Less progressive farmers (N=48)	
	High adopters (N=33)	Low adopters (N=44)	High adopters (N=30)	Low adopters (N=18)
I.P.D. Unit	32	44	29	18
Co-operative Bank	..	..	1	..
Commercial Bank	..	..	..	..
Land Mortgage Bank	1	..	..	..
Others*	..	..	..	..

Table 25: Credit institutional preference pertaining to timely lending.

Credit institutions	Progressive farmers (N=77)		Less progressive farmers (N=48)	
	High adopters (N=33)	Low adopters (N=44)	High adopters (N=30)	Low adopters (N=18)
I.P.D. Unit	16	26	15	12
Co-operative Bank	9	8	4	2
Commercial Bank	7	9	10	4
Land Mortgage Bank	1	1	..	..
Others*	..	..	..	..

Analysing table 25 it is found that 70 farmers out of 125 prefers I.P.D. Unit for their timely lending of credit for cultivating high yielding variety of paddy. The next priority with regard to the timeliness of lending credit to farmers goes to the Commercial Bank as expressed by 30 farmers followed by the Co-operative Bank as experienced by 23 farmers. Land Mortgage Bank is preferred least.

Table 26: Credit institutional preference pertaining to adequacy in lending.

Credit institutions	Progressive farmers (N=77)		Less progressive farmers (N=48)	
	High adopters (N=33)	Low adopters (N=44)	High adopters (N=30)	Low adopters (N=18)
I.P.D. Unit	10	15	7	11
Co-operative Bank	16	24	15	6
Commercial Bank	7	5	8	1
Land Mortgage Bank	..	..	..	..
Others*	..	..	..	..

It is seen from table 26 Co-operative Bank is preferred by 61 farmers out of 125 due to its adequate lending capacity for farming, whereas 43 farmers are

satisfied with the credit offered by I.P.D. Unit of this locality. 21 farmers are preferred the Commercial Bank.

Table 27: Credit institutional preference pertaining to easy lending procedures.

Credit institutions	Progressive farmers (N=77)		Less progressive farmers (N=48)	
	High adopters (N=33)	Low adopters (N=44)	High adopters (N=30)	Low adopters (N=18)
I.P.D. Unit	23	37	23	13
Co-operative Bank	3	2	4	3
Commercial Bank	3	5	3	2
Land Mortgage Bank	4	..	..	..
Others*	..	..	..	..

Table 27 evidences the easiness of lending procedure of the I.P.D. Unit as experienced by 96 out of 125 farmers studied. 25 farmers find the lending procedures of the banks to be also easy. Four high adopters prefer Land Mortgage Bank as an easily available source of credit.

Table 28: Credit institutional preference pertaining to easy repayment procedures.

Credit institutions	Progressive farmers (N=77)		Less progressive farmers (N=48)	
	High adopters (N=33)	Low adopters (N=44)	High adopters (N=30)	Low adopters (N=18)
I.P.D. Unit	13	11	8	12
Co-operative Bank	10	20	16	4
Commercial Bank	6	6	5	2
Land Mortgage Bank	4	6	1	..
Others*	..	1	..	..

Procedures for easy repayment of credit availed from Co-operative Bank is evidenced by 50 farmers as per the table 28. I.P.D. Unit is alone found to have easy repayment procedure for the credit lend by the I.P.D. Unit as experienced by 44 farmers out of the 125 paddy growers studied in the area.

Table 29: Credit institutional preference pertaining to accommodative recover procedure.

Credit institution	Progressive farmers (N=77)		Less progressive farmers (N=48)	
	High adopters (N=33)	Low adopters (N=44)	High adopters (N=30)	Low adopters (N=18)
I.P.D. Unit	11	18	9	7
Co-operative Bank	15	17	18	7
Commercial Bank	3	4	3	4
Land Mortgage Bank	3	4	..	..
Others*	1	1	..	..

Others* - Relatives, Neighbours and Moneylenders.

Table 29 evidences that 57 farmers prefer the procedure for the recovery of loans framed by the Co-operative Bank to be the best, followed by the recovering procedures of the I.P.D. Unit as experienced by 45 farmers.

DISCUSSION

DISCUSSION

This chapter consists of four sections. First section deals with the extent of adoption of H.Y.V. of paddy by the progressive and less progressive farmers. Second section deals with the credit need and utilization of farmers with respect to their extent of adoption and by different categories of farmers. Third section deals with the relationship of socio-economic characteristics with their extent of adoption and extent of credit utilization. Fourth section deals with the preference of credit institution and perception of source of credit by the farmers.

Section I

The extent of adoption of H.Y.V. of paddy by the progressive and less progressive farmers.

It is seen from the table 1 that more than half of the sampled farmers (80 per cent) seems to adopt the package of practices recommended under the H.Y.V. programme of paddy cultivation in this area. Amongst them a sizeable majority were found to be medium adopters, which evidenced that the farmers were aware of the important practices in the H.Y.V. paddy cultivation. This might also be due to the intensive extension work conducted by I.P.D. Unit of this area. It has been interesting to note in the table 2 that

the sampled farmers were almost halved equally by the mean adoption score, namely, 78.60 under high and low adoption.

Based on the measure of "Progressiveness" applied amongst the farmers, it is seen from table 3 that the mean score of 19.40 divides the population sample of 125 farmers almost into two equal groups. This synchronises with the findings of table 2; indicating that the progressiveness of farmers pertaining to adoption of important agricultural practices to be high adopters and less progressive farmers as low adopters under the H.V.V. programme.

As per the measure of progressiveness, a scale developed by Venkatarama Reddy et al (1974), it is seen that 61.60 per cent of the farmers (table 4) to be progressive and 38.40 per cent of the sampled group to be less progressive. Thus, two third of the farmers seem to take lead to follow the package of practices as a result of the contact with extension agencies. As seen in table 5 the scale used for measuring progressiveness, was tested and found to be significant under the conditions prevailed for the study.

Progressive high adopters.

Of the 33 high adopters, majority (20) belonged to the age ranging between 36 and 57 years. Amongst them 30 farmers were small farmers having paddy area less than 2.5 acres. The progressive high adopters were found to be educated and 27 of them took more risk in cultivating the H.Y.V. paddy and in following improved package of practices. Almost, all the farmers perceived the cost of innovation of the package of practices as low. But only 4 farmers out of 33 progressive farmers cultivated H.Y.V. with high profit motive, whereas 24 of them had only a medium perception on its profit. Though progressive high adopters, majority of the farmers had least social participation and all of them except one farmer had farming as sole occupation. 25 farmers within the group, belonged to high caste. All the progressive farmers under this category except one utilized their credit in full.

Progressive low adopters.

Amongst the 29 farmers belonging to progressive low adopters out of 44 were middle aged between 36 and 57 years. The extent of holding of 37 progressive low adopters were below 2.5 acres and hence small

and 26 high adopters amongst the less progressive farmers perceived more profit in cultivating H.Y.V. of paddy in their fields. Social participation was low in this category of farmers also. All farmers except two, who had other occupation, also belonged to high caste.

Less Progressive low adopters.

Eighteen farmers were categorised under this group. All these farmers except two belonged to the age group between 36 and 47 and had farm area less than 2.5 acres. All of them except one were found to be educated. Half of them perceived greater risk in farming than the remaining 9 farmers in the category. All the less progressive low adopters except two also perceived the cost of innovation, of whom 13 farmers had least social participation within the I.P.D. area. Farming was the only occupation of all the farmers in the category except one. 16 farmers belonged to high caste in the locality. All less progressive farmers except one utilized fully the credit provided to them by the credit institutions of the locality.

Section II

Credit need and credit utilization.

Discussing on credit need of the farmers, it is seen from table 6 that the average credit need

has been worked out to Rs.1,095.87 for cultivating an acre of land with H.Y.V. of paddy. In this regard, it is interesting to note in table 7, that the credit need of both big and small farmers under progressive high adopters needed credit lesser, compared to the average credit need of the farmers (Rs.1,095.87) as well as the marginal farmers in the same group (Rs.1,185.00). Here the big farmers needed the least credit (Rs.621.00). This might be due to the facilities and resources available with them. This is supported by Harwant Singh and Kahlon (1971) noted that the medium and large groups of farmers could not meet most of their working expenses out of their own funds. Some large holders could get credit for such inputs as improved seeds, fertilizers etc. from the dealers of these inputs, hence their demand for operational credit was lower.

In the case of marginal farmers, who had to spend for all the inputs of farming required more credit, as explained by Prasad (1971) that the small farmers (having less than 2 acres of land) spent as much or even more than the big farmers do, when he switched over to new technology.

But in the progressive low adopters group, it is worthwhile to note that the marginal farmers needed

lowest credit (Rs.1,061.00), whereas the credit need by the small (Rs.1,074.00) and the big farmers (Rs.1,118.00) category were more for their H.Y.V. of paddy cultivation. The increase in the credit need of these farmers might be due to their improper and untimely use of the inputs in their cultivation, which might increase their expenses. This might also be reasoned by Rai and Singh (1971) that the requirements of amount for wages showed a great disparity among different size groups of holdings. Unlike the farmers with smaller size-holding, big farmers had relatively less family labourers available for work. On the other hand it was also explained that the farmers in the higher size-group require more money for the purchase of farm machineries and implements as well as for irrigational purposes.

In the case of less progressive high adopters the credit need was greater for the big farmers (Rs.1,321.00) and marginal farmers (Rs.1,212.00) as compared to the small farmers (Rs.1,198.00). This finding was also supported by Rai and Singh (1971), who stated that apart from their less progressive nature, required more money to stabilise their economic condition in farming. But the less progressive low adopters group of marginal farmers needed almost an amount nearest to the average per acre credit need (Rs.1,071.00) and the

small farmers required less than the average per acre credit need (₹.787.00) as reasoned by Subramanian et al (1971) that the percentage of credit to total spending was largest in the small group. Compared on per acre basis, it is observed that the requirement and supply were the largest for the small farmers.

Credit utilization by all the farmers were found to be full as in table 8 except two, who partially utilized their credit. They were one progressive and a less progressive farmer having more than 2.5 acres of land as indicated by the table 9. This may be ^{due to} that these farmers might have availed credit from more than one institution which was more than their requirement, made them to channelize the funds in improper direction, other than agricultural purposes.

Section III

Relationship of socio-economic characteristics with their extent of adoption and extent of credit utilization.

It is seen from table 10 that the socio-economic characteristics of farmers were not having any relationship with their extent of adoption and credit utilization. As shown in table 11 that farmers' extent of holding is having relationship with their education. Social participation and education also having a relationship. Perception of cost of innovation and perception of profitability are having relationship with farmers risk perception.

Age.

It is seen from table 12 pertaining to the relationship between age of the farmers and their extent of adoption and credit utilization. One third of the high and low adopters of the progressive group were below mean age (47.93) i.e. between 36 and 46 years, whereas about half of the similarly categorised less progressive farmers also belonged to this same age group. This clearly indicates that very little or no relation existed between the extent of adoption and the age of the farmers. This finding goes in line with the findings of Reddy (1962) Pareek, Kumar and Jain (1965) Ratanchand and Gupta (1966) and Rajendra (1968) who reported that the age of the farmer was not a differentiating factor between adopters and non-adopters. The table also shows that almost another one third of middle aged, who were between 47 and 57 years of age. As well as 20 out of 33 progressive farmers and 23 out of 30 less progressive farmers belonged to the high adopters group, who fell in the age range of 36-57 years. This indicates that majority of the high adopters were middle aged, irrespective of their progressive attitude towards cultivating H.Y.V. of paddy.

Regarding the extent of credit utilization both the group of farmers except two, irrespective of their age utilized the credit given for H.Y.V. paddy cultivation

in full. This shows that age need not be a factor to be considered in providing credit to the farmers. Again table 11 reported insignificant relationship with the farmers perception of profitability and age, hence all the age group were perceiving the adoption of improved practices as profitable and thus utilized their credit in full, which was further supported by Das and Sarkar (1970) and Salunkhe and Thorat (1975).

Extent of holding.

Table 13 revealed that 67 high adopters out of 77 progressive farmers and 40 high adopters out of 48 less progressive farmers had paddy area less than 2.5 acres and thus they were marginal farmers. This was a clear indication that small size of holding will not stand in the way of adopting improved farm technology irrespective of their progressiveness. The utilization of credit by these farmers were also found to be full. This could also mean that credit was most important factor in cultivating H.Y.V. of paddy and that might be responsible for high adoption, as supported by Singh (1967) that even small farmers had high level of adoption of H.Y.V. mainly due to liberalised short term loan advanced to farmers adopting H.Y.V. It was also seen from the table that out of 8 progressive small farmers, 6 were found to be low in their extent of adopting the recommended

package of practices. This might be due to their extent of land holding more than their bear minimum that was needed to produce sufficient paddy for domestic consumption. Excess production of paddy with high investment might run them to a loss, due to low paddy prices. These reasons indicated non-relationship of farmers' extent of holding with their extent of adoption and credit utilization which has been supported by Rajendra (1968), Grewal and Sohal (1971) and Jayarama Reddy and Bhaskar Reddy (1972).

Education.

Pertaining to the level of education of the farmers, it is seen from table 14 that almost all the farmers studied were upto middle school and above, except four farmers who were below the primary level. Even amongst them 32 out of 77 progressive farmers had high level, which may be a reason for their progressive attitude towards improved technology. Their level of adoption were also found to be significantly related to their extent of holding as well as social participation as per table 11. At the same time majority of the less progressive farmers, namely, 33 out of 48 farmers had only middle school education which might be a reason for their progressiveness. Thus it is evident that more the education, better the

attitude of the farmers towards adoption of improved package of practices in paddy cultivation. Due to these reasons, there was no relationship with their extent of adoption as it was supported by Joon et al (1970), Jayarama Reddy and Bhaskar Reddy (1972) and Sharma and Nair (1974) were found that education was not a significant degree in H.Y.V. cultivation and adoption. Irrespective of their level of adoption, all had utilized their credit in full for their H.Y.V. of paddy cultivation.

Risk perception.

Perception of risk in adopting improved package of practices in paddy cultivation has been perceived low by almost all, namely 110 out of 125 farmers studied. Table 15 indicates that a majority of farmers irrespective of their progressiveness were willing to take risk to a certain level. 46 progressive and 27 less progressive farmers took risk in their farming practices. And it was found that this behaviour of risk perception has been advantageous to lead the farmers to accept the improved technology. 15 highly progressive farmers took more risk as compared to 2 farmers of the less progressive group. This might be due to the innovative characteristics prevailing amongst the progressive group. Significant relation has been evidenced in table 11 between risk perception and perception of cost

of innovation followed in paddy cultivation. This innovative practice might pertain specifically in growing improved varieties of paddy as well as taking timely plant protection measures to maintain high yield. This is supported by Basram (1966) that the small land holders cannot take risk in trying new ideas with which they are not familiar. If the validity and usefulness of new ideas are established by local farmers, people will be motivated to adopt the ideas. Except two, all the farmers utilized their credit in full, due to their willingness to take risk, perceiving as well, the cost of innovation and profit.

Perception of cost of innovation.

Table 16 indicates that amongst 63 high adopters 52 farmers seemed to have perceived the cost of innovative practices under H.Y.V. programme of paddy cultivation. At the same time, 72 farmers belonging to progressive and less progressive group had medium level of perception on the cost of innovative practices under H.Y.V. paddy cultivation. This finding is supported by Salvi and Pawar (1966) who revealed that high cost is not a barrier to adoption and cost has shown a significant relationship with efficiency. Costly practices involves more inputs, but more profits gained by farmers. This coupled with credit facilities of to-day seems to be responsible for the cost attributes not standing as a barrier to adoption. May be, due to this reason, that almost all the farmers, except two utilized their credit in full

in adopting improved practices in cultivating H.Y.V. of paddy. Thus no significant difference between their extent of adoption and credit utilization and perception of cost of innovation had been evidenced in the study.

Perception of profitability.

Table 17 indicated that majority, namely, 58 out of 77 progressive and 39 out of 48 less progressive farmers belonged to the middle group. Amongst them it is interesting to note that more farmers in the low adopter group perceived the profit more than that of the high adopters group. The findings revealed that the farmers in general had average perception on the profit in cultivating H.Y.V. This might be due to their necessity to produce more paddy being small holders. Also they could enjoy all the credit facilities available to them through institutions. Since almost all the farmers were having high perception of profitability, they had utilized their credit in full. By utilizing the credit in proper direction they might have got more profit may also be one of the reasons for full utilization. This supports the finding of the past research workers Raghudharan et al (1976) who found that economic security in the case of low adopters found to influence the adoption of H.Y.V. of rice.

Social participation.

In table 18 social participation has been quite low both in the case of 58 progressive and 29 less progressive farmers. Only two farmers secured a high social participation, whereas 18 farmers in each group made social contacts and participation in their social life only to a limited extent. The reason might be due to low income and the standard of living of the small holder. This has been expressed by Surinderpal Singh Saini et al (1977) who found that social participation did not show high level of adoption, as supported by Supe and Salode (1975).

Regarding their credit utilization all the farmers except two, utilized their credit in full due to the reason that they were having high risk bearing ability and high perception of profitability.

Occupation.

It is seen from table 19 that 120 farmers out of 125 studied were agriculturists. Farming was found to be their sole occupation. The location selected for study was purely an agricultural area brought under the I.P.D. programme of the Department of Agriculture. Bengupta (1970) found that main occupation of the farmer as a factor for adoption. Since almost all were agriculturists, the credit given to them has been properly utilized.

Caste.

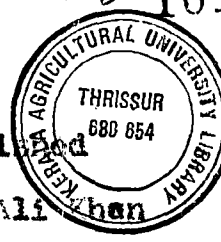
The majority of the farmers studied, belonged to high caste according to table 20. It is seen from the table that out of 77 progressive farmers of high caste group, 43 were found to be low adopters. 28 less progressive farmers out of 48 belonged to high caste were found to be high adopters. The finding arrived here is supported by Ratanchand and Gupta (1966) who indicated that the caste of the farmer does not have any relationship with their adoption of improved practices and it is supported by Jha and Shaktawat (1972). The economic status of the farmer might be the reason for adoption under H.Y.V. programme, hence it is seen all the farmers except two, belonging to high and low caste utilized their credit offered to them.

Section IV

Preference of credit institution and perception of source of credit by the farmers.

With reference to the preference of credit institutions, table 21 explained that the farmers preferred I.P.D. units as most important institution providing credit to farmers of the locality, followed by Co-operative Bank and Commercial Bank of the area. Such a preference might be due to on the basis of their accessibility for the credit, facilities offered to be the easy credit source for the farmers. The remaining sources have been ranked after the I.P.D. unit and the banks, as these institutions are to-day in the fore-front for giving credit to farmers. The least ranked sources of credit of to-day were the money lenders, who dominated the banks in the past.

It is interesting to note that non-institutional source of credit i.e. Relatives comes in fourth ranks, which over looked Land Mortgage Bank, in the farmer's preference. The reason might be that they perceived this source, due to more flexibility in repayment with more accommodative policy and approach for recovery. This has been supported by Rural Credit Survey Report (1959), which estimated that over 93% of the loans from source like indigenous individual lenders as credit



eventhough so many credit institutions were established at village level. For this unknown reason Haider Ali (1977) suggested that small farmers required to produce non-encumbrance certificate while borrowing from banks at the cost of about Rs.60/-. This is a costly and inconvenient procedures, might be the reason for preferring the relatives for their credit than Land Mortgage Bank. The above findings had also been supported by their recognition of the facilities offered by the credit institutions. But no significant association was found to exist between extent of adoption and timely lending by institutions, adequate credit facilities, easy lending procedure, flexible repayment procedures and accommodative recovering procedures. Such a finding might be due to the fact that the farmers availed the credit facilities based on their accessibility and availability without much difficulty at their nearest sources.

Pertaining to the interest rate on credit, the farmers preferred I.P.D. Unit as the cheapest, since the Government provides credit through I.P.D. Unit at the lowest rate of interest than other credit institutions in the locality as evidenced by table 24.

Table 25 showed that two third of farmers preferred credit from I.P.D. Units as the credit was available to

them in time. The second institution that lend credit to farmers was the Commercial Bank followed by the Co-operative Bank as preferred by 30 and 23 farmers respectively. This might be due to high formalities for disbursement of credit by the banks that delays the matter.

With regard to adequacy in lending of credit, it is seen from table 26 that Co-operative Bank has been preferred by 61 farmers followed by I.P.D. Unit as expressed by 43 farmers of the locality. This might be due to channelizing of adequate money through Co-operative Bank by the Government.

The procedure of lending credit by I.P.D. Unit has been easy as expressed by 96 farmers as per table 27. Only about a dozen of farmers mentioned that banks have easy lending procedures. The lending procedure is easy in the I.P.D. Unit as in many cases as credit slips are given to farmers for supply of seeds, fertilizers, plant protection equipments and chemicals etc. to concerned societies.

Table 28 evidenced easy repayment procedures of Co-operative Bank as expressed by 50 farmers. 43 farmers also ranked I.P.D. Unit for the same reason followed by the Commercial Bank as expressed by 19 farmers. This

might be due to the reason that Co-operative Bank has instalment repayment system with flexible procedures of repayment of loan by farmers.

Regarding the procedures of recovering loans from farmers, it was evidenced that Co-operative Banks were more accommodative for them. 45 farmers also ranked the I.P.O. Unit in this context. Only 14 farmers found that recoveries made by Commercial Bank to be accommodative.

The repayment and recovery procedures of the Co-operative Bank must have been preferred by the farmers as the condition prescribed and enforced by the Co-operative Bank might be followed with delay and not in the prescribed manner.

SUMMARY

S U M M A R Y

Since the inception of High Yielding Variety Programme from 1966, farmers have been taking up improved cultivation of paddy. The Agricultural Department of Kerala had prescribed a set of package of practices to be followed by farmers. Farmers are being provided with credit facilities by different institutions in the area. The study has been designed with the following objectives.

1. To study the adoption behaviour of progressive and less progressive farmers under the High Yielding Variety Programme of paddy cultivation.
2. To study the credit need and credit utilization in adopting the package of practices recommended for growing High Yielding Paddy Varieties.
3. To study the relationship of socio-economic characteristics that are related to adoption and credit utilization under the High Yielding Variety Programme of paddy cultivation.

The study has been purposively undertaken in Anacode I.P.D. Unit in Trivandrum District, since the farmers under the unit were extended with maximum credit facilities.

An intensive review on the study had been undertaken on researches done in extent of adoption of High Yielding Varieties of paddy as well as progressiveness of farmers. The farmers' response to credit had also been reviewed in relation to their socio-economic characteristics.

An hypothetical approach has been followed to reveal the relationship between the farmers' socio-economic characteristics and their extent of adoption and credit utilization.

125 farmers were selected for the study, belonging to Anacode I.P.D. Unit. The selection was based on a survey of their extent of involvement with credit institutions in the area. A pilot study was also organized so as to delineate the variables pertaining to their extent of adoption and credit behaviour. An interview schedule was prepared and pre-tested for its validity. "Mundakan Season" was taken as the base season for the study. Methods to quantify the adoption behaviour were scrutinized. The adoption quotient scale developed by Jaiswal and Dave (1972) which was the modified scale of Chattopadhyay (1963), was used to measure the total extent of adoption. The potentiality of adoption of various practices was based on the recommendation made under the package of practices developed by Kerala Agricultural University (1978). The

progressiveness of the farmer was assessed by using a progressiveness scale developed by Venkatarama Reddy ^{et.al.} (1974) and their total extent of adoption was measured in percentages. Parametric test, namely, correlation analysis was used to test the hypothesis. Chi-square test was applied for finding out the association between the farmers' extent of adoption and their perception of source of credit. The credit need of the farmers was assessed by the method explained by Johl and Kapur (1977). Thurstones' paired comparison technique was used to find out the farmers' preference of credit institutions.

The findings of this study were as follows.

1. A high relationship was found between progressiveness and extent of adoption of High Yielding Varieties of paddy cultivated by farmers.
2. Among the 125 farmers studied, 77 were found to be progressive and 48 less progressive farmers in the unit.
3. Out of 77 progressive farmers, 33 were found to adopt the package of practices to a great extent and thus fell under high adopters group. 44 were found to be low adopters.
4. Among the less progressive, 30 were high adopters whereas 18 farmers were poor in adoption.

5. The average credit need per acre of the farmers in Anacode I.P.D. Unit was found to be Rs.1,095.87.
6. Though 108 farmers were marginal farmers irrespective of their extent of adoption, their credit need were comparatively high than others.
7. The less progressive high adopters were found to require the highest credit as compared to other farmer groups.
8. All the farmers except a few, irrespective of their progressiveness, fully utilized the credit made available by the I.P.D. Unit, Co-operative Bank, Commercial Bank and Land Mortgage Bank.
9. No significant relationship has been evidenced between age, extent of holding, education, risk perception, perception of cost of innovation, perception of profitability, social participation, occupation and caste and their extent of adoption as well as their utilization of credit.
10. Interna of occupation, almost all except five, were found to be fully occupied with farming.
11. The farmers studied, were found to be risk bearers, innovative and profit minded in cultivating the High Yielding paddy varieties.
12. 112 farmers were found to belong to high caste as compared to 13 who were belonging to lower caste group.

13. Pertaining to preference of credit institution by farmers, the study revealed the I.P.D. Unit, Co-operative Bank and Commercial Bank as the preference source of credit respectively.
14. Non-institutional source of credit like neighbour and moneylender were found to be of least importance to the farmers of to-day.
15. The I.P.D. Unit was preferred by farmers for their lower interest rate, timely lending and easy lending procedures.
16. Co-operative Bank has been preferred by the farmers for the adequate lending capacity, easier repayment as well as accommodative recovery procedures.

Suggestions for further research.

1. Research in the same line can be conducted amongst the farmers identified by the Small Farmers Development Agency in I.P.D. Units.
2. Study shall also be undertaken on the reasons for farmers' preference to institutional credit than non-institutional credit, namely, moneylender, neighbour and relatives.
3. The credit need for different categories of farmers could be worked out for cultivating High Yielding Varieties of paddy.

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*Original not seen.

APPENDICES

APPENDIX I

Package of practices for H.Y.V. of paddy recommended by Kerala Agricultural University. (For 1 acre of cultivation)

- | | |
|---|--|
| 1. Seed rate | 20 Kgs. |
| 2. Nursery area | 10 Cents. |
| 3. Spacing | 20 x 10 Cms. |
| 4. Age of seedlings | 20-25 days. |
| 5. Seed treatment fungicides and dosages. | 50 gms. of Agrosan for
20 Kgs. of seed. |

6. Manures and fertilizers.

1st application (Basal dose)

Farmyard manure	2000 Kgs.
Ammonium Sulphate	90 Kgs.
Superphosphate	112.5 Kgs.
Muriate of Potash	15 Kgs.

2nd application (Panicle initiation stage)

Ammonium Sulphate	90 Kgs.
Muriate of Potash	15 Kgs.

7. Plant protection.

Name of the chemical	Dosage.
Metacid 50 E.C	200 ml.
Muvacron 40 E.C.	250 ml.
Ekalux 25 E.C.	200 ml.
Hinosan	200 ml.

APPENDIX II

Statements selected for measuring progressiveness of farmers.

1. Do you keep yourself upto date in latest technology?
 - a. Using High Yielding Paddy Varieties. Yes/No
 - b. Using Chemical Fertilizers. Yes/No
 - c. Using Plant Protection Chemicals. Yes/no
2. Do you generally try to adopt the following recommendations?
 - a. Recommended seed rate. Yes/No
 - b. Recommended spacing in planting. Yes/No
 - c. Recommended nursery practices. Yes/No
3. Are you growing H.Y.V. of paddy as per the season wise recommendations? Yes/No
4. When did you first cultivate the H.Y.V. of paddy?
5. Have you been consulted by your neighbour farmers regarding any practices in the cultivation of H.Y.V. of paddy? Yes/No
6.
 - a. Do you treat the seed as per the recommendations? Yes/No
 - b. Do you take up plant protection measures for nursery? Yes/No
 - c. Do you take up plant protection measures for mainfield? Yes/No

APPENDIX II Continued

7. How frequently you meet the following extension workers for your problems in cultivating H.Y.V. of paddy?

Frequently Sometimes Never

- a. Agricultural Scientists.
- b. Junior Agricultural Officer.
- c. Fertilizer Agents.
- d. Agricultural Demonstrators.
- e. Field Workers.

APPENDIX III

Interview Schedule

"To Study the Impact of Institutional Credit and its
Influence in the Behaviour of Farmers in Adopting
High Yielding Varieties of Paddy Cultivation.

I. Progressiveness of farmers.

1. Do you keep yourself upto date in latest technology?

- | | |
|--------------------------------------|--------|
| a. Using H.Y.V. of paddy. | Yes/No |
| b. Using Chemical Fertilizers. | Yes/No |
| c. Using Plant Protection Chemicals. | Yes/No |

2. Do you generally try to adopt the following recommendations?

- | | |
|-------------------------------------|--------|
| a. Recommended seed rate. | Yes/No |
| b. Recommended spacing in planting. | Yes/No |
| c. Recommended nursery practices. | Yes/No |

3. Are you growing H.Y.V. of paddy as per the season wise recommendations? Yes/No

4. When did you first cultivate the H.Y.V. of paddy?

5. Have you been consulted by your neighbour farmers regarding any practices in the cultivation of H.Y.V. of paddy? Yes/No

6.a. Do you treat the seed as per the recommendations? Yes/No

b. Do you take up plant protection measures for nursery? Yes/No

c. Do you take up plant protection measures for mainfield? Yes/No

APPENDIX III Continued

7. How frequently you meet the following extension workers for your problems in cultivating H.Y.V. of paddy?

Frequently Sometimes Never

- a. Agricultural Scientists.
- b. Junior Agricultural Officer.
- c. Fertilizer Agents.
- d. Agricultural Demonstrators.
- e. Field Workers.

II. Extent of adoption.

1. Total area of paddy cultivated in Mundakan Season.... acres.

2. Name of the H.Y.V. you have grown. Area in acres.

- a.
- b.
- c.
- d.

3. Seed rate.

- a.
- b.
- c.
- d.

4. Nursery area.

- a.
- b.
- c.
- d.

5. Spacing.

- a.
- b.
- c.
- d.

APPENDIX III Continued

6. Age of seedlings.

- a.
- b.
- c.
- d.

7. Seed treatment fungicides and dosages.

- a.
- b.

8. What was the basal manures/fertilizer rate followed by you for your crop? (NPK)

- 1. Kgs.
- 2. Kgs.
- 3. Kgs.
- 4. Kgs.

9. What was the fertilizer rate you applied in split doses?

1st application
(Basal dose)

- 1. Kgs.
- 2. Kgs.
- 3. Kgs.

2nd application
(Panicle initiation stage)

- 1. Kgs.
- 2. Kgs.
- 3. Kgs.

10. Have you applied any plant protection chemicals to your crop? if so,

Name of the chemical. Dosage.

- 1.
- 2.
- 3.
- 4.

APPENDIX III Continued

III. Credit Need and Utilization.

Credit utilized (kind)	N.	P.	K.	Pesticide	Cost
	Kgs.	Kgs.	Kgs.	Kgs.	Rs. Rp.

Nursery

Mainfield Basal

1st Application

2nd Application.

Amount spent on different practices from the availed credit.

- | | |
|---|-----|
| 1. Seeds | Rs. |
| 2. Nursery Management & labour cost | Rs. |
| 3. Weeding operations (labour cost) | Rs. |
| 4. Mainfield management including labour cost | Rs. |
| 5. Harvesting and Thrashing (labour cost) | Rs. |
| 6. Irrigation charges | |
| Labour cost | |
| Water cess | |
| Pump set (Diesel charges) | Rs. |
| 7. Sprayer hired charges & Labour cost | Rs. |
| 8. Other expenditure if any | Rs. |

APPENDIX III Continued

IV. Credit facility availed.

What are all the credit facilities availed in your area for cultivating H.Y.V. of paddy from difference sources given in "Mundakan Season".

Cash	Ferti- lizer	Plant protect- ion chemicals	<u>Kinds of loan</u>			Conce- ssions	Sta- ere
			S.T*	M.T*	L.T*		

1. I.P.D.
2. Co-op Bank.
3. Com. Bank.
4. L.M.B.
5. Moneylender.
6. Neighbour.
7. Relatives.

S.T* - Short term loan.
M.T* - Medium term loan.
L.T* - Long term loan.

APPENDIX III Continued

V. Risk perception.

S.A.* A.* U.D.* D.A.* S.D.A.*

1. Growing H.Y.V. of paddy is a risk because it gives pest/disease problem.
2. Raising nursery for H.Y.V. is a risk because it needs extra inputs.
3. Seed treatment is a risky practice while growing H.Y.Vs.
4. Growing a particular H.Y.V. in any season is a risky attempt because it will fail.
5. Maintaining recommended spacing in H.Y.V. is a risk because it reduces yield.
6. There is a risk in getting all kinds of chemical fertilizer for growing the H.Y.Vs.
7. Applying chemical fertilizers in "Splitdoses" is a risky practice in H.Y.V. cultivation.
8. Plant protection measures used to control pest/disease in H.Y.V. cultivation is a risk.
9. Growing H.Y.V. involves risk in increasing the number of weeding.

APPENDIX III Continued

S.A.* A.* U.D.* D.A.* S.D.A.*

10. Schedule recommended for H.Y.V. is a risk because it cannot withstand the same.

VI. Perception of cost of innovation.

1. Growing H.Y.V. of paddy is expensive.
2. Cost of H.Y.V. cultivation in three seasons is expensive so we cannot grow H.Y.V. in all seasons.
3. H.Y.V. seeds are costly.
4. Nursery preparation for H.Y.V. involves more expenditure.
5. Recommended spacing is important in H.Y.V. cultivation but it increases the cost of labour.
6. Recommendation for the use of chemical fertilizer for H.Y.V. needs more money.
7. Splitdoses of chemical fertilizer are expensive.
8. Plant protection measures and their adoption needs more money in H.Y.V. cultivation.
9. Weeding schedule requires more amount of money.
10. Irrigation cost is high for H.Y.V. cultivation.

APPENDIX III Continued

VII. Perception of profitsbility.

S.A.* A.* U.D.* D.A.* S.D.A.*

1. Growing H.Y.V. paddy is not economical.
2. H.Y.V. fails in some season, so growing H.Y.V. in all season is not profitable.
3. Seed rate for H.Y.V. is more, so it is not economical.
4. Extra inputs for Nursery management in H.Y.V. cultivation makes uneconomical.
5. H.Y.V. seeds need seed treatment which is not economical.
6. Correct spacing for H.Y.V. makes less plant population which is a loss.
7. H.Y.V. needs more chemical fertilizers so it is not profitable.
8. Plant protection chemical is high cost which affect the profit in H.Y.V. cultivation.
9. H.Y.V. needs more irrigation practice which is not profitable in H.Y.V. cultivation.
10. In H.Y.V. more of weed, which makes more labour cost. So it is not profitable.

S.A* - Strongly Agree A*-Agree U.D

S.D.A*- Strongly disagree.

APPENDIX III Continued

VIII. Preference of credit institution.

Choose the credit institutions you prefer for getting crop loan in the given pairs.

- | | | |
|-----------------------|-----|--------------------|
| 1. Co-operative Bank | and | Land Mortgage Bank |
| 2. Moneylender | and | Land Mortgage Bank |
| 3. Relatives | and | Commercial Bank |
| 4. Moneylender | and | Neighbour |
| 5. Relatives | and | Co-operative Bank |
| 6. I.P.D. Unit | and | Land Mortgage Bank |
| 7. Neighbour | and | Land Mortgage Bank |
| 8. Co-operative Bank | and | Commercial Bank |
| 9. Commercial Bank | and | Land Mortgage Bank |
| 10. Neighbour | and | Relatives |
| 11. Relatives | and | Land Mortgage Bank |
| 12. Moneylender | and | Relatives |
| 13. I.P.D. Unit | and | Commercial Bank |
| 14. Neighbour | and | I.P.D. Unit |
| 15. Relatives | and | I.P.D. Unit |
| 16. Moneylender | and | Co-operative Bank |
| 17. Co-operative Bank | and | I.P.D. Unit |
| 18. Moneylender | and | Commercial Bank |
| 19. Neighbour | and | Co-operative Bank |
| 20. Neighbour | and | Commercial Bank |
| 21. Moneylender | and | I.P.D. Unit. |

APPENDIX III Continued

IX. Perception of source of credit.

I.P.D. Co-op. Com.Bank. L.M.B. Oth

1. Which institution offers you the lower interest rate.
2. Which institution issues loan at proper time for your H.Y.V. cultivation.
3. Which institution supplies adequate credit facilities for your H.Y.V. cultivation.
4. Which institution has the easier lending procedure.
5. Which institution is more flexibility in repayment of loans.
6. Which institution is having more accommodative policy and approach for recovery.

*Others - Relatives, Neighbours and Moneylenders.

X. Socio-economic characters.

1. Age..... Years.
2. Extent of Holding.....acre.
3. Education:
 1. No formal education
 2. Primary School
 3. Middle School
 4. High School
 5. College.

APPENDIX III Continued

- | | | | | |
|-----|-------------------------|------------------|---------|-----------------|
| 4. | Caste | Higher/Lower | | |
| 5. | Occupation | Main/Subsidiary. | | |
| 6. | Social participation. | | Members | Office holders. |
| 1. | Co-operative Bank. | | | |
| 2. | Commercial Bank. | | | |
| 3. | L.M.B. | | | |
| 4. | Panchayat. | | | |
| 5. | Wla Committee. | | | |
| 6. | Farmers' Club. | | | |
| 7. | Radio rural forum | | | |
| 8. | Political activities. | | | |
| 9. | Religious activities. | | | |
| 10. | Educational activities. | | | |
| 11. | Cultural activities. | | | |
| 12. | Others, if any. | | | |

TO STUDY THE IMPACT OF INSTITUTIONAL CREDIT AND ITS INFLUENCE IN THE BEHAVIOUR OF FARMERS IN ADOPTING HIGH YIELDING VARIETIES OF PADDY CULTIVATION

By

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ABSTRACT OF THE THESIS

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A B S T R A C T

This study is designed to study the Impact of Institutional Credit and its influence in the behaviour of farmers in adopting High Yielding Varieties of Paddy Cultivation. In this study, 125 farmers of the Anacode I.P.D. Unit, Trivandrum District, were interviewed so as to assess their extent of total adoption of the package of practices recommended by Kerala Agricultural University. The study also pertains to their credit need and utilization to cultivate the High Yielding Varieties of paddy. The data was tabulated and statistically analysed to reveal their adoption behaviour pertaining to the implementation of High Yielding Variety programme in the unit. 52 per cent of the progressive farmer and 48 per cent of the less progressive farmers were found to be high adopters of the package of practices. The average credit need of the farmers was found to be Rs.1,095.87. Less progressive high adopters were found to require the highest credit need. Almost all the farmers utilized their credit offered by institutions in full. In general no relationship was evidenced between age, extent of holding, education, risk perception, perception of cost of innovation, perception of profitability, social participation, occupation and caste and between extent of adoption and credit utilization.

Intensive Paddy Development Unit secured first preference amongst others, viz. Co-operative Bank, Commercial Bank, Land Mortgage Bank, Moneylenders, Neighbour and Relatives pertaining to timely lending, lower interest rate and easy lending procedure.