

**INVESTMENT IN EDUCATION AND AGRICULTURAL  
DEVELOPMENT: A STUDY OF THE IMPACTS ON THE  
FARMERS' DECISION-MAKING FUNCTION**

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C E R T I F I C A T E

Certified that the dissertation entitled "INVESTMENT IN EDUCATION AND AGRICULTURAL DEVELOPMENT : A STUDY OF THE IMPACTS ON THE FARMERS' DECISION-MAKING FUNCTION" submitted by Debi Prasad Dash in partial fulfilment of the requirements for the award of the degree of MASTER OF PHILOSOPHY, has not been previously submitted for any other degree of this or, any other University and is his own work.

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## A B S T R A C T

The process of learning is visualised as a form of investment for adding to the productivity of human capital. The better educated are generally expected to be more flexible, more motivated and can adopt themselves more easily to the changing circumstances. In short they are generally expected to be more productive than the less educated ones. So every incremental investment in education from societal point of view is shown to be increasing productivity of the people by adding to the skill and abilities. But with limited means the society must resort to social welfare functions which necessitate ordering of different objectives in accordance to their social priorities. We may take the case of agricultural development and different educational policies as the object of study here.

Agriculture in India stands midway between the traditional farming and modernised farming. If Indian farmers are equipped with latest technical knowhow they can considerably increase the agricultural production. Basically the transformation from traditional pattern to a modernised one depends upon the investment not only in physical capital but also in the human capital. Investing in various forms of education can add to the effectiveness of the human capital. These forms of education to a great extent

are complementary to each other but differ in cost effectiveness.

The present study is an attempt to assess the impacts of farmers' education on their decision-making function. Even if some alternative forms of education have been elaborated the paucity of time and resources restricted the study from going deep into the relative cost effectiveness of such alternative forms. The study specifically tries to find out some perceptible difference in farm-culture on the basis of the difference in farmers' educational attainment.

The total volume of work has been divided into six chapters. Chapter I is the introductory part. The first part of the chapter highlights the importance of education in the process of human resource development and it traces the relationship of education in its different forms with agricultural development. The second part of the chapter I gives brief notes of some famous studies undertaken in various other related fields. Most of the cited works establish some functional relationship between education and agricultural development. They substantiate the relationship of education with dissemination of agricultural information on the one hand and development of agriculture on the other.

The chapter II illustrates education in its different forms and shows how different forms of education (formal, informal and nonformal) contribute to agricultural development in different ways. The effectiveness of such forms of education at different stages of development and in different conditions is discussed briefly in the chapter.

Chapter III is further sub-divided into two parts. The first part gives an account of the process of adoption of new farming methods and new inputs. It gives a precise appraisal of the process of decision-making in agriculture. It also tries to sort out the factors which the farmers take into account while adopting some new methods or inputs. The second part of the same chapter gives a brief note of some models of diffusion of agricultural information and also analyses the role of extension services in disseminating agricultural knowledge in the rural areas.

The chapter IV presents the design of the study. The first part contains the hypotheses and also the norms followed in conducting the study. The second part of the chapter describes the setting and gives a bird's eye view of the structure of farms, cultivation practices, and socio-economic profile of the farmers from the area of the study.

Chapter V presents the interpretation of data. It analyses the collected information from the area of study on the light of the hypotheses. The chapter VI is the concluding part which gives a brief summary of the study and some policy implications.

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CHAPTER - I

INTRODUCTION

## INTRODUCTION

The object of education, is to provide wise exercise for capacities, wise direction of the tendencies, and, through this exercise and this direction, to furnish the mind with such knowledge as may contribute to the usefulness and enrichment of individual and social life. So there exists a dialectical relationship between society and education.<sup>1</sup> Education is both a product of society and a factor of social change. When education imparts proper skills and values and those are absorbed by individuals. They become more useful members of the society. From this perspective we look for the best direction for channelising this potential factor in modernising the people and in bringing the conditions for allround prosperity.

India is a country where around 80% of the population depend on agriculture. The people here practise agriculture more as a way of life than as an occupation. But this attitude towards agriculture has proved to be detrimental in their part. While there has been marked progress in other sector, agriculture has been trailing behind, unlike those of other

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1. Malasis Louis, "The Rural world ' Education and Development" Croom Helm, London. 1976, p. 38.

progressive developing countries, Indian farmers have not generously accepted advanced agricultural practices and scientific methods of cultivation. The traditional practices are still dominant in agriculture.

"Farming, based wholly upon the kinds of factors that have been used by farmers for generations" is called traditional.<sup>2</sup> As Prof. Schultz points out, traditional agriculture is niggardly<sup>3</sup> and a country dependant upon traditional agriculture is inevitably poor. Past studies also show that few countries have experienced sustained economic development without the growth of the agricultural sector. All those countries which have experienced significant growth in agriculture have also achieved a more rapidly growing economy. So we need a transformation of agriculture into a highly productive sector. To achieve this goal farmers will have to master new skills and follow modern farming practices.

The government has attempted to provide the infrastructure and required environment under different

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2. Schultz, T.W., "Transforming Traditional Agriculture" The University of Chicago. 1963 pp. 3-4.

3. Ibid., p. 43.

programmes like I.A.A.P., I.A.D.P, H.Y.V.P. etc. It has also launched the National Extension Service in 1953 as a drive for the dissemination of the farm informations, educating and helping the farmers to integrate those in their own practice. As a result of these integrated efforts the so-called tradition oriented farmers are increasingly taking to modern methods of cultivation. However, the extent of adoption of such improved practices varies from region to region and from farmer to farmer.

Other than the extension service the knowledge of new agricultural technology originating at research centres and agricultural universities also flow through various channels such as mass - media (Radio, News papers, magazines, bulletins and etc) and through non institutionalised sources like web of familyties, words of mouth etc. However the availability of information and the speed with which it is transmitted alone don't ensure the complete success of agricultural communication.<sup>4</sup> Communication is a two way process. It is equally important on the

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4. Singhi, prakas, m., and Mody, Bella.,  
"Farmers' Ignorance and The Role of Television",  
Centre for management in Agriculture, I.I.M.  
Ahmadabad, 1974. p.2.

part of the ultimate users of these new scientific knowledge to conceive the exact nature of practices to be adopted and to show interest to experiment with those new productive options.

Various sociopsychological and economic factors have been found to contribute to the differences in the adoption behaviour of the farmers. Farmers in large scale react positively and quickly to attractive prices for their products. However they can not respond appropriately and quickly unless they clearly understand both the feasible technologies applicable to their farm as well as the agroeconomic environment in which they operate. It is wrong to consider that all farmers possess the same ability to organise and manage their farms. Farmers differ in their managerial abilities because of differences in personal characteristics like experience, education in likes and dislikes preferences in training, in organisational capabilities and so on. Similarly farms also differ in their physical conditions and in economic potentialities, depending upon the size of the farm, its site, location, soil composition the local climatic conditions, irrigation facilities available etc. In view of the diversity in the

individuality of farmers and farms there can easily be great diversity in managerial efficiency of farmers. In a developing economy like ours where the traditional agriculture and modern agriculture co-exist the range of variation in farm management efficiency is bound to be greater.

Farm management under the traditional agriculture is largely a simple and routine affair as compared to that of the modern agriculture. It is with progressive introduction of science and technology into farm production that farming becomes a business involving wide range of decisions about acquisition and utilisation of resources, calculation of investment income and profitability.<sup>5</sup> Therefore the farmers' knowledge of agricultural methods and appliances is of paramount importance, in transforming traditional agriculture. Emphasising the human factor Prof. Schultz pointed out that the tempo of economic progress can be accelerated not only by increasing investment but also by conscious measures to make men more skillful through greater contribution in education training and research. As there is a good correlation between investment in man, (increase in human skill) and expansion of national product, Investment in human factor is bound to play

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5. Narayana, D.L., "Entrepreneureship and Agricultural Development", Indian Insitute of Asian Studies., Bombay, 1966, p.36.

a crucial role specially where the farmers are still the victims of ignorance, illiteracy, idleness and inertia. Empirical knowledge derived from management studies reveals that strong motivation towards economic goals, good training and experience and adequate fund of knowledge expressed in appropriate practices are definitely associated with a high degree of financial success.<sup>6</sup> Hence the transformation of traditional farmers is a prerequisite for the transformation of the agriculture. But that doesn't mean just to lure the farmers, and to make them adopt some innovations. The objective is rather to keep their professional skill upto date.

Purpose of the Study: -

Researchers have tried to find out the various socioeconomic factors, expected to contribute to the adoption pattern of farmers and to change their attitudes to modern farming practices. But in Indian context such studies are only a few. There is a need for conducting such studies in depth in different parts of the country

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6. Reiss, F.J., "Individual Differences in Entrepreneurial and Managerial Ability Among Illinois, Farm Operators", Indian Journal of Agricultural Economics, no. 3. 1962, p. 63

which have varying farming patterns, different sets of infrastructure and modes of living. The present study is an attempt in this direction to assess the effectiveness of education in its various forms in increasing the access of the farmers to the modern methods of cultivation. The question, dealt here is where the extension services are delivered as the major source of technical information whether the farmers with more formal education benefit more than the less educated ones". The broad objective of the study is to specify the relationship between education and adoption of agricultural innovations in the farming practices.

Factors Related to Modernised Farming :-

Different studies have pointed out that knowledge of new agricultural technology originating at research centres flows through channels such as massmedia, institutionalised sources like extension services and other non institutional sources. In India massmedia are not yet welldeveloped<sup>7</sup>. In rural areas information pertaining to agriculture generally flows not through massmedia, but mainly from institutionalised sources, that is the extension agencies to a small group of

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7. Gaikwad, V.R. and others, "Opinion Leaders and Communication in Indian villages", I.I.M. Hyderabad, 1972, p.2.

innovative farmers and from them the knowledge trickle down to other section of farming population. Studies in diffusion of agricultural innovations have pointed out that it takes time between 5 to 25 years just for the diffusion of an awareness of various agricultural innovations such as ammonium sulphate, super phosphate and pesticides in Indian village communities. Moreover after such a long period of time not all the members are aware of these innovations. Gaikwad<sup>8</sup> observes that the advantages of the institutionalised sources is taken by proportionately less number of farmers coming from lower strata, namely those who are illiterate, are socially less active and have small land holdings and small agricultural income. This class of people generally depend upon its social circle and continue to be the late adopters.

The Decision Making in Agriculture :

Trying any new options or adoption of any agricultural innovation depends<sup>on</sup> various factors. It involves decision making on the farmer's part. These decisions take into account not only the economic advantage occurring from adoption but also depends upon the setting in which he is placed. It is a product

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8. Gaikwad, V.R., "Trends of Change in Eight Indian Villages", Behavioural Sciences and Community Development, vol IV, no. 2, 1970, p.p. 99-106.

of a complex interplay of both the situational and psychological factors.<sup>9</sup> Besides, the factors posing blockades to adoption are lack of knowledge about scientific crop raising, lack of skill to adopt the innovation, lack of time to go deep in-to details of modern agronomic practices. Farmers feel more secured with long experimented traditional methods than the novel one. The fatalism, and alongwith its, the incompatibility of scientific package of practices to the available resources both material and immaterial, pose the major blockades.

The Controlable and Uncontrolable factors :-

The efficiency in managing the farm from the point of view of individual cultivator depends upon two sets of factors.<sup>10</sup> Factors which operate independently of individual farmer's control such as the influence of natural forces environmental conditions, seasonal and climatic condition, draught, flood, inherent soil fertility which cannot be altered by or controlled readily by the farmer's individual effort. It is a

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9. Gladwin, Christina, " Theory of Reallife Choice , Applications to Agricultural Decisions Making" Barlett, P.F. Academic Press, Chicago, 1980. p.p. 48-82.
10. Narayana, D.L., Op. cit., p. 33.

fact that risk and uncertainty arising out of natural factors pervade agricultural production to a marked extent, but it can not also be denied that a considerable portion of risk and uncertainty can be avoided by intelligent action and rationalisation and insurance. So broadly the two sets of factors are factor under partial control and factor under complete control. Factors of first category relate to production pattern with in certain limits and factor constraints, and the second set includes the choice of crops and varieties, method of cultivation, use of fertilizer and other available inputs to agriculture. So although the natural environment and macroeconomic factors are not under the control a prudent farmer may try to evolve suitable conditions, select the best strain of seeds or variety of crop to suit the climatic condition, adopt suitable farming practices to realise maximum yield under the given geological or soil composition of his land. He may go for a change of crop in relation to changes in the prices and marketing condition. Thus, the farmer can influence the economic results of his farm considerably inspite of the uncontrollable factors.

The Personal Attributes:

Westermark<sup>11</sup> comments Economic progress and

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11. Westermark, "Indian Journal of Agricultural Economics, vol. xvi, no. 2, 1961, p.13.

profitableness of course depends on many things as for example the climate.....etc. However important the collaboration between natural and economic resources of agriculture is, for successful activity they only constitute the instruments of production. It is the personal contribution of the farmer entrepreneur which is eventually decisive. How often has it not been seen that where one entrepreneur has been stumped by his task another has come off with flying colours.

While explaining the perceptible differences in agricultural production among countries we find neither the infrastructural nor the inputs as strong explanatory variable. The key variable in explaining the differences in agricultural production is the human agent<sup>12</sup>, i.e. the differences in the level of acquired capabilities of farm people.

Ezra Sadan cites the example of Israel in this context.<sup>13</sup> During the period 1952-59 agricultural production more than doubled although farm employment rose only a fourth. The land was not of high quality but modern factors of production were effectively used.

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12. Schultz, T.S., "Transforming Traditional Agriculture", University of Chicago, May, 1963, p.16.

13. Ezra, Sadan, "Agricultural Settlements in Israel: A study in Resource Allocation", In, Schultz, "Transforming Traditional Education"., 1964.

The people who entered upon agriculture were not skilled at farming for they were mainly non farm people but most of them had a good deal of schooling.

## SECTION- II

### Studies in Modernisation of Agriculture :

The overall picture, projected by available literature shows that educational factor is important as it makes the farmers see the advantages following from new methods of cultivation.

Fleigel and Kivlin<sup>1</sup> study of "Attributes of Innovations as Factors in Diffusion" explicitly deals with variables of innovation themselves, such as cost, returns, efficiency, risk and uncertainty. Communicability and congruence as the determinants of diffusion. It was found that some sharp differences occurred on the attributes that reflected perceived cost, risk and uncertainty and desirability of rapid changes. The study found that the innovations, perceived as most rewarding and least risky are adopted most rapidly and high cost doesn't serve as a constraint on adoption in all cases.

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1. Fleigel, F.C and Kivlin, J.E., "Attributes of Innovations as Factors in Diffusion", A.J.S. 72(3). 1966.

Emphasising on social factors underlying <sup>2</sup> agricultural development E.M. Rogers and L. Svenning in their "Modernisation Among Peasants" pointed out that literacy and massmedia exposure contribute for modernisation of the peasantry section. 'Modernisation' for them is a process under which the traditional peasants take on a more complex rapidly changing lifestyle. They cannot modernisation as essentially a communication process in which new ideas are transformed from outside. In this study they used key concepts of literacy massmedia exposure, cosmopolitanism and achievement motivation in effecting changes in human behaviour. They examined the farmers' behaviour in a sociopsychological context in relevance to the changing situation. Rogers and Svenning describe innovativeness as the degree to which an individual adopts new ideas relatively earlier than other in his social system. They classify the peasants into five adopters categories. Those are innovators, early adopters, early majority, late majority and laggards.

Radhukar (1962)<sup>3</sup> in his "Farmers' Characteristics Associated with the Adoption and Diffusion of Improved

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2. Rogers, E.M. and Svenning, L., "Modernisation Among Peasants", Holt, Rinehard and Winston, Inc, 1969.

3. Radhukar, W.B., "Farmers Characteristics Associated with the Adoption and Diffusion of Improved Farm practices", I.J.A.E, vol. xvii, no. 2, 1962.

Farm Practices" tries to find out the relationship of personal and social characteristics of farmers to the adoption of improved farm practices and the extent to which these farmers are reached by communication media for adoption of improved farm practices. The study reveals that the level of education is significantly related to the adoption of improved farm practices. Education is an important factor for the adoption of recommended practices. Farmers with primary or middle school education tended to adopt half of the recommended practices and with high and college education were likely to adopt greater number of practices the study also revealed that farmers with exposure to greater number of information sources were more likely to be the adopters than the farmers with less exposure.

S.P. Bose (1964)<sup>4</sup> in his paper "The Diffusion of Farm Practices in Indian Villages" has observed that a new practice introduced in a village is not accepted straightway but a considerable time lapses before all or even a majority accept any new practice. The rate of acceptance is not even. There appears to be a resistance at the beginning. Then with the passage of time the resistance breakdown, and more and more people begin to adopt the practices.

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4. Bose, S.P., "The Diffusion of Farm Practice in Indian Villages", R.S. 29(1), 1964.

Sachindananda<sup>5</sup>, in "Social Dimensions of Agricultural Development" tries to establish strong correlation between education and adoption. In his comparative analysis of I.A.D.P. and non I.A.D.P. Blocks he marks that the importance of education is relatively less in the I.A.D.P. Blocks. This is due to the fact that in I.A.D.P. areas education is only one of the factors, promoting adoption but in other areas where opportunities and incentives for adoption are not many, it is the only factor. Education for him makes an impact only beyond the middle school level.

The study of Y.P. Singh<sup>6</sup> (1973) in his paper "The Key Communicators of Technological Innovations", tried to uphold the social and personal characteristics and assess their role in technological change in agriculture. The study reveals that the persons who play a major role in agricultural diffusion possess distinct socioeconomic status, education, changeagent linkages, changeproness and communicability. The study goes beyond most of its types in the number of sociopsychological variables included in assessing characteristic differences between communicators and non communicators in diffusing the new ideas and practices.

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5. Sachindananda, "Social Dimensions of Agricultural Development", National Publishing House, New Delhi-1972.
  6. Singh, Y.P. "Key Communicators of Agricultural Innovation", Agra, 1973.

C.H. Hanumanta Rao (1975)<sup>7</sup> in his book "Technological Change and Distribution of Gains in Indian Agriculture" discussed how the technological changes have contributed to the widening the income disparities between regions, from small and large farms. His study points out that the socioeconomic infrastructer is the most important factor for improving the distribution of gains of technological advancement.

Singh and Ready (1965)<sup>8</sup> in their paper "Adoption of Improved Agricultural practices of Farmers have observed that some of the socio-economic characteristics such as farmsize economic status and social participation and education are associated with adoption of improved practices and they function in a definite direction leading to the adoption of new practices.

S.P. Bose and Dasgupta (1962)<sup>9</sup> in their study have established positive relations between diffusion and characteristics of practices like complexity,

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7. Hanumanta Rao, C.H., "Technological Change and Distribution of Gains in Indian Agriculture", MacMillan, Delhi, 1975.

8. Singh, S.N. and Ready, S.K., "Adoption of Improved Agricultural Practices of Farmers", I.J.S.W., vol. xxvi, no. 1, 1965.

9. Bose, S.P. and Dasgupta, S., "The Adoption Process", Department of Agriculture, Govt. of West Bengal, 1962.

expensiveness and lack of immediacy of return. In their book "The Adoption Process" they marked that the innovations perceived as most rewarding and least risky are adopted most rapidly.

D.P. Chaudhari (1971)<sup>10</sup> in his book "Education Innovations and Agricultural Development" inquires into the effects of general formal education on agricultural productivity and innovations, that took place in North India in the wake of the Green Revolution. His study shows that general education up to secondary level has a significant impact on diffusion of technology and agricultural productivity in the Indian wheat belt in the North where the H.Y.V.S. have been introduced widely. But he concluded that the level of education is not proportionately related to the level of adoption. He points out that mere literacy is inadequate to ensure widespread adoption and diffusion of highyielding innovation, but sustained rural education up to secondary level is required for the attainment of the objective. Education is both the cause and the result of higher agricultural productivity. He realises that an improved content of agricultural modernisation and a better technology of education needs to be investigated and experimented with for formulation of rural educational policy.

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10. Chaudhari, D.P., "Education Innovations and Agricultural Development", Croom Helm, London, 1971.

Pradipto Roy, Fredrick, C. Fliegel, J. E. Kivlin and L.K. Sen (1968)<sup>11</sup> in their study under "Agricultural Innovation Among Indian Farmers" dealt with the causes of spread of modern technology among the rural people. The study analyses the factors under three stages. First the community setting in which rural people live to determine to what extent the nature of the community itself affects the adoption of modern technology. Second is to determine factors affecting the innovative behaviour of the individual farmer within the community setting. The study shows that direct contact with the extension personnels is more functional for agricultural adoption. The more important aspect of their derivation is that the general socio-economic status of the farmer in terms of his living educational status are strongly and positively related with the innovativeness.

Raza and Ramachandran (1990)<sup>12</sup> in their book "Schooling and Rural Transformation" marked that the propensity to modernise increases with educational difference. The access to the institutional sources of agricultural finance increases with education. The difference between no schooling and some schooling increases the propensity to use cooperative societies, but for many other aspects the diffusion pattern in rural

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11. Roy, Pradipto and others, "Agricultural Innovation Among Indian Farmers", N.I.C.D., Hyderabad, 1968
  12. Raza, Moonis, Ramachandran, H., "Schooling and Rural Transformation", N.I.E.P.A. Vikas Publication, 1990.

**society neutralise the additional advantages connected with education.**

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A.S. Seetharamu (1980) in his study "Education and Rural Development", substantiates that education is one of the significant factors in development responsiveness. The study finds that those with education fair for better than the illiterates in development responsiveness though education is not essential for that. The concern of the study is about the responsiveness of people in rural areas with different levels of education or no education at all to development programmes in Karnataka.

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13. Seetharamu, A.S., "Education and Rural Development", Institute for Social and Economic Change, Bangalore, 1980.

CHAPTER-II

INVESTMENT IN DIFFERENT FORMS OF  
FARMERS' EDUCATION

The Place of Education in Agricultural Development:

A forward thrust in agriculture requires a combination of circumstances, and education must be one of them.<sup>1</sup> With the availability of many new inputs and technology greater specialisation takes place which call for new skills and knowledge to deal with the new services, products and technology, previously unfamiliar to the area. A comparison of development in Japan and India shows the importance of education on agricultural productivity.

A Cross Country Observation:

On percapita basis India has six times as much agricultural land as Japan.<sup>2</sup> The land resource of India as a natural endowment is also of better quality. Even in terms of irrigated area India has merely three times as much as Japan. But total agricultural production in Japan has become three times that of India. There is no doubt that the agricultural factors employed in Japan are far better than those used in India, but more important still are the high level of farming skills and the amount of schooling that the farm people of Japan have acquired compared to the

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1. Coomb and Ahemad, (1974) op.cit, p. 14.

2. Schultz, T.W., (1963) op. cit., p. 21.



low level of skills and general illiteracy that still prevails in rural India.

The success in agricultural production in the united states also tells the same story. The upward thrust began towards the beginning of the thirties when the effects of education was accumulating.

A similar observation was made by Lester Brown.<sup>3</sup> An examination of literacy level in major rice and wheat and corn producing countries shows a total of 24 countries with literacy levels below 50%. During the period 1935-39 to 1960-62 14 of these countries had rising yields 9, had declining yields and one had same yield. The average rate of yield increase for this group of these countries was 0.17% per year. Among 13 countries with literacy level between 50% & 80% 11 had rising yield, one had declining yield and one had same yield. The average rate of yield increase in this group of countries was 1.02% per year. Among the 23 major grain producing countries with a literacy of above 80% 22 had rising yields and one, had same yield. The average yield increased by 1.43% per year. This crosssectional study establishes the fact that there is a broad and direct relationship between the percentage of literacy and the productivity in agriculture

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3. Brown, R. L., "World Population, and Food Supplies", A.S.A. Publication no. 5, 1980, p.p. 12-13.



Intersectoral Variations :

This implies modern agriculture cannot thrive without trained and educated farmers.<sup>4</sup> While comparing industry with agriculture we find a strong point of difference. While agricultural productivity in the result of decision and action of millions of cultivators that in the Industry depends on the entrepreneurs who are relatively fewer, better educated and accustomed to the modern methods of management and technology. So it is comparatively difficult to modernise agriculture. For agricultural transformation, crores of farmers in India are to be induced and reoriented towards technological progress. That necessitates a flexible, effective, and subtle means, which education to some extent imparts.

The Human Factor :

This is also what Ashok Mehta observes in his words "It is time for us to realise that there is no shortcut to the agricultural revolution. The agricultural revolution which we conceive today will depend for its success on our ability to adopt ourselves to the different techniques best suited for different region and different crops, techniques either, already devised or to be devised

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4. Narayana, D.L., (1966) op. cit., p. 67.

through scientific research and advances in different fields. This adoption would call for the reorientation of human factor in agriculture through continuous education demonstration and training as well as through the provision of essential inputs and services to the farmers. It is only if we succeed in making this reorientation shall we be in a position to bring the small farmers in-to the vortex of the revolution, without them however the revolution will die at birth"<sup>5</sup>.

Education and Rural Areas :

The educational needs in rural areas are numerous.<sup>6</sup> Those can be grouped under four broad heads:

- (i) General or basic education.
- (ii) Family improvement education.
- (iii) Community improvement education and
- (iv) Occupational education.

The general or basic education includes literacy numeracy and elementary understanding of one's environment what primary and general secondary school seek to achieve. The occupational education is designed to develop particular knowledge and skill associated with various economic activities and profession in general.

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5. Mehta, Ashok, "Indian Journal of Agricultural Economics" vol. xx, 1965, p. 19.

6. Coomb and Ahemad (ed) (1974) op. cit., p. 15.

So farmers in general need a combination of both the farming and nonfarming skills. A farmer is not only required to be skilled in working the soil, he should also be able as well to built and repair simple instruments and structures, arrange and maintain a watersupply construct bounds produce cottage industry items for sale in the market place, using the byproducts in the most profitable way. Moreover, the more sophisticated his agricultural technology becomes the more ancillary skills a farmer requires. The skill requirement increases rapidly when more advanced technology begins to penetrate in rural areas. New types of farm impliments and methods require new skills for operating them and maintaining them in working condition. So the inherited traditional skills which pass from generation to generation often fall short to handle the new skill requirements.

As we find, with agricultural development gathering momentum in India, farmers are more and more required to obtain production credit, operating cooperatives, managing retail stores, transporting production to the cold storage, acquiring market information etc. All these grow and multiply with further advancement. So education and training in different forms serve as a catalyst in agricultural development and sets the

precondition for agricultural take off.<sup>7</sup>

Education For Self-Sustaining Agricultural Development:

What we generally find in different regions is that although most of the farmers are often illiterate but are not ignorant so the more pertinent question is transforming the concern of the farmer than transferring the technology. Development cannot be a self-sustaining process unless farmers control their own affair and actively participate in the process of development. It is not the technical deficiency that retards the development, but the social problems related to people who are not in position to change their condition.

It has taken a great deal of learning and trial and error for agriculture to reach the present state.<sup>8</sup> But the same process of learning from experience and wants can no more satisfy the objective of rapid agriculture is a simple matter of telling and showing the highly successful modern technology of Japanese and American agriculture. Farmers in Indian condition rarely search for the new technology. Moreover when they are persuaded, the acceptance of those much depends on farmers confidence

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7. Malasis, L. (1976) op. cit., p. 51.

8. Ryan and Saad, (ed) (1980) op. cit.

and on learning how to use the new factor effectively so what Schultz comments that the most efficient way in this regard in the long run is schooling. Schooling what he views as an investment in human capital and in this case it is an investment in farmpeople. In his words "rapid sustained growth rests heavily on particular investment in farmpeople related to the new skills and new knowledge that farm people must acquire to succeed at the game of growth of agriculture".<sup>9</sup>

Education and Stages of Agricultural Development:

The process of agricultural development shows that there was a time when growth of agriculture did not wait schooling and training schooling played a very insignificant role but now where technically superior factors of production are a principal source of agricultural growth schooling counts.<sup>10</sup> A lot of training is required for successful adoption of a complex agricultural factor. But it is surprising that little attention has been given to the process of learning, and also to the question how much learning is required and at what time. This is because it is not sufficient merely to adopt new factor and reap the larger return. It is quite misleading to think that once the farmers have successfully substituted modern

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9. Schultz, T.W., (1963), op. cit., p. 170.

10. Schultz, Ibid. p. 178.

for traditional agricultural factors, like any once over change, no or only a little additional learning will be necessary from then on wards. But that is not being observed from the experience of the advanced countries. Their experience propagated the fact that lack of education means the human agents has fewer capabilities than he would have if he might have been educated and acquired the skill and some useful knowledge associated with schooling.<sup>11</sup> The farmer suffers the deprivation of basic learning skill.

#### Types of Learning :

So learning in this connection can be classified into some useful knowledge and some useful skills. But both are verymuch complementary to each other and some times they are inseparable. The new knowledge and skills as we find can be acquired in three ways. Those are through trial and error based on sheer experience the on the job training, and the third is by schooling.

#### Formal Education:

Begining from the third type schooling in general is expected to contribute substantially to the achievement of the objective of changing the quality of thinking alongwith adding to the quantity of factual knowledge.

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11. Schultz, Ibid., p.49.

To enumerate the contributions education in form of schooling enunciates the adoption of more ambitious standard of living with sufficient scope to call forth new efforts. It develops an enquiring mind rather than minds which too readily accept a tradition or superstition. It increases foresight and readiness accuracy reliability and brings initiative in adopting a method or taking some action on which other hold back. Readiness to work hard and sincerely and readiness to cooperat in new ways and new organisations also fallow up. These are some of the attitudinal changes which accrue to farmers alongwith formation of some basic skills of reading writing and arithmetics. Besides, some knowledge and understanding develop among the farmers, which enable them to appreciate changes, to understand the price movements, market trends taxes, and the functions of the available service units.

Effective Level of Formal Education:

Most of the empirical studies devoted to the study of this relationship unanimously conclude that agricultural productivity is significantly related to the level of education but those differ on the question, what would be the level of education that optimises agricultural development and they hold different views regarding

the types of education that to be emphasized at different stages of growth suitable to different conditions.

Schultz holds the view that primary schooling is the most profitable of all levels of education.<sup>12</sup> It entails the lowest cost per year of schooling for both the government and for the family a child belong to the children are still too young to do any appreciable amount of useful farmwork. So from a purely cost benefit consideration primary education is supposed to contribute more in comparison to other levels. But in contrast to this view Chaudhari established the importance of education of secondary level.<sup>13</sup> The adoptive behaviour and use of H.Y.V.s chemical fertilizer and other institutional facilities were found more responsive to education of higher secondary level in comparison to the primary level or mere literacy.

Informal Education:

Other than formal education two other modes of education are- Informal education and Nonformal education. Informal education is a lifelong process by which every

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12. Schultz, Ibid., p. 201.

13. Chaudhari, D.P. "Education Innovation and Agricultural Development", Croom Helm, London. 1971.

person acquires and accumulates knowledge skills attitudes and insights from daily experiences and exposure to the environment at work, from the attitudes of friends, neighbours, radio, films and television.<sup>14</sup> Generally informal education is unorganised and often unsystematic, yet it counts for the larger part of a persons' lifetime learning.

Nonformal Education:

Nonformal education, on the other hand, is organised, systematic educational activity carried on outside the framework of the formal system to provide selected type of learning to particular subgroups in the population. So nonformal education includes for example agricultural extension, farmers' training programmes, adult literacy programme occupational skill training given outside the formal system with substantial educational purposes. However it is difficult to have watertight compartments between these three modes of education.<sup>15</sup>

Both the formal and nonformal education as they exist today have been organised to augment and improve upon the informal learning process. For adults who

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14. Coomb and Ahemad, (1974) op. cit., p. 8.

15. Coomb and Ahemad, Ibid., p. 9.

are committed to farming and who therefore cannot attend regular schools, formal courses those imported during the off season to teach new farm skills can be shown as a sort of formal mode of education. So adult education, to promote and facilitate certain valued type of learning such as reading and writing which individual can not readily acquire through ordinary exposure to their environment is sorted very high the "International commission on the development of education" recommends in similar line that "We propose lifelong education as the master concept for educational policies in the years to come both for developed and developing countries. The commission also points out that adult education is obviously more important than full time (school education) for the success of agricultural development during the transitional period. By adult education it means several forms of literacy work in general or technical training which increases the receptiveness to progress and also dissemination of new techniques.

So lifelong learning system should be designed to provide every individual with a flexible and diversified range of useful learning options throughout the lifetime<sup>16</sup>. This implies, both young and the adults should

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16. Malasis, L. (1976) op. cit., p.p. 110-112.

have acquired a primary education or the basic training which will enable the process of education to be continued and any such system would have to synthesise the elements of both formal, informal and nonformal education. The official educational statistics shows a very precarious condition of the rural formal education. The rural primary schools benefit fewer young than the official statistics show. This serious deficit in primary schooling compounds enormously the task of nonformal education.<sup>17</sup> But in contrast the rural nonformal education imparts comparatively few programme concerned with general basic education. The pattern of nonformal education programmes that has evolved so far is grossly inadequate and seriously imbalanced in relation to the educational needs of different groups in rural communities.

#### Nonformal Education of the Present State:

For (instance) the usual method of teaching literacy, to adults as it is found in practice is the alphabetical method.<sup>18</sup> The letters of the alphabets are taught one after another and then these are drilled in by combining into words. The adults get bored by this meaningless drill and give up learning, long before all the letters of the cases they end the process with learning how to write

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17. Coomb and Ahemad, (1974) op. cit., p.19.

18. Chickermane, D.V., "Experiments in Rural Education" Studies and Research in Rural Education, 1978, p.p. 66-67.

their names. As such the literacy acquired is superficial and lost much sooner than it is gained.

Effective Nonformal Education:

Four types of approaches are made under different forms of nonformal education.<sup>19</sup> They are:

- (1) The extension approach.
- (2) The training approach.
- (3) The cooperative self-help approach.
- (4) The integrated development approach.

These are not mutually exclusive compartments. The extension model works with the objective of transforming the subsistence economy into a dynamic market economy. The training approach in contrast emphasises the communication of information about innovative technical practices, seek for a more systematic and deeper learning of specific basic skills and related knowledge.

The cooperative self-help approach on the otherhand starts with the assumption that the complex process of rural transformation must begin with changes in the rural people themselves, in their attitudes towards change in their aspirations for improvement and aboveall in

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19. Coomb and Ahemad, (1974) op. cit., p. 24.

their perception of themselves and of their own inherent power individually and collectively to better their condition. The chief motive power for rural development must come from within . Once the people are ready to move, help of various kinds in response to their expressed needs may be essential to sustain progress.

This process of self discovery and initiative leading to self-help and self-management is seen as education, but of a quite different sort, than the education provided by formal schooling that tends to alienate them from their environment. The process of self-help is not indigenously accomplished by the rural people, rather considerable outside help is needed to break the environmental bottlenecks to rural development.

Lastly, integrated development approach is highly versatile and elastic which combine the elements of an methods of extension, training approach and self-help.

CHAPTER - III

DIMENSIONS OF DECISION-MAKING IN AGRICULTURE

## Dissemination of Agricultural knowledge and Information

Scientific knowledge will be fruitless if it is not extended to farmers for utilisation in their field to realise better production.<sup>1</sup> The two process that determine the progress are innovation and imitation. Innovation without widespread imitation will be of limited value for economic growth. But the difference between innovation and imitation is often one of degree and not of kind. Other things being equal imitation is easier and less risky as compared to innovation, for the innovator by virtue of his effort bears the initial costs and accumulates empirical knowledge which can be availed by imitator of the process.

### Models of Diffusion:

Prof. Havelock and his colleagues have distinguished three general models that can be used to investigate and explain the creation introduction and diffusion of innovation.<sup>2</sup> These models are :

(i) Problem solver model (ii) Research development and diffusion model (iii) The social interaction model.

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1. Narayana, D.L., op.cit., p.39.

2. Havelock (ed) "Planning for Innovation Through Dissemination and Utilization of knowledge" Ann Arber 1973.

The problem solver model involves two roles that a client who has a problem which he wishes to solve in the one hand and the problem solver usually an organisation which would provide a solution to the problem. The starting problem is the existence of a problem alongwith the need to solve it. The second model of diffusion supposes that a solution of a problem will create corresponding demand for the process of solution from the farmers. The third model of social interaction based primarily on the introduction and diffusion of innovations, a process which requires interaction and communication among individuals with in social unit. That demonstrates the importance of social factors in the explanation of behaviour like the influence of opinion leadership interpersonal contacts social integration formal and informal organisation etc. These three models are not mutually exclusive to eachother. Peculiar to the Indian farming set up the third model explains a great part of adoption behaviour. If a new practice has some high initial advantages it becomes a self-sustaining and self generating with high favourable spread effect. If the method were to involve any positive loss to the villagers he readily gives up the attempt to continue with, and reacts very harsely.<sup>3</sup>

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3. Ryan, John and Saad Adib.T., "Agricultural Education for Development in the Middle East", American University of Beirut, 1980. p. 52.

As the rural people are very sensitive the revulsion spreads widely and an attitude of opposition develop among them. Some times even the best of the promising methods or improved practices may fail to take roots if it is introduced halfhazardly or improperly without adequate preparation of the community with necessary understanding.

The Problem of Diffusion of Knowledge :

Without a nourishing flow of pertinent knowledge and the capacity to convey it effectively to farmers agricultural knowledge is little more than a series of rituals.<sup>4</sup> To maintain such a flow a developing country requires a knowledge generating process of its own. Farmers are rarely benefited by the research work done else where if they are not communicated and are convinced about the advantages of the new methods. "Agricultural Universities, technological Universities and rural Universities .....are regarded as a major source of generating productive knowledge in the field of research teaching extension and consultancy services". Realising the confinement of research work in the laboratory of Universities and the demonstration field Prof. K. Chellapan comments - that " there is a great need for an active and continuing interaction between Universities and the users to fulfil the rural development efforts.

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4. Coombs, Phillip. H. Ahemad Manzoor, "Attacking Rural Poverty", John Hopkins University press, London, 1974, p. 120.

In the learning and transfer process the Universities involve more at the levels of memory, and understanding and less in the applications and transfer".<sup>5</sup> His observation is based on the field experiments in the University - Gandhi Gram Rural Institute. He also realises the need for an active extension service network as he finds the number of such Universities is small that is 165 and the people to be served are more i.e. (820 million). The Government has taken upon itself the very important responsibility of extending knowledge made available in the laboratories and research stations to the people who need it . This process of extending the knowledge of recent advances in science and technology to the people who use it most is known as extension.<sup>6</sup> The extension agency discharges functions such as educating farmers in scientific ideas in agriculture and to enthuse them to adopt these, solving problem of farmers in agricultural production and ensuring supplies and services to farmers.

Extension System :-

The National Commission on Agriculture (Govt. of India 1976) has a much broader perspective of the extension system. Extension in its view refers to informal out of

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5. Chellipan, K., "Role of Universities in Rural Development", New Frontiers of Education, July - September, 1990.
  6. Singhi, P.M. & Wadwalkar, S. and others "Management of Agricultural Extension" I.I.M. Ahemadabad, 1982, p.p. 2-4.

school education and services for the farming community to enable them to adopt improved practices in production management and conservation and marketing of agricultural and allied activities . Agricultural extension aims at not only imparting knowledge and securing adoption of a particular improved practice but also changing the outlook of the farmer to the point where he will be receptive to and on his own initiative continuously seek means of improving his farm occupation, home and family life in totality.

To summarise extension is viewed as an educational programme to be undertaken by the public agencies to activate the process of transfer of knowledge science and technology from laboratories to people in order to help people to help themselves, Change their attitudes and skills, help them in farm planning, decision making, use of inputs, storage, processing and marketing and etc.

In terms of the organisational structure<sup>7</sup> at the bottom of the hierarchy in the field level a V.L.W. is provided for a group of about 320 farmers in the irrigation command areas and for 500 farmers in other less intensive areas. An Agricultural Extension officer is

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7. Coombs, Phillip. H. Ahemad Manzoor, op.cit., p.p. 28-29.

provided for supervising eight V.L.W.S. Since the early fifties apart from providing more staffs and funds the extension strategy has also become increasingly complex. By the mid sixties a programme on national demonstrations on farms. Once more the limited performance of the Green Revolution has led the Govt. with the help of world bank consultants to workout a new approach to tackle the problem of agricultural extension. The new approach was formulated in the mid seventies and was operationalised in 1978. This was to revitalise agriculture through revitalising the extension services and research.

Conditions for Successful Extension System :-

The success of such a system requires components which together perform five critical functions : i.e. Identification of knowledge needs of the farmers. Generation of knowledge to meet the identified needs. Dissemination and application of knowledge and the staff development and management of the system. The main problem of extension worker is to make contact of minds which results in imitation, often the extension worker has to persuade the farmers of some locality to adopt the better methods<sup>8</sup>. If once an innovation succeeds it calls for gossip, interest investigation and discussion

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8. Shinghi, P.M. and others op.cit. p.p. 5-9.

for final adoption. If the extension worker succeeds in solving some problems which worry the peasants very much, he gains their confidence. But most important is creating an atmosphere where the farming community must consider extension staff as an integral part of their community and look for his advice.

It is through communication that the flow of information and the circulation of ideas is attained. The process of communication doesn't deal only with the source of first information about a new idea. A great deal depends upon how the change agents or extension officers go about their job. The success of the programme depends upon the attitude and behaviour of the change agents towards the farmers and the village people at large.

The agricultural extension system as it is functioning presently is founded on a narrow vision of the objectives and process of agricultural education to promote mass development. Extension is seen mainly as a process of informing farmers about new technical practices and persuading them to adopt them which shall bring about increased agricultural output.<sup>9</sup> So increased production seems to be the overriding objective and criterion of success of agricultural development.

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9. Freire, P. "Pedagogy of the Oppressed", The Seabury Press, New York, 1976. p. 52.

The common ailment found all over the country that the extension services with the purely technical aspects of agricultural production leads to serious neglect of other important knowledge needs of the farmers in the rural areas, as very often their main needs often run in other directions. The local extension agents are treated as oneway messengers.

The success of the extension service and a two way communication depend on the favourable attitude of the farmers, at the receiving end. The entrepreneurship and, their imitative and adoptive behaviour depend on the culture, the level of literacy and education as all these factors contribute for better communication ability.

SECTION -II

The Adopters and Adoption :-

Adoption of innovation is always selective which item of a programme will be accepted and which, rejected and that too how soon depends upon a number of factors. Satadal Dasgupta (1963)<sup>1</sup> had classified the adopters in Indian villages in to three categories. Those are innovators early adoptors and average farmers. The innovators are such farmers who come foreward and sought information about the utility and application of a new item. The early adoptors seek information from the innovators before they adopt an innovation, last come the lateadoptors.

Entrepreneurship in Agriculture :-

According to Clarence Danhof<sup>2</sup> there can be fourfold classification of entrepreneurshship. The first and best type is known as the innovating entrepreneurship which corresponds to Dasgupta's innovators section. They are the aggressive experimentors comparable to the Schumpeterian model. The second category is the immitative entrepreneurship corresponding to Dasgupta's early

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1. Dasgupta, Satdal, "Inovation and Innovators in Indian villages" Man in India, vol. 43. no. 1, 1963.
  2. Research centre in Entrepreneurial history "Change and Entrepreneures", Havard University, p.p. 23-24.

adopters. The section comprises the persons who are ready to adopt the successful innovations already experimented and perfected. In Indian agricultural set up they form the progressive section of farmers and the economy largely rely upon them to accomplish the goal of rapid economic development. The third class is known as the fabian entrepreneurs consisting of cautious and sceptical farmers, who will try to bring innovation when failure to do so results in loss. They are by nature nonenterprising acting with a great sense of inertia. The fourth category is the drone entrepreneurs. They are the farmers who refuse to change their farming style even if it means loss and low return in relation to other producers. The typical traditional farmer in underdeveloped countries constitutes a perfect drone entrepreneur while the fabian type is also significantly present in stagnant agricultural regions in terms of productivity.

The classification of entrepreneurs is not very exclusive type as there are found many other types too one of such is known as overcautious entrepreneurs who is not so progressive as the immitator. He is responsive but conservative enough to wait until the local people have accomplished success. For instance in introducing the new practices unless he is convinced, developing his own faith in new practices he

will not take to experiment. In general, peasantry of small means in underdeveloped countries respond slowly and cautiously for innovations suggested under the extension service programme.

So the two processes that determine economic change are innovation and imitation<sup>3</sup> while innovation is the soul force of economic development imitation constitutes its substance. Innovation without widespread imitation is often one of degree and not of a kind other things being equal imitation is easier and less risky as compared to innovation.

The Constraints in Decisionmaking :-

When a new practice is widely adopted by a community thereby enjoying its benefits, it becomes a self-sustaining and self-generating innovation with favourable spread effects. But the spread effect largely depends on the constraints involved with the new alternative. The constraints demand that the new alternative<sup>4</sup> or innovation perform better than the status quo on at least one dimension and equally as well on other dimension.

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3. Gladwin, Christina, (ed) op. cit., p. 60.

4. Narayana, D.L. op. cit., p. 19.

That implies the new alternative must yield some more advantage in atleast one direction. Covering the constraints for the new alternative since the farmer has got used to the traditional system. Very often the new alternatives are not very exclusive of eachother. That compel the farmer to order the alternatives on the basis of constraints. This ordering depends upon the farmer's introspection and his foresightedness. So the profitability criterion of decisionmaking varies from farmer to farmer even with homogeneous agro-infrastructural environment.

The constraints and decision making can be put to a decision tree model.<sup>5</sup> In the following example of decision tree different constraints are shown in the context of using urea in the field. Suppose the farmer uses phosphat in the field with the introduction of urea in the area he finds different alternatives and different constraints. All the alternatives are weighed on comparative advantages of urea on the traditional farming pattern and the constraints come from supply awareness knowledge, yield, cost and return, risk capital and other conditions. In a way farmer orders those constraints and takes the decisions at different level. The trees of decisions are big and small counting the constraints involved.<sup>6</sup>

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5. Gladwin, Christina. H. op. cit. p. 62.

6. Barlett, P.F. (ed) Gladwin, Christina. H. p.p. 45-69.

Constraints

Supply :-	Is urea available		
	Yes	No.	Not used.
Awareness :-	Are you aware of urea.		
	Yes	No.	Not used.
Howknowledge:-	Do you know what V.L.W. says about use of urea.		
	Yes	No.	Not used.
Yield :-	use both for good yield.	use traditional instead of urea.	Not used.
Return & cost :-	Gross Return for unit of urea that of traditional.	If equal or less	Not used.
Risk :-	If urea too risky to use.		
	No	Yes	Not used.
Other conditions:	Time and labour available for second use .		
	Yes	No .	Not used
Capital :-	Available credit/ capital to use urea with traditional.		
	Yes	No.	Not used
	Try in Both	In one	
		which crop need more urea.	

In regards to the constraints from status Quo (it can be said) adoption means coping with new problems. The traditional system is based upon long established routines in respect to all production activities. Introducing a new factor or new item thus would mean not only breaking with the past but also coping with a problem. This is because the production possibilities of the new items will<sup>be</sup> subjected to risk and uncertainties as yet unknown. In practice we find the agricultural factors that farmers employ have been used by them and their forebears for a long time and non of these factors meanwhile has been altered significantly as consequences of learning from experience, nor have many new agricultural factors been introduced. This shows why the farmers, limited to traditional agricultural factors feel more secured in what they know about factors than farmers who adopt and learn how to use new factor of production. <sup>7</sup>

The Causes of Nonadoption :-

To enumerate the factors underlying nonadoption of new items and new systems farmblindness<sup>8</sup> comes as the first stumbling block. It is a phenomenon which prevails in all professional groups as a consequence of working for a long

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7. Schultz, T.W., op. cit., p. 31.

8. "Indian Journal of Agricultural Economics" vol. xvi, no. 2 1961, p.31.

period of time in the same milieu. This characteristics appears strongly in the farmer. The farmer feels that certain factors are fixed and unalterable which makes certain failures inevitable and the farmer cannot do any thing about them. Absence of progressive outlook is another block. It is the result of traditional routine of working in agriculture without change for a long period. Environmental factors of ignorance, illiteracy and immobility stand in the way of conceiving a picture of better conditions and better ways of doing things. The third obstacle is the excessive dependence of the farmer on the neighbourers' opinion. Even when the farmer is induced to accept the extension agents advice he is bound to be overcautious experimenter as he lacks economic capability to bear the cost of failure over and above the inadequacy of confidence in new measures. Hence poverty constitutes an important hurdle for adoption of new methods.<sup>9</sup>

Taking the above factors in to consideration it is obvious that every new development programme for farmers may face different degrees of acceptance or resistance from the members of the community depending upon the mental attitudes, social and cultural values and the economic setup.

The degree of response in the adoption of a new practice or any item of technological change on part of the

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9. Narayana, D.L., op. cit., p. 41.

farmer may be classified into five stages. These are: (i) awareness of the existence of an improvement or facility. (ii) passive acceptance, that is an attitude of using without effort. (iii) preparedness, an attitude of readiness to adopt it. (iv) adopt-ing the practice, an attitude of progress innovation and experi<sup>m</sup>entation. (v) active acceptance, that is an attitude of continued effort and readiness to adopt it.

CHAPTER - IV

DESIGN AND EXECUTION OF THE STUDY

A Norm on Methodology :-

Various developmental projects , national extension services and other agencies propagating improved farming techniques in the rural areas are being undertaken for last three decades. Even if those policies never pay priority to any specific section, there exists great differences in acceptance of those new ideas among the farmers.<sup>1</sup> Recently the Green Revolution has shown a high inclination to the interest of the big farmers in the wheat belt of northern India. In spite of honest efforts made by the government and other agencies to bring the advantages of the revolution to other parts of the country very little progress has been marked. Besides, great degree of variation is found even among the farmers of a region in accepting the new scientific methods.

This shows that there are factors contributing to the farmers' progressiveness other than the infrastructural provisions, which implies that within a farmers' community the rate of acceptance and innovativeness as well is expected to depend upon economic position, social status, educational level, value system etc. of the farmer. The present study is intended to inquire into the extent

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1. Raulerson, C.H., "What we have Learnt From Twenty Five years of Agricultural Development" Agricultural Education for Development in Middle East (ed) Ryan, J. and Saad, A . T. American University, Beirut.

to which these factors and specifically education is responsible for the farmer to farmer variation in accepting improved agricultural practices.

The study is designed with the objectives to find out the following aspects.

- (1) How individual farmer differs in access and exposure to (communication) informations about modern agricultural technology on the basis of educational attainment. In this context the intension is to find out the difference in types of relationship with the extension agent and with other farmers of the region.
- (2) How the farmer differ in their ability to decode the information and in moulding the available information into their practical use.
- (3) On the basis of education what are the possible differences among farmers ability to plan and willingness to take risk in order to attain certain goal and also their differing value orientations.
- (4) To categorise the early adopters the immitators and the laggards and also the entrepreneurial ability in them.
- (5) The possible barriers they face and the differing number and intensity of such barriers on the basis of their educational attainment.

So the main focus of the study is the sociopsychological dimensions of education which contribute to agricultural development in terms of farmers' progressiveness and consequent increase in the productivity. The study also tries to focus on the extent, the farmers utilize, available services from cooperative societies, extension system and the village level worker.

Hypotheses :

- (1) Farmers with higher educational status tend to adopt the improved practices more than the farmers of lower educational status.
- (2) Farmers with required level of education take more advantage of the available extension services in comparison to that by farmers, not having the required level of education.
- (3) The sources of farm information differ from educated farmers to uneducated farmers.

The factors affecting adoptive behaviour of the farmer can be broadly classified into two categories viz. economic factors and sociocultural factors. But economic status is also related to some non economic factors. Farmers of higher educational status with proper communication channels and progressive cultural values may have greater scope and opportunities to benefit from new

agricultural ideas by virtue of their superior knowledge, skills and progressive value orientation.

The general hypothesis of the study is that the farmers' rate of adoption of improved agricultural practices is determined by their educational attainment.

The concepts and terms used in the study are defined below.

Adoption :- The actual use of an improved practice by a farmer on a trial or permanent basis within past year substituting some traditional ones.

Agricultural inputs:- This refers to the seeds, chemical fertilizers, pesticides and implements available to the farmers at the village level through cooperatives, private sources and extension services.

Educational status :- For operational convenience and to observe some distinct effect of education on agricultural practices educational status as defined here counts only the formal education of higher secondary level. Such an arbitrary definition of education was felt necessary on the basis, that education of atleast higher secondary in the present educational setup is expected to have some special impression on a person in comparison to a barely educated person with sufficient scope for informal and nonformal education.

The nonformal education here includes the adult education, and more specifically the training under extension services.

Selected Improved Agricultural Practices :-

Selected improved agricultural practices are those practices, popularised and sponsored by the extension agencies in that particular area and also by the agriculture department. They include use of improved strains, chemical fertilizers, improved farm instruments and plant protection measures pesticides, fungicides and weedicides.

This is essentially a microscapic study covering three sample villages. The data were collected through personal interviews with the farmers. Questions were phrased to elicit the desired information relying heavily on the experience of others with regards to the format. In short, a questionnaire was constructed using operationalisation of similar studies. Adequate care was taken to make the correspondents understand the objective of the study and the meaning, peculiar to different questions.

The basic criterion for selection of the villages was to findout the farmers with required level of education and also roughly typical of the range of variability of farming pattern. However official records showed

comparatively steady growth of agricultural production in that area. Criteria for selecting farmers for interview were more narrowly specified. Selection was restricted to farmers who actually made the day to day decisions on the farm. They are landowners themselves and the main occupation was farming for all the farmers. The purposive sampling was followed to find out 20 farmers with required level of formal education and 20 farmers well below the required level of education from the villages. But regarding the age structure, cost size of the land holding and variety of crops produced intention was to accommodate maximum variations. The objective was to purposively include farmers covering wide range of farming practices.

The interview schedule was broadly divided into three sections. First was about the personal data regarding age, occupation, literacy status etc. The second one included the general information about farmers' landholding land under highyielding varieties, use of any specific scientific instrument and the like. The second section asked for information about the economic factors and about the infrastructural facilities. The third section entitled the extent of adoption of improved practices and also about the communication behaviour. The third section was the most important section under the observation of which the study was undertaken.

Limitations:-

Even if maximum care was taken to include the perceived changes in the farming practices, lack of uniformity, that is multidimensionality of farming practices posed difficulties in taking note of all. Moreover, the decision regarding adoption and non-adoption of some items were half hazard, which required a lot of guesswork for both the interviewer and interviewee to decide whether an act comes under adoption or not.

Partial Coverage:- The study was confined to the farmers of only three villages cultivating a few variety of crops. Farmers, engaged in allied practices like poultry, fishery and dairy alongwith agriculture, were not reasonably covered. The study was confined to field practices only. But attempts were made to add maximum variability and maintaining flexibility in the process of data collection.

The limited scope :- Since agriculture was not practised in commercialised way the credit orientation and marketing of products were not observed in large scale. Only the membership to the cooperative society and source of market information were thus considered relevant to measure the progressiveness of the farmers and their communication ability.

The intention of revealing the farmers' value orientation regarding education of their children and the use of education in the farming practices was not attained with satisfaction as the respondents were found, giving contradictory views in this context.

The dependent variable in this study is the level of adoption of modern techniques of cultivation at the individual level. Since the major aim here is to explain different levels of adoption and to locate the responsible factors. The dependent variable was formulated in terms of farmers' responses to questions dealing with aspects of local agricultural practices. Some objective measures of adoption behaviour were sorted out. Those are cropping intensity, percentage of area under highyielding varieties, the percentage of crop supplied with chemical fertilizers, pesticides, and any positive change regarding crop produced or medium of irrigation etc. Absence of any prior index or relative importance of the above factors obviously delimits the study. However a great deal of exercise was done to formulate some tentative index of the relative importance of the factors under the dependent variable.

The Extent of Adoption in Context of the Study :-

The norms found relevant and followed in course of the fieldwork are given below:

Intensity of adoption was ranked high at the initial level in comparison to the adoption at the later stages which were merely supplementary to the process. This is because a shift from food crop to some cash crop corresponding to a change in profitability is of greater importance than using some new chemical fertilizer to the traditional crop.

This implies any positive change involved with larger chain of decisions should be ranked high in comparison to that with less number of it. This also implies that some adoption decisions can be taken without much hesitation as the constraints involved are not many. But in case of some other the farmer has to confront with a number of constraints which requires a series of decisions at different levels. So by measuring the extent of adoption only by objective index may not reveal the clear picture of adoptiveness and progressiveness of the farmer.

Moreover, at some transitional stage some new factors and processes may be adopted by farmers with greater or lesser ease. But once the process is established little perceptible difference in their behaviour can be marked and that too to relate to their personal factors. So it was felt necessary to take into account the changes they have accepted at different periods in comparison to their counterparts in the same particular

region, instead of heavily relying upon the present farming practices.

Similarly in the context of acquiring information, the sources were not very exclusive to each other. A farmer is expected to know about the farm affairs and about other related aspects from a large number of sources simultaneously. Some sources may communicate more and some may less of informations, but the multiplicity of sources makes it difficult to find out the communication behaviour.

So the importance was given only to the main sources of information, and the sources those contribute potentially in taking some important decisions on the basis of that two major sources were sorted out. The neighbours, village-level workers one is internal to the social system and the other is external to it. However the external one was evaluated higher in the study as the scope of getting information about modern practices is more with the extension system.

From the point of view of innovativeness another majoring index was dependence on the neighbouring farmers. The innovativeness is inversely related to the number of farmers consulted about the technicalities of the new process before adopting it. But on the otherhand the

quality of leadership is measured under the index of number of persons coming for advice. The number is directly related to leadership quality in a farmer. That is the more the farmers come to consult a farmer and depend on him in decision making the higher his leadership quality of and the larger the volume of information he acquires.



SECTION-II

Description of Setting:-

The state of Orissa is located in the East coast of India in between 17 48' and 22 34' north latitude and 81 24' and 87 28' east longitude. Out of 13 districts in Orissa Puri district occupies an important place for the reason of its geographical and historical significance. It is bounded on the north and north-east by the districts of Dhenkanal and Cuttack and on the west and south-east by Bay of Bengal. The district covers an area of 10,159 sq. kms. that is 6.52% of the state's area. The selected area of study comes under the Nimapara block of Puri district.

Nimapada town, the block headquarter is situated on the major district road No. 80 which connects important places like Konark, Kakatapur and Astaranga. It is 30 km. far from the state capital Bhubaneswar. The town has its considerable importance as a centre of commercial activities. Other than the block level officers there is a private degree college which provides educational facilities for the students of most of the villages, coming under the block.

The area has the physical and climatic characteristics, which are conducive for agriculture. The red and

yellow soils of the area are well suited for rice cultivation. Major part of the soil is rainfed. Tanks and wells are the main sources of irrigation supplemented by canal irrigation system of a perspective type, designed to supply water only in the event of the failure of rain during monsoon. Pumpsets are installed on wells and streams. Paddy is the main crop which covers 82% of the area. Pulses and oilseeds and sugarcane are also grown but over a small area.

The Selected Villages:

Bamanal : Of the three selected villages Bamanal is the biggest, having 175 households consisting 1043 persons. It is connected to the block headquarter by a kuccha road of about 8 kms. The access to the village sometimes become difficult in the rainy season by vehicles. Majority of the villagers are Brahmin by caste and are also literate. The village is also the centre of facility for postal, banking services and milling of products. Education up to matriculation is available in the village. A high school has been functioning since 1960 and long before that a primary school and a middle level school were setup by the villagers. A cooperative credit society operates in the village, extending the credit facility to

other nearby villages. A village 'hat' sits twice a week and serves as the retail market for some 15 far and near villages. The village came under the extension service with the appointment of its first village level worker in 1970. The present V.L.W was posted in the village in 1989. He is very popular among the villagers for his friendly and helpful nature. He is said to be more accessible in comparison to others who served the village earlier.

**Jamara :** The village Jamara is a fairly large one having 54 household consisting of 372 persons. The village comes on the way of block headquarter, Nimapa'a town from Bamanal village. It is situated two km. away from Bamanal and 6 km. from Nimapa'a. There is a middle English school in Jamara. For almost all other facilities the villagers share with the people of Bamanal. In comparison to other two sample villages the villagers of Jamara have shown remarkable progress in commercialising agriculture. But in contrast to other sample villages it has lower literacy ratio.

**Naraladeuli :** Naraladeuli, the third village is a small village of 22 households consisting of 165 persons. Education of primary level is available in the village. The primary school has two teachers and 48 students. Out of

which 18 are girls. Nine boys and three girls of the village are in the middle school of four boys in the Highschool of Bamanal village. Six boys, who are in college communicate Nimapa town everyday.

The overall agricultural setup of the area under study is described from different perspectives.

Investment perspective :

Other than the traditional heads of investment, expenditure for irrigation facility forms a large share. Even the canal irrigation facility is there for 50% of the cropped land a lot of expenditure is incurred for some additional facilities. The farmers tried to acquire diesel pumpsets for their personal use. Farmers doing horticulture in land adjacent to their houses opted for electric pumpsets, tubewells and deepwells.

Expenditure for pesticides and fertilizers and H.Y.V.S is very common with the farmers. Farmers were found of investing for fishery and also in dairy. However these investments were not very common to both the Sections. The uneducated section preferred investing in goat breeding to other subsidiary business. Even though they were found with orchards that don't come under horticulture as those were meant for domestic consumption.

Besides, the farmers spend a lot for servicing their equipments, for buying new one, in buying bullocks hiring tractors. They were found interested to have their own spraying machines, weeders than hiring those in the time of need.

From the volume basis the farmers had to spend the largest part in paying the wages. The wage rate and availability of the labourer served the most important criterion in every decision making. The farmers with small holding were independent of the effect to some extent as they relied upon the family labour. The progressive use of tractors has reduced the demand for labour. (Still it is incapable of providing much help.) Tractors are hired only for ploughing purpose. But during the harvesting season it has its little use. Farmers have to pay exorbitant wages to the farm labourers. This was also stated as the main reason behind not acquiring personal tractors even some farmers were found capable of acquiring it.

Irrigation system :-

At the time of survey it was found that there were around 30 pumpsets (both diesel and electric) in these villages. Even though every family in all the villages

have atleast a deepwell or a tubewell, but very few of those could be used for agriculture. Only pump sets were used to bring canal water to their field. So pumpsets were the main source of irrigation other than the canal water. The farmers used to hire pumpsets in the time of need if they didnot possess their own.

Working capital :

Farmers generally depended upon their personal saving and farm turnover for their further investment. Even though this area has always been a deficit area farmers were not found mortgaging their land or precious matals. Farmers in general borrowed from the cooperative credit society but their attitudes differed from person to person as presented in their responses.

Land type :

The consolidation(of landholding)movement was not successful since scattered land holdings were found after completion of the consolidation operation. Lands in this area are placed at different levels. The low level lands are frequently affected by floods and by water logging because of continuous heavy rain for a few days. Around 75% of the land area in the region is of this variety. So any abnormality in monsoon is reflected in the

agricultural production of the area. The remaining part is said to be dryland and are less affected by floods but those have the inherent problems from irrigation point of view. Since placed at high level canal water doesnot reach the field. Farmers usually produce pulses in those lands as they donot require irrigated water. With the advent of increased irrigation facilities farmers were doing double cropping in the suitable lands. In most of the cases farmers used to sow pulses while paddy was still in the riping stage.

The Cropping Pattern :

The cropping pattern has also undergone a marked change as some of the traditional varieties were being replaced by local improved varieties and also by some high yielding varieties. The Rabi crops were not common to all the farmers of the area. In most of the cases farmers produced pulses for their domestic consumption. Introduction of H.Y.V.S was accompanied by the availability of canal water in the region. The paddy varieties, most popular for high production potential were I.R. 1014 and I.R. 1009. Besides, some water resistant varieties were also produced. The availability of seeds and the soil condition have been

the major determinants of the use of H.Y.V.S. The use of H.Y.V.S. has also been restricted due to limited availability of fertilizers and risk of flood. In the initial stage a handful of farmers started experimenting with these new varieties but could not afford to pay adequate care and condition, so the demonstration effect was poor for a pretty long time but with a persistent trial and error process some of them could produce reasonably high and showed high profit. Afterwards farmers gained confidence and tried to increase the share of H.Y.V.S. in total sown area. At present some farmers are interested to use H.Y.V.S. for their total cropped area but untimely supply of fertilizers and low working capital to buy H.Y.V.S. pesticides and fertilizers handicap them. Use of H.Y.V.S. and fertilizers in case of pulses is very limited, even if some farmers produce pulse like urad and green gram as the main crop.

The Size of Holding and Croppattern :

Unlike the general trend there seems no correlation between the size of holding and the use of H.Y.V.s. The trend is reverse as it was found that the incidence of using H.Y.V.s was high for the farmers with holding of one acre to five acres. They were found using

H.Y.V.s for bigger share of their land. This may be due to conformity with the concept of operational holding. But as the farmers give reason like limited availability of H.Y.V.s, limited potential of irrigation and working capital, it was found that farmers can add to the production if they would be provided with better services and some additional facilities.

Fertilizer use:

The region has not shown a balanced progress in the use of fertilizers with the use of H.Y.V.s and irrigation. In comparison to the use of H.Y.V.s, use of fertilizers is very limited. The farmers used compost and green manure and other traditional types. But with the introduction of H.Y.V.s they started to use chemical with the traditional manures. However the farmers were not applying the prescribed amount of various types in proper order or in proper time of application. For Rabi crops use of fertilizer was more generous.

Use of all the three factors H.Y.V.s, fertilizers and pesticides followed the availability of canal irrigation facility. The canal link was provided to the area in 1967 and H.Y.V.s and chemical fertilizer were applied in regular basis afterwards. Farmers started

using diesel pumpset in the early eighties. In comparison to other regions of the same block, progress in using these modern factors is marked higher. Farmer having their land far away from the canal were found cultivating urad as the main production as that requires less irrigated water.

Supply of Inputs:

Farmers usually collected fertilizer and H.Y.V.s seeds from the block office at the block headquarter and often they availed those from at the village cooperative society and from the village level worker. However they depended largely upon the supplies from the free market. The recommended doses of fertilizers for H.Y.V paddy in the region of N.P.K. is 36.18.18. That is Nitrogen content of 36 kg. phosphorus of 18 kg. and potassium of 18 kg. per acre. But average actual use is much less than the recommended amount very often the farmers have to substitute one type of fertilizer for another in case of non availability of the required types. So it was difficult for them to keep regular count of the quantity of contents used and to abide by the recommended succession of use.

The farm machineries in the region were limited to tractors, iron hoe, sprayers, and seeder machines. The traditional wooden plough was inadequate for proper land preparation for high yielding varieties. So farmers

shifted to iron hoes. Farmers with large holding opted for ploughing by tractor. Tractor was used only for tilling purpose, but other field operations and transportation was done by bullock driven instruments and bullock cart. Farmers generally brought tractor on hire in the time of need. Some time in early Seventies some farmers had tried to use power tiller. But that was given up after experimental use for some years.

Sprayer machines were the most commonly used instruments for applying pesticides, and for applying other plant protection items. Sprayers were available at subsidised prices and were needed frequently. So farmers preferred to buy those for personal use.

The Traditional varieties :

The local varieties were also equally treated as those called for less investment. Those do not require high dose of fertilizer. Those are more flood resistant, less affected by pests and insects, and are of much conformity to the traditional farming pattern. So some improved local varieties are equally popular. It was also observed that the production per acre for H.Y.V.s in unfavourable condition is almost same or even less in comparison to the per acre production of improved local varieties.

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Source - Census of India 1981 .

Puri District, Orissa.

CHAPTER -V

IMPACTS OF FARMERS' EDUCATION ON  
FARM - CULTURE

Analysis of Data :

Data obtained by analysing the schedules used for fieldwork are presented and are interpreted in form of simple percentages. This is done for the response for all the aspects, taken in to consideration under the study. Data obtained from the relatively educated and lesseducated section are interpreted in a comparative frame. The significant aspects observed from the tabulated data have been brought to focus.

Land Holding:

Some writers believe that high economic efficiency, associated with ownership of large holding may result in the adoption of a large number of improved agricultural practices. In other words, they say that there is a positive and high correlation between economic status or the extent of land ownership and practice-adoption by the farmers.<sup>1</sup> However there are others who substantiate a negative correlation between the size of holding and adoption. They argue that, small size of holding is more intensively cultured, when there is motivation for higher production. But the

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1. Dasgupta, Satadal, "Innovation and Innovators in Indian villages", man in India, vol. 43. no. 1, 1963.

observation, made under the study doesnot come in conformity to either of these two extreme view. Farmers with varying size of holdings opted for new inputs and practices, almost in equal degree, suitable to the size of holding and also for other considerations.

From among the respondents more than one third of the respondents have the land holdings, ranging from one acre to five acres in size. That includes 50% of holdings of the less educated farmers and 20% of that of the relatively educated farmers. The major distribution of the correspondents in the relatively educated section comes under the 6to 10 acre range of the landholding. The average size of holding of the correspondents from both the sections also lies with in the same range. Table - 1.

Land Holding Pattern

Size of the Land Holding	Relatively Educated		Lesseducated		Total	
	No.	%	No.	%	No.	%
Up to 5 acres.	4	20	10	50	14	35
6 to 10 acres.	12	60	8	40	20	50
11 to15 acres.	3	15	2	10	5	12.5
16 & more.	1	5	-	-	1	2.5
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source - Field study conducted in the month of September, 1990.

Irrigation:

The extent of adoption of improved agricultural practices is said to be closely connected to irrigation facilities. Irrigation is the factor, which often decides the crop pattern, the number of crops and extent of yield and so on. The following table shows the distribution of the respondents' on the basis of percentage of their land holding irrigated.

Table - 2.

Table - 2  
Land under irrigation

Percentage of total land Irrigated	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
Unirrigated	2	10	5	25	7	17.5
Up to 25 %	14	70	14	70	28	70
26%to 50 %	3	15	1	5	4	10
51%to 75%	1	5	-	-	1	2.5
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source - Field Study.

The respondents, not having any irrigated land form 17.5% of the total sample population. While 10% of the relatively educated farmers do away with irrigated land, 25% of the less educated section forms

the counterpart. More than (two third) 2/3 of the respondents possess the irrigation facility for about 25% of their cultivated land. Farmers irrespective of their land size, more or less depend on the monsoon. The irrigation facility also depends upon the location of the landholding. The landholdings are to a great extent scattered over the region. Land near the canal get sufficient water even little special arrangement is made for. The special arrangements made for irrigation can be marked from the table - 3.

Table - 3

Means of Irrigation

Method of Irrigation	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
Pumpset only	1	5.5	1	6.6	2	6
Canal only	6	33.3	10	66.6	16	48.5
Pumpset and Canal	11	61.2	4	26.6	15	45.5
<b>Total</b>	<b>18</b>	<b>100</b>	<b>15</b>	<b>100</b>	<b>33</b>	<b>100</b>

Source - Field Study

Out of the total 33 respondents who are having some or other irrigation facility around 50% have pumpsets and 45% out of them have both the facilities. In a relative sense respondents from the educated section are in advantage

position. While 33% relatively educated farmers depend on Canal only, more than 60% have arranged for pumpset in addition to the canal water facility. More than 85% of the less educated section on the otherhand depend on the canal water as the single source of water.

Improved Strains:

From the general trend it is found that, those regions, assured of irrigation facilities are more expected to accept new agricultural practices. As a matter of fact many improved strains require assured irrigation facility. But it was observed under the study that some farmers have shifted over to high yielding varieties even, they donot have secured watersupply. Both the sample farmers from the relatively educated section adopted high yielding varieties even though their land holdings are completely rainfed. But from the lesseducated counterpart out of five sample farmers (who are not having irrigated land) two are still continuing with the traditional varieties. The table -4 shows that while 90% of the relatively educated respondents have applied H.Y.V.s to more than 50% of their land while only 50% of the less educated have applied H.Y.V.s to their land, ranging from 51% to 75% of their land holding.

Table -4

Area applied with H.Y.V.s

Share of Land under H.Y.V.s	Relatively Educated		Less- educated		Total	
	No.	%	No.	%	No.	%
Not used	-	-	2	10	2	5
Up to 25%	1	5	3	15	4	10
26%to 50%	1	5	5	25	6	15
51%to 75%	8	40	10	50	18	45
76%to100%	10	50	-	-	10	25
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source - Field Study,

The use of H.Y.V.s was not a recent change in the farm culture for most of the farmers. The use of H.Y.V.s came in advent to the availability of the canal water, but the progressive use of some new category like I.R. 8 I.R. 36 C.R. 1030 C.R. 1009 and C.R. 260 is not very past story to the area. There are farmers, still relying on the traditional varieties. They find the traditional varieties to be more flood resistant and are less affected by pests. So that requires less plant-protection measure. The farmers in this case rate high the norm of loss minimisation but to some extent they are the lateadopters. The distribution of the respondents on basis of difference in the period of using H.Y.V.s is shown in the table-5.

Table - 5

Duration of using H.Y.V.s

Period of Application	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
Previous year	1	5	2	11	3	8
2 to 5 years.	8	40	10	55.5	18	47
6 to 10 years.	7	35	5	28.	12	32
11 to 15 years.	4	20	1	5.5	5	13
<b>Total</b>	<b>20</b>	<b>100</b>	<b>18</b>	<b>100</b>	<b>38</b>	<b>100</b>

Source - Field Study,

Around 55% of the total respondents have taken up the new varieties within a period of last five years. There is no marked difference between the relatively educated section and the less educated section in adopting the new varieties except a few cases. One of the sample farmers from the relatively educated section has tried the cr. 1009 variety long before the variety was brought to the area by the V.L.W. Three other farmers also from the same section were first to shift-over to I.R. 1030 variety when introduced by the V.L.W. First they tried the variety in an experimental basis but very soon they started to sow the variety in major part. The demonstration effect was not strong in the initial years of application. But to the credit of these farmers, their persistent effort to better

off brought high margin over the traditional strains. This made other farmers to think positively for the adoption of the new varieties. The table -5 however shows that the lesseducated farmers are trailing behind the relatively educated section in adopting new variety. Even after the observation of 15 years of higher productivity with H.Y.V.s 10% of lesseducated farmers are still continuing with the traditional strains. By bringing the data of table-5 into cumulative frequency table we can find the trend of adoption. But here it is assumed that H.Y.V.S. were introduced in the region 15 year back.

Table -6  
Cumulative % of adopters over years.

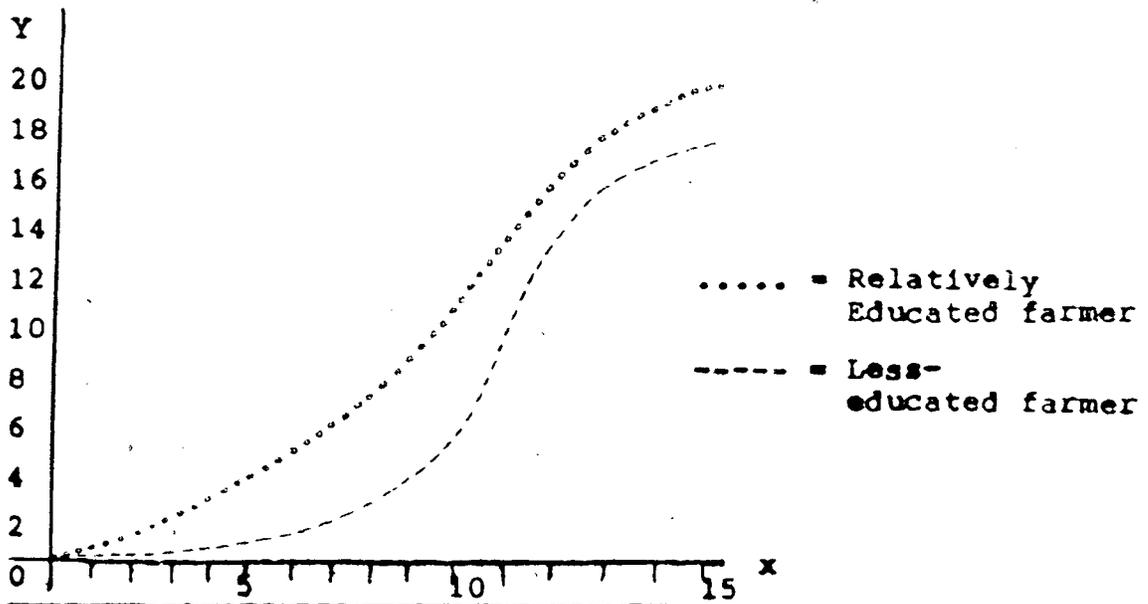
Years	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
0 to 5	4	20	1	5	5	12.5
6 to 10	11	55	6	30	17	42.5
11to 15	20	100	18	90	38	95

Source - Field Study,

20% of the relatively educated farmers and 5% of the lesseducated farmers have adopted some H.Y.V.s in the

first five years of introduction. With in the next five year term 55% of the first section and 30% of the lesseducated adopted the new varieties and with in 15 years of introduction almost all the relatively educated farmers entered the adopter group while 90% of the lesseducated section have started sowing H.Y.V.s.

For two sections of the farmers we can derive two cumulative adoption curves, similar to that of Beals and Rogers' 'S' curve<sup>2</sup>. The trend, observed from the curve tells that in the initial stage a few people adopt a new practice. When the practice is found profitable, many come forward. The swarm like adoption gives a steep slope to the curve and towards the end a few late adopters and loggards are left who adopt the practice very late.



2. Beal, George. M. and Evert, M., "The Adoption of Two Farm practices in central Iowa Community," Iowa State University of Science and Technology, 1960 pp. 12-13.

The two curves representing the adoptive behaviour of relatively educated and less educated farmers shows two distinct patterns of adoption behaviour. The 'S' shape is less prominent for the relatively educated section because of higher adoption in the first ten years in comparison to that of the less educated farmers. In the last five years the less educated farmers had a higher adoption rate of around 125% of the previous 10 years while that for the relatively educated farmers was only 82%. This shows that the probability of early adoption is higher for the relatively educated section of the farmers.

Improved Implements:

Use of modern implements like tractors and power tillers is accepted as a major step towards modernised farming system. But in Indian soil use of tractors and power tillers cannot be strictly taken as a gauge of adoptive behaviour of the farmers. What found in context of the study is the relative accessibility of the farmers to use of tractor. The accessibility found greater for the relatively educated farmers. This can be marked from the table-7. While 50% of the relatively educated section used tractor to till more than 75% of their land by tractor 45% of the less educated farmer do not use at all. Only 55% of them use tractor for more than 50% of their land in contrast to 90% of that of the

former section.

Table - 7  
Percentage of land ploughed by tractor

% of land ploughed by tractor	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
Not used .	2	10	9	45	11	27.5
Up to 25 %	-	-	-	-	-	-
26%to 50 %	-	-	-	-	-	-
51%to 75 %	8	40	4	20	12	30
76%to100 %	10	50	7	35	17	42.5
Total	20	100	20	100	40	100

Source - Field Study.

Since there is no big difference between the average size of holding of the relatively educated farmers and the lesseducated farmer the variation in tractor use shows the higher resourcefulness and better accessibility to modern mehtods of farming for the former section of the farmers.

Chemical Fertilizers :

Almost all the high yielding varieties are fertilizer responsive and to a great extent the traditional varieties are also responsive to fertilizers even in

absence of adequate irrigation. This was observed under the study when farmers were found applying chemical fertilizers irrespective of the strains, sown in the field and irrespective of the availability of irrigation water. But farmers were rarely found applying the required amount and proportion of fertilizers. The use of fertilizer to the required amount is shown in table -8.

Table - 8

Percentage of required amount of fertilizer applied.

% of required amount applied	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
Up to 25 %	3	15	10	50	13	32.5
26%to 50 %	5	25	8	40	13	32.5
51%to 75 %	10	50	2	10	12	30
76%to100 %	2	10	-	-	2	5
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source - Field Study ,

It can be easily marked that the relatively educated section is in a better position than the lesseducated section in context of fertilizer use. While 60% of the relatively educated farmers manage to apply more than half of the

required amount 50% of the lesseducated farmer can apply upto 25% or less of the total requirement. Only 10% of the lesseducated farmers can afford to apply more than 50% of the required amount of fertilizer to their land. So 90% of them fall below the 50% requirement mark.

A lot of difference was also marked between the two sections on the basis of early and late acceptance of the chemical fertilizers. For a longtime farmers were relying on the countryyard manures, composts as the main nutrients for their crops. That was also continued for even for the high yielding varieties for some time. But with increased ease in availability of chemical fertilizers and also greater productivity with chemical fertilizers motivated the farmers to shift over. The early and late shift over can be marked from the table -9. Around 25% of the relatively educated farmers had started using chemical fertilizer as long as before 6 years and more. However there is not much difference between the early adoptors from both the sections. 70% from educated section 75% of the lesseducated section started using chemical fertilizer with in a period of 2 to 5 years. But the less educated farmers form the greater share of the late adoptors as about 20% of them have started using

chemical fertilizer in the previous year.

Table -9  
Period of use of Chemical Fertilizer

Period of use.	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
Previous year	1	5	4	20	5	12.5
2 to 5 years.	14	70	15	75	29	72.5
6 to 10years.	4	20	1	5	5	12.5
More than 10 years.	1	5	-	-	1	2.5
Total	20	100	20	100	40	100

Source - Field Study,

The Farm Culture :

Taking all the aspects related to farm culture, the direction of change is presented in the table -10. Changes, marked in use of fertilizer is the most universal for the farmers followed by the shift over to the highyielding varieties. The new impliments have been progressively used. These impliments are confined to the iron hoe, the sprayers and some handy machines beside the use of tractor. Drastic difference is marked between the relatively educated and lesseducated in context of

irrigation and plantprotection. Here irrigation implies only the special arrangements excluding the available canal water facility.

Table -10

Change in farming culture

The practices	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
Use of H.Y.V.s	20	100	18	90	38	95
Irrigation	12	60	5	25	17	42.5
Chemical fertilizer	20	100	20	100	40	100
Plant protection	9	45	3	15	12	30
New impliments	18	90	12	60	30	75
Method of sowing	14	70	12	60	26	65

Source - Field Work,

While 60% of the relatively educated farmers are in position to regulate water supply in their field only 25% of the lesseducated section have arranged for the same facility. The relatively educated farmers are three times better off in taking plant protection measures in comparison to the lesseducated farmers. While 45% of the former section are able to provide plant protection

measures, only 15% of the less educated are capable to do so. This information was made available from the V.L.W which is in conformity to the respondents' farming experience. Another important observation was made regarding the pattern of sowing. The line sowing which is basically a labour intensive process was progressively adopted by both the sections with almost equal responsiveness.

Cooperative Society and Availability of Credit :

The membership to cooperative society and credit orientation are regarded as the index of progressiveness in farmers. It was found that 95% of the relatively educated farmers and 85% of the less educated farmers are the members of the cooperative credit society. Some of them were early to be the members and some other were late. The table - 11 shows that 70% of the less educated were the late-comers to the cooperative credit society, while more than 60% of relatively educated farmers have the membership for the period more than 6 years.

The access to finance and timely availability of credit are important factor for successful farm management. Farmers were found preferring different sources for different reasons. Their preferences for main sources are presented in the table -12. The respondents in general prefer the

loans from the cooperative credit society.

Table -11  
Membership period in Co-operative Society.

Timeperiod of membership	Relatively Educated		Less- educated		Total	
	No.	%	No.	%	No.	%
1 to 5 years.	7	36.8	12	70	19	52.8
6 to 10years.	10	52.6	5	30	15	41.7
11to 15years.	2	10.6	-	-	2	5.5
<b>Total</b>	<b>19</b>	<b>100</b>	<b>17</b>	<b>100</b>	<b>36</b>	<b>100</b>

Source - Field Study,

Table - 12  
The Source of Finance

Sources	Relatively Educated		Less- educated		Total.	
	No.	%	No.	%	No.	%
Personal saving	8	40	1	5	9	22.5
Village moneylender	1	5	7	35	8	20
Cooperative loan	8	40	7	35	15	37.5
Loan from- neighbours	3	15	5	25	8	20
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source - Field Study,

loans from the cooperative credit society. But the relatively educated section differed from the lesseducated in two difference ways. First, 40% of the relatively educated were found self-sufficient to a great extent as they manage to finance from their personal savings. Secondly, while 20% of relatively educated farmers go to the moneylender or neighbours for meeting their continengy needs around 60% from the lesseducated section approach the same sources. Only 5% of the lesseducated farmers managed the finance with their personal savings.

The farmers were asked about the causes of the low preference for the cooperative credit. In response, the farmers showed different reasons which is presented in the table-13. It is interesting to note that 90% of the lesseducated farmers face procedural complications and show this as the major hindrance in getting loan from the cooperative society.

Both relatively educated and lesseducated section equally complain about high rate of interest and about untimeliness of the credit from the cooperative credit society. 40% of the relatively educated farmers also feel that the procedure of getting loans from the society to be unduely complicated.

Table -13  
Reasons for nonavailability of Credit

Reasons for non-availability	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
Procedural complication	8	40	18	90	26	65
High rate of interest	8	40	7	35	15	37.5
Untimely	10	50	11	55	21	52.5

Source - Field Study,

Contact with V.L.W :

It is through communication that a flow of information. The circulation of knowledge and ideas are maintained. The process of communication doesnot only deal with the source of first information about new method new input or about new developments, that also takes in the account how the flow of information is maintained. The communication behaviour thus includes the contact with the V.L.W. and the relative role of V.L.W. friends neighbours for the effect of communication. The third section of the questionnaire wanted to reveal some important aspects of the communication behaviour of the respondents.

The V.L.W. is said to be the most exclusive source of new information for the farmers and he also serves as

the main problem solver (adviser) for them. The communicative behaviour of the farmers is counted in term of frequency of meeting with the V.L.W in the previous farming season (for operational convenience). The distribution of the respondents in this context is given in the table-14.

Table-14  
Frequency of Contact with the V.L.W.

No. of time contacted V.L.W.	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
1 to 5 times.	2	10	-	-	2	5
6 to 10times.	8	40	2	10	10	25
11to 15times.	10	50	16	80	26	65
16 times & more.	-	-	2	10	2	5
Total	20	100	20	100	40	100

Source- Field Study,

The frequency of meeting with V.L.W doesnot reveal much about the communicability, rather that shows the dependence level of the respondents. The intension was to findout, howmany times a farmer needed to consult with the V.L.W to take some decision or to solve some farm problem. The data show that the lesseducated farmers have taken up their problems to the V.L.W more frequently than the

relatively educated farmers. While 50% of the relatively educated farmers consulted V.L.W less than 10 times 90% of the less educated farmers consulted more than 10 times in the previous farming season. The shows the lesseducated farmers are more dependend on the V.L.W in comparison to the relatively educated farmers.

Source of information:

Though there are several sources through which the formers know about the improved agricultural practices only a few sources are popular among them. The farmers' impressions on different sources of informations are presented in the table -15.

Table - 15

Sources of information

Sources of information.	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
V.L.W.	11	55	15	75	26	65
Fellowfarmers	3	15	12	60	15	37.5
Own experience	2	10	-	-	2	5
Demonstration	6	30	10	50	16	40

Source- Field Study,

The sources however are not exclusive of each other. The V.L.W serves as the main source, who provides

about 2/3 of the information and knowledge about the modern farm practices. That is equally true for both the relatively educated farmers and the lesseducated farmers. The fellow farmers and demonstration are almost equally important but come next to V.L.W in rank. These two sources are more pertinent for the lesseducated farmers in comparison to the relatively educated farmers. While only 15% of the educated farmers got information from the fellow farmer 60% of the lesseducated farmers acquire information from the same source. That shows, the lesseducated farmers are more dependant on their neighbours and the fellowfarmers in taking some decision. The extent of dependence was measured with the number of fellow farmers (as the index) usually consulted in the event of taking some decision. This is shown in table-16.

Table -16

No of farmers consulted in taking decision

No. of persons consulted	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
1 to 5 persons.	15	75	6	30	21	52.5
6 to 10persons.	2	10	10	50	12	30
11to 15persons.	3	15	4	20	7	17.5
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source - Field Study,

75% of the relatively educated farmers were found consulting with a very small group of farmers not more than 5 persons in taking decision about their farm. On the other-hand 70% of the lesseducated farmers were found with larger number of advisors, not less than 6 persons.

Farm Problem and Solution:

To some extent the concern of the farmers differ. They usually look for the V.L.W. or the fellowfarmers for advice and consultation in case of some unprecedented situation veryoften their concern are common. Some of the common concerns are for instance availability of H.Y.V seeds and required variety of fertilizer, pesticides and insecticides. Second most common is the proper dose of fertilizer judicious use of water, intercropping and etc.

The table-17 shows different concerns of the farmers. The provision of farm inputs is the most important concern for both the relatively educated farmers and lesseducated farmers. While 70% of the first section seek advice regarding the correct dose of fertilizer it is a concern for all the lesseducated farmers. Their concern also differ in context of intercropping marketing of product and the soil testing. While 30% of the relatively educated farmers have discussed with the V.L.W. for soiltesting no body from the lesseducated section has shown interest in this regard. 50% of the relatively educated farmers have seriously consulted for

better return for their products and arranged to transport their products to the wholesale market, only 30% of the lesseducated farmer have followed the same way.

Table -17

Firm Problems and Solution

The problems	Relatively Educated		Less-educated		Total	
	No.	%	No.	%	No.	%
Provision of farm inputs.	18	90	20	100	38	95
Disease of crops	6	30	8	40	14	35
Dose of fertilizer	14	70	20	100	34	85
Water management	8	40	5	25	13	32.5
Inter-cropping	4	20	2	10	6	15
Marketing of Products	10	50	6	30	16	40
Soil testing	6	30	-	-	6	15
Cooperative credit	8	40	7	35	15	37.5

Source- Field Study,

The relatively educated farmers also have shown more interest for intercropping in comparison to the lesseducated farmers. However the two sections do not differ much in dealing with diseases of crop, proper water supply and regarding the availability of cooperative credit. Specifically the difference in concerns regarding marketing of products, soil testing in one hand and use of fertilizer on the other prove the relatively educated farmers to be more progressive.

The Effective Adoption:

To assess the effect of adoption the respondents were asked about the changes in production after adopting some new inputs or with new farming methods. The changes in the output as the farmers mentioned was primarily due to four factors. First for shift over to H.Y.V.s from the traditional varieties, secondly, due to judicious supply of water, thirdly due to proper doses of fertilizer and lastly for plant protection measures.

To some extent farmers observed the effects of changes in the farming pattern some where else and subsequently shifted over to new practices. Their observation pattern can be taken as an important aspect of the adoptive behaviour. The more a farmer wait to observe the advantages with some new method or use of some inputs, the less innovative the farmer is said to be. The innovative behaviour, measured with such an index is presented in the table-18. The adoption here stands only for the shift over to the H.Y.V.s.

The data show that while 80% of the relatively educated farmers adopted the new strains with less than 10 times of observation, 50% of lesseducated farmers shifted over to the new strains after at least 10 times of observation of higher productivity.

Table-18

Previous Observation before Adoption

Times observed before adoption	Relatively Educated		Less- educated		Total	
	No.	%	No.	%	No.	%
First to use	1	5	-	-	1	2.6
1 to 5 times	8	40	4	22	12	31.6
6 to 10times	7	35	5	28	12	31.6
11to 15times	4	20	8	44	12	31.6
16 and more	-	-	1	6	1	2.6
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>	<b>38</b>	<b>100</b>

Source - Field Study,

Effect of Adoption:

By taking all the four factors together the effects of adoption was measured. Even though farmers could rarely afford to all these major changes in any single farming season, they provided some tentative estimate of change in output which can be taken as the advantage over the output under traditional farming set up. These amounts of changes are presented in the table-19 in percentage.

The data show that 75% of the farmers have observed an increase in output of 25% over the previous traditional condition. 15% of the relatively educated farmers have experienced more than 25% increase in output.

Table-19

Change in Output due to Change in Farm Culture

Change in output in percentage	Relatively Educated		Less- educated		Total	
	No.	%	No.	%	No.	%
No change	2	10	5	25	7	17.5
up to 25%	15	75	15	75	30	75.
26 to 50%	2	10	-	-	2	5.
51 to 75%	1	5	-	-	1	2.5
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source - Field Study,

On the other hand 25% of the lesseducated farmers have expressed the view that the increased output is not sufficiently high to overcompensate the higher cost incurred in the process of modern farming. Similar impression is also given by 10% of the relatively educated farmers. But irrespective of the farmers' experience of changes in output none of them have ever opted to go back to the traditional practice. They have rather tried to improve with the modern inputs and methods to increase the turnover. Even though some of the farmers have not shifted over to new varieties and some have not arranged for additional water facility almost all try to develop the farming culture somehow or other.

CHAPTER-VI

CONCLUSION

## CONCLUSION

Education is the process by which a society socialises its members and brings desirable changes in social life. It is a process by which the members of a society attain social competence and optimum individual development. Decision-making being essentially an exercise involving knowledge attitude and skill, cannot free itself from the impact of education. Communication and diffusion of knowledge and information depend on the social competence which is also attributed by education.

What-ever the role that education plays, it is not the sole agency of change in rural areas. In-fact education is one of the agencies that contribute to the rural development. With the drive towards modernised farming the importance of education has been persistently increasing. Education in present context is no more confined to the formal schooling only. It also includes the nonformal education and informal education in their different forms. They have their comparative advantages over each other in different circumstances. Sometimes non formal education proves more effective in comparison to the time-honoured formal education. So learning in all different forms contributes to the development in some way or other.

The present study, in an attempt to enumerate the contributions of education to agricultural development has tried to assess the impacts of farmers' education in their farming practices. The study was designed to find out how the farmers differ in exposure to information and in their ability to decode and mould this information to their practical use on the basis of the difference in educational attainment. The intention was also to find out how they differ in planning for the future, in taking risk and or the whole in their progressiveness.

The major farm practices which were taken to mark the variations in farmers' decision-making functions were the cultivation practice, pattern of irrigation, use of HYVs, use of modern farm implements, use of chemical fertilizers and pesticides, use of cooperative credit facilities and sources of agricultural information.

The major elements with the farmers, supposed to be significantly related to their decision making function were found to be the planning orientation, innovativeness, willingness to take risk or venturesomeness, change-proneness, fatalism and the degree of communicability.

The relatively educated farmers in general fair better than the lesseducated ones in applying the new knowledge and information in their farm practices. The effective contact with the V.L.W. contributes more to the adoptive behaviour of the relatively educated farmers in comparison to the lesseducated ones.

Farmers in general derived 2/3 of the information from the V.L.W. serves the most efficient source of information. Even if farmers were found acquiring first-hand information about the innovations from different sources, farmers depended on the V.L.W. for the detailed information. The percentage of lesseducated farmers getting information from the V.L.W. did not differ much from that of the relatively educated farmers but a lot of variation was found of the implimentation level. That shows the village level worker, even though he is in position to inform about new farming methods and other farming related matters, he is insufficient to motivate all for the adoption of those to the practices. The lesseducated farmers in most of the cases were found imitating the advanced farmers at the initial stages of adoption. They usually imitate the succesful farmers when they find the farm conditions to be sufficiently suitable for the adoption. They are very reluctant to go for any major change in their farm practices.

The purpose and content of interaction between the farmers and the village level worker differ for the two sections of farmers. The greater dependence on the V.L.W. in the lesseducated farmers' part shows that shows that the V.L.W. to some extent compensates the deficiency in farmers because of their low educational status. Moreover, interaction between the lesseducated farmer and the V.L.W. normally takes place at the initiative of the farmer, whereas interaction between the better educated farmers and the V.L.W. is initiated by either of them. The V.L.W. also depends on the progressive farmers of the relatively educated section to carry out various demonstrations and experiments. This kind of interaction was found to be more effective than the interaction based on only the occupational needs.

A lot of variations was observed regarding the acceptance of different farm practices. For some practices they differ much but for some others the difference is not very big. In general the responsiveness for adoption of some new practices is more with the relatively educated section in the initial stages in comparison to that of the lesseducated section.

A number of reasons have been advanced by farmers for non adoption of the new practices. The reasons in some cases are different for the relatively educated farmers

and the lesseducated farmers. The lesseducated farmers showed maximum reluctance for any shift over for fertilizers and pesticides. They also showed maximum lack of knowledge in regard to the application of fertilizers and pesticides. But the relatively educated section showed least disinterestedness in regards to application of H.Y.V.s and chemical fertilizers. High cost was the common detereent for both the sections of farmers but the degree of adoption was higher among the relatively educated section than that of the lesseducated farmers.

Taking into consideration different attitudinal factors the better educated farmers were found to be more progressive in comparison to the lesseducated farmers. They were more receptive to the modern values and practices. They played the role of propagators of technological changes in rural areas.

Better communicability was marked with the relatively educated farmers, very frequently the farmers from the lesseducated section looked for technical advice about farm matters. They also assisted the fellow farmers in acquiring bank credits and other farm inputs.

Planning orientation was found more with the relatively educated farmers. They were found with greater conviction of the fact that environmental conditions can be

manipulated to a large extent. This is marked from their favourable attitude towards investments for long term returns. The credit orientation and commercialised farming to some extent show greater planning-orientation among the better educated farmers.

The lesseducated farmers on the other hand were found to be subdued by the fatalism in them. It was found out that, they are likely to contemplate failure long before that actually comes, and they weigh the losses more than the gains which accrue to them with adoption of some new methods or inputs.

According to the findings of the study more numbers of risk taker come from the better educated section. Since the lesseducated are sceptic about the success. They form the group of late adopters, but very often farmers from the relatively educated section were found bringing about changes in their traditional practices, through the trial of newly introduced innovations.

The relatively educated farmers were found to be more receptive to modern values and practices. They play the role of propagators of technological changes in rural areas. This shows the greater degree of modernism in them. The difference in educational status thus to a great extent explains the difference in progressiveness

and success. To sum of, it can be stated that education as a factor of change influences the psychosociological behaviour significantly, which in turn contributes to the farmers' decision-making function, which contributes to better agricultural output in a major way.

The low standard of education of rural people is mainly due to the difficulties inherent in the rural environment and also due to the longlasting belief that growth in economy can be achieved without educating the farmers. So little attention is paid in favour of adopting the system of education to the need of rural world. That doesnot mean education is the panacea for the backwardness of agriculture. No amount of training and education shall help unless and untill the farmers are made to realise that agriculture is no less a business and they should take it like-wise. The farmers in rural areas are experienced and practical persons but what they lack is the initiative, outlook and understanding. They are largely paralysed by the limited aspirations. While they realise that change is inevitable the desire for change is not pressing, so it is desirable that more thought be given to the problem. The importance of sociopsychological factors in economic development needs to be recognised in a better way.

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APPENDIX

QUESTIONNAIRE

1.0 General-

- 1.1 Serial No.
- 1.2 Village :
- 1.3 Name of the respondent :
- 1.4 Main Occupation :
- 1.5 Literacy Status :

Illiterate -  
Elimentary (1-5 years)  
Higher Elimentary (6-8 years)  
Secondary (9-11 years)  
Graduate

2.0 Structure of Farms, Cultivation Practices -

- 2.1 Size of Land-holding in acres :

1 to 5 acres  
6 to 10 acres  
11 to 15 acres  
16 acres and more

- 2.2. Percentage of total holding under irrigation :

Completely unirrigated  
Irrigated up to 25%  
26% to 50%  
51% to 75%  
76% to 100%

2.3. The means of irrigation :

Well

Pumpset

Tube well

Canal

2.4 Major crops harvested by the farmer :

Paddy

Urad

Green Gram

Sugar Cane

2.5 The share of land cropped applied with HYVs.

Not used at all

Used upto 25%

• 26% to 50%

51% to 75%

76% to 100%

2.6 How long since the farmer has been using HYVs

In the previous season

2 to 5 years

6 to 10 years

More than last 10 years

2.7 What percentage of total land is ploughed by tractor :

Not used at all

Up to 25%

26% to 50%

51% to 75%

76% to 100%

2.8 What percentage of the cropped land he feeds with chemical fertilizers :

Not used

Applied to 25% of land

26% to 50%

51% to 75%

76% to 100%

2.9 How long since he has been using chemical fertilizers :

Used only in previous season

Since 5 years

6 to 10 years

11 to 15 years

16 and more years

2.10 Is he a member of the cooperative society :

Yes -

No -

(b) How long since he has been a member of the cooperative society :

Up to 5 years

6 to 10 years

11 to 15 years

More than 16 years

2.11 What are the main sources of finance for his farm :

Personal saving

Village moneylender

Loan from cooperative society

Loan from neighbours

2.12 Which source of finance other than his personal savings he prefers most :

Loan from relatives

From village moneylender

Loan from cooperatives

2.13 What are the problems he generally faces in obtaining the bank loans :

Procedural complications

High rate of interest

Untimeliness

3.0 Communicative Behaviour -

3.1 What are the sources, he comes to know about the new agricultural practices :

V.L.W.

Fellow farmers

Own experience

Demonstration

3.2 Does he have contact with the extension agent

Yes -

No -

(b) How many times he communicated the extension agent in previous farming season :

Up to 5 times

6 to 10 times

11 to 15 times

More than 16 times

3.3. Did he ever change his farming pattern on the VLW's recommendation.

Yes -

No -

(b) In what respect he changed :

Water management

Plant protection

Fertilizer use

Soil testing

Marketing of products

3.4 What percentage more yield he could reap over the previous years amount, following the recommended changes :

No change  
Up to 20%  
21% to 40%  
41% to 60%  
61% to 80%  
More than 80%

3.5 How many farmers he had observed, following that changed pattern before he adopted it :

First to adopt  
Up to 5 persons  
6 to 10 farmers  
11 to 15 farmers  
More than 16 farmers

3.6 What are the subjects the farmer seeks regular information about from the extension agent :

Availability of farm inputs  
Effects of chemical fertilizers  
Proper dose of fertilizers  
Marketing of products.

3.7 How many farmers come to consult the farmer on event of taking some decision :

Up to 5 persons  
6 to 10 persons  
11 to 15 persons  
More than 16 persons

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