

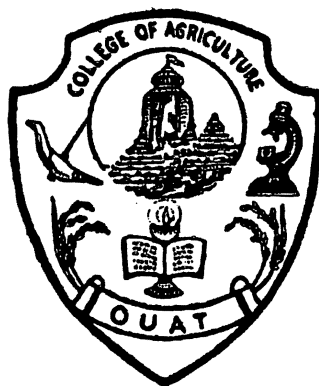
MANAGERIAL SKILL OF THE FARMERS IN CRISIS MANAGEMENT

A THESIS SUBMITTED TO
THE ORISSA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, BHUBANESWAR
IN PARTIAL FULFILMENT OF THE REQUIREMENTS

**FOR THE DEGREE OF
MASTER OF SCIENCE IN AGRICULTURE
(EXTENSION EDUCATION)**

BY

Manas Ranjan Panda



Department of Extension Education
COLLEGE OF AGRICULTURE
Orissa University of Agriculture & Technology
BHUBANESWAR
1997

THESIS ADVISOR

DR. N. C. RATH

DEDICATED TO
MY
BELOVED PARENTS


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C E R T I F I C A T E

This is to certify that the thesis entitled "MANAGERIAL SKILL OF FARMERS IN CRISIS MANAGEMENT" submitted in partial fulfilment for the award of the degree of MASTER OF SCIENCE IN AGRICULTURE (EXTENSION EDUCATION) of the ORISSA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, Bhubaneswar is a faithful record of bona fide research work carried out by Mr. MANAS RANJAN PANDA under my guidance and supervision.

This research is original and no part of this thesis has been submitted for any other degree or diploma. The assistance received during the course of investigation has been duly acknowledged by him.

BHUBANESWAR
Dated, 6th October, 1998.


(N. C. RATH)

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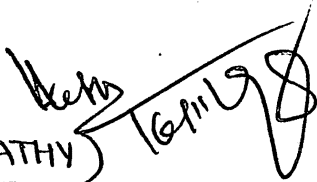
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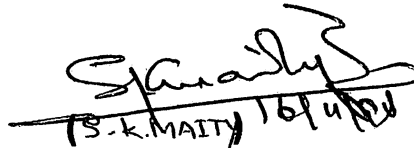
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Really words run short to express the feelings of my heart for him/her whose hearts beats for me, whose breath stops for me and some of those moments dedicated for me.

Words run short to express my regards and devotion to my beloved parents, Nana and other family members for their sacrifice and encouragement. I highly appreciated the love and affections of them whose smiles not only enlighten in a better way but also act as refreshment at the time of exhaustion.

I wish to express my deep sense of honour, Love, Heartfelt regards and earnest gratitude towards my beloved, father for his ever lasting love, unmatched encouragement, needy inspirations for bearance and dedicated effort throughout my educational career.

Last but not the least, with heartfelt devotion I bow my head before Almighty who is most benevolent and beneficent and whose blessings have solely contributed to my reaching this point.

Bhubaneswar,

Dated, the 6th October, 1998.

**Manas Ranjan Panda
(Manas Ranjan Panda)**

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ABSTRACT

- Name of the student : Manas Ranjan Panda
- Admission number : 209 EE/95
- Title of the thesis : Managerial skill of the farmers in crisis management
- Degree for which submitted : M.Sc. (Ag.) Extension Education
- Name of the department : Department of Extension Education, College of Agriculture, O.U.A.T Bhubaneswar
- Academic year : 1997
- Name of the advisor : Dr. Nirmal Chandra Rath
Research Officer

The study entitled "Managerial skill of farmers in crisis management" was under taken with the main objectives to find out the managerial skill of different categories of farmers in managing different types of crisis situations viz. flood and cyclone, drought and pest & diseases which are most commonly faced by the coastal farmers. Further attempt was also made to find out the relationship of managerial skill with some of the selected personal and socio-economic characters of the farmers. Survey research design was followed in the study. Two villages were selected from the two randomly selected blocks of Balasore district. Forty five farmers from each of the villages were selected randomly. So altogether 90 farmers comprising of 30 each from the category of big, small and marginal were treated as the sample respondents for the study. The data were collected through a pre-tested structured interview schedule during the year 1998. Appropriate statistical methods were used for analysing and drawing the inferences.

It was revealed from the study that the managerial skill of the total farmers was highest on 'appropriateness in future action due to crop failure' which is means of solution to crises caused due to flood and cyclone. Their managerial skill was lowest on 'taking of contingency crop', which got the lowest rank. Further, it was observed that 69 per cent, 18 per cent and 13 per cent of them had medium, high and low level of managerial skill in managing flood and cyclone respectively. The managerial skill was highest in respect of 'maintenance of proper plant population' combating with the crisis situation caused due to drought. The lowest managerial skill of total farmers was observed in respect of 'use of drought resistant varieties'. Altogether 13%, 70% and 17% of the farmers belonged to the high, medium and low level of managerial skill respectively in managing the crisis caused due to drought. In managing pest and diseases it was observed that the managerial skill of total farmers was highest on 'control of leaf spot diseases' and lowest on 'control of brown plant hopper'. Further, it was observed that 18%, 67% and 15% of the total farmers had high, medium and low level of managerial skill respectively in managing the pest and diseases problem. By taking all the crisis situations together, it was found that 24%, 61% and 15% of the total farmers had high, medium and low level of managerial skill respectively. Lastly, it was observed that the personal and socio-economic characters viz., educational status, extension contact, social participation and training received by the total farmers were positively and significantly related to their managerial skill

INTRODUCTION

The 18th century economist Malthus said that while food production grows in arithmetic progression population multiplies in geometrically. The famous Malthusian law at the time of promulgation and long after did seem irrefutable. While discovery of steam power and invention of steam engine the forces and factors that lead to the Great industrial Revolution of 19th century had already been set motion .the physical and numerical science cause to acquire over whelming responses since they contribute to production of wealth. The industrial mechanism with the help of economic theories multiplied the production of goods at an increasingly progressive rate, but agricultural-production remained subject to vagaries of weather, the malnutrition of land, the attack of pest and the whim and caprice farmer and could not keep pace with the rapid growth population. As we cannot move in horizontal direction, therefore every body is emphasizing on the vertical direction. Due to lack of initiation from the government and the ignorance of the farmer agriculture production lagged behind the industrial production.

Environmental factors are vital for sustainable agricultural development. Among the diverse ecological environmental factors, deficient rainfall is of special importance in Indian agriculture, particularly in the situation of marginal and subsistence economy. Among natural calamities that have been visiting India on a regular basis causing death, destruction and distress on a large scale, drought ranked very high followed by flood, cyclone and earthquake. Drought has been reoccurring phenomenon in India, causing deleterious impact on the national economy. The disastrous sight of drought could be of 1987, which was considered worst in this century. As high as 2,55,837 villages, covering 263 districts, 285.42 million people, 58.60 million ha of cropped area and 168.11 million cattle heads were affected by drought (Ministry of Agriculture, 1989). The unprecedented drought caused high economic losses to the tune of Rs 1736 crores in the form of central assistance to drought relief works in addition to Rs 3600 crores worth crops destroyed. Besides, primary episodic events of decreased food production and impaired agro-ecology, the drought causes secondary consequences namely, poverty, malnutrition and social problems like riots. Also, drought at its peak can precipitate famine in venerable agricultural system, accompanied by large-scale migration causing social tension, when migrated people

compete with natives for scarce resources. There fore, natural calamities are accepted as a phenomenon with economic and social implications.

Reoccurrence of natural calamities is a persistent feature in India as a rain fed agriculture accounts for 70 per cent of net cultivated area. Dry land farming is being practiced in 102 million ha out of 142 million ha total cropped area of the country (Ministry of Agriculture 1990). Further, as high as 50 million of dry land are in the drought prone areas of the country. Thus, the vagaries of the monsoon play a predominant role and drought is a matter of great concern to policy makers in governmental organization for attaining stability in agriculture.

In the past also drought had provided impetus for the mass migration and the rise and fall of civilizations. The horrifying consequence of drought was well documented in early historical records. Referring to the available records especially Badshahnama of Abdul Hamid (1630) on drought in Richur district drought, it was written that:

“Life was offered for a leaf, but none would buy. For a long time dog’s flesh was sold for goats’ flesh and pounded bones of dead were mixed with flour and sold, some took poison, others threw themselves into rivers. Distribution at last reached such a pitch that man began to devour each other and flesh of son was preferred to his love. In the streets and still more in road journeys man ran great danger of being murdered and eaten (Anonymous, 1949).

Similarly, another dreadful famine of Bengal was of 1945 where 1.5 million people died of starvation (Khanna, 1989). But on contrary, the drought impacts seen today is no way comparable to the experiences of past. This could be attributable to the development of mechanisms to deal effectively with such droughts. Nevertheless, it is apparent that the drought could be carefully managed to keep its impact at tolerable level.

It is also true of Chinese symbol of word “crisis” that:

“It is composed of two characters; one meaning ‘danger’ and other opportunity. Danger is implicit in crisis, but there is also an opportunity for constructive action to solve the problem” (Robertson, 1970).

Also, drought is labeled as 'creeping disaster', which provides sufficient time before it expresses its full scale devastation, thereby providing the scope for management of drought.

Imbalance between environmental resources demands and performance capacities is the pre-condition for the genesis of crisis. It has been widely established that the interface between man and crisis typically involves adjustments. Freire (1973) pointed out that:

"If man is incapable of changing realities he adjusts himself instead. Adoption behavior is characteristic of animal sphere: exhibited by man, it is symptomatic of his dehumiliation".

Crisis is regarded, as the challenge thrown by nature to man and its management is reflective of man's capability. Thus, individuals evolve response mechanism depending on their capabilities to adapt to crisis situation by exploiting all the viable economic means to achieve economic security. So also, agriculturists who live in areas of unstable weather develop a variety of adoption mechanisms-diversify the crop (Laya, 1975; Bein, 1980), accumulate assets in good periods which are drawn upon when drought reduces production (Morris, 1975), distress selling of animals (Chamala and Crouch, 1977) ploughing a smaller acreage (Kgathi and Opschoor, 1979), reduce consumption (Taal, 1989) migration (Skrabanek et al. 1964; Morris, 1975; Bein, 1980; Fuller, 1987) etc. Underlining the importance of farmers crisis mitigation measures, it was asserted that action by farmers themselves offers more promising possibilities of countering crisis than those of centralized government schemes (Anonymous, 1965). But, with varying resources endowments of farmer, the capacity to change vary among the individuals and also tolerance limits to environmental changes (Kelly, 1955). This situation pinpoints the need for intervention by the government through relief programmes. As it is argued that drought has done more in India to create food scarcity than any other environmental factors, the Indian administrators over the past 125 years have developed multiprolonged programmes to counter the effect of natural calamities (Torry, 1986). To mitigate natural calamities' effect, short term strategies like relief employment and long term programmes namely, soil and water conservation measures, water shed development projects, minor and major irrigation projects which will serve both the purpose like controlling flood and irrigation, were launched. No doubt, these programmes would cause long lasting effect by playing supplementary role to farmers' adaptation and are implemented effectively in during crisis period.

In addition to government sponsored intervention programmes, a deliberate and effective efforts towards enhancing farmers adaptation to crisis is the support of dry land farming and low land farming technology, which play a predominant role to build up sustainability of the agricultural system. In this context Garcia (1981) remarked that nothing short of a total structural change in underlining practices that comprise the normal for today's society will reduce the developing worlds vulnerability to climate as a trigger of socio-economic instability to frequent catastrophe. Nevertheless, dry lands have under exploited agricultural potential and this potential can be best developed by concepts and methods specially suited to dry regions. Further, in the early as 1971-74, the All India co-ordinated Research project on dry land showed that dry lands yields can be improved by at least 100 percent by using improved varieties, timely sowing, effective weed control and optimum fertilizer use (ICAR, 1976). Thus, dry land agriculture

Floods in India are synonymous with a host of untold human misery, sufferings and woes. Floods make a mockery of human designs to contain it, throwing aside the concerns of engineers, planners, administrators and environmentalists causing enormous loss of life and property. Orissa no exception to this phenomenon. A long with Utter Pradesh, Bihar, West Bengal and Assam, it stands as one of the most flood prone states of India. Its four major rivers namely the Mahanadi, the Baitarani, the Brahamani and the Suvarnakha flood a total area of 24 million hectors of the state.

With a coast line that borders the Bay of Bengal Orissa is prey to a wide varieties of storms and cyclone that rip the land apart, causing misery and death and wide spread destruction of property. In the coastal districts flood is always associated with cyclone due to low pressure.

It they who face the wrath of God and uncertainties of the weather.it is their opportunity to react according to the climatic and situational condition and take appropriate action to save their family from starvation. Considering the above mentioned crisis this study has been taken up to measure the managerial skill of the farmer. Therefore, it is worth while to study the managerial ability and skill of farmers towards managing different crisis faced by them. So far no systematic study has been under taken in this direction. The present investigation is an attempt to fill the lacuna in this area. Keeping these aspects in view, the present study was undertaken with following specific objectives.

SPECIFIC OBJECTIVE OF THE STUDY

1. To identify and document the different major crisis faced by the farmers.
2. To measure the managerial skill of the farmers in managing the different types of crisis already identified.
3. To find out the relationship of managerial skill with some selected socio-economic profile of the farmers.

SCOPE AND IMPORTANCE OF THE STUDY

Research investigations oriented towards measurement and prediction of management skill has been very few. Management though widely used in economic studies has not been profitably used in extension research. Since every farmer differ considerably with respect to his socio-economic background and personal characteristics. It important ot understand how these factors affect his management behavior. Data can be analysed with a view to identify cause of variation in managerial skills of farmers.

Several aspects of the study are of special significance with vast scope for implication in strategic planning related to management of drought, flood, cyclone and pest & diseases which are permanent environmental problems and also for future researchers to conceive their studies on different aspects of the research area.

The designed study is intended to evolve meaningful crisis management level of the farmers of different crisis areas. The research would help tp identify the patterns of adoptions of farmers which will serve as an indicator declaring an area as drought / flood / cyclone affected as well as identifying the venerable categories of farmers to take up appropriate measures.

The study would also throw light on relationship of some personal and socio-economic factors associated with the crisis management of the farmers. These research exercises would have practical implication to find out the variables which are positively related to the crisis management and to take up necessary steps to upgrade these variables, thus enhancing the crisis management of the farmers. Also this information is useful in identifying right beneficiaries for the Government sponsored programmes.

LIMITATIONS OF THE STUDY

The present investigation didn't suffer due to any unusual limitations other than one's like fund, time and physical facilities available to student researcher. In spite of these limitations every effort was made by the researcher to keep the study as objective as possible by deliberating following all norms of scientific research pilot study, well structured questionnaire, pre-testing. Hence the findings of the study can be applicable generally to all such regions where similar conditions exists.

OPERATIONALISATION OF THE CONCEPTS USED IN THE STUDY

FLOOD: When there is more enough water spread than the requirement and it causes damages to both human being as well as to crop field and bring a colossal loss to the economy.

DROUGHT: It is a deficiency of soil-water caused by insufficient rain fall severe enough to effect the crop yield in dry land areas and is identified based on Government declaration and opinion survey involving drought consequences criteria.

CRISIS: Crisis is operationalised as a situation of concentrated period of disturbances caused by low and erratic rainfall, spreading of water more than requirement and severe disease and pest attack to the crop which affect the farm yields and farmers income, there by stimulating action on the part of farmer to satisfy his family needs.

MANAGERIAL SKILL: The special ability in optimum utilization of human as well as material resources to fulfill the pre-conceived objectives.

CRISIS MANAGEMENT: Crisis management is operationalised as the ability of the farmers to with stand the crisis induced by concentrated period of drought, flood, cyclone and pest and disease problem which is assessed by the decision making ability, adaptability and economic performance of the farmers.

ORGANISATION OF THESIS

The dissertation includes the chapters viz., Introduction, Review of Literature, Methodology, Results and Discussion, Summary and Conclusion, Bibliography and Appendices.

The first chapter i.e "Introduction" deals with the problems objectives, the scope and limitations of the present study. The second chapter is devoted for the "Review of Literature" which covers the reviews of selected important and related studies in the area of present investigation. The third chapter "Methodology" deals with the locale of investigation, research design, selection of respondents, operationalisation and measurement of variables technique used for data collection and statistical tools used for analyzing the data. The fourth chapter is devoted for the "Results and Discussion" of the study. The fifth chapter covers the "Summary and Conclusion" of the study followed by "Bibliography" and "Appendices" respectively.

CHAPTER - II
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REVIEW OF LITERATURE
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REVIEW OF LITERATURE

Past studies pave the ways for future research endeavors. An acquaintance with earlier pertinent studies was felt necessary to develop good understanding of the present study. Therefore, an attempt was made in this chapter to review the literature, which had meaningful relation to the present study.

The relevant literature on all respect of the investigation which is having direct and indirect bearing on the study has been organized and presented in this chapter under the following heads.

1. Concept of crisis
2. Crisis management - theoretical orientation
3. Measurement of management
4. Crisis management components-Concept and research studies

4.1 Decision making ability

4.2 Economic performance and its influencing factors

4.3 Factors related with management level of farmers

1. Concept of Crisis

The term crisis has been used variedly by historians, sociologists, psychologists, economists and political scientists under different contexts. Therefore, it is worthwhile to have an insight into the meanings/definitions offered by cross-section of scientists. This is particularly useful in building systematic knowledge on the concept crisis and would also help in operationalising the term crisis in the present investigation.

Barnard (1938) states that crisis is a situation or an event that confronts decision-makers with an opportunity for response, either action or inaction.

Hischman (1958) viewed that crisis may stimulate action and learning on a problem on which insight has been low and which for that very reason has not been tackled as long as it was in acquiescent state.

Parad and Caplan (1960) defined crisis as a period of disequilibrium, over powering the individuals homeostatic mechanism. During crisis, a person is faced by a problem,

which is of basic importance to him because it is linked with his fundamental instinctual needs.

In the context of organizational crisis, Hermann (1963) identified three dimensions of crisis, which included: i) threat to organizational values, ii) restricted response time and iii) a situation unanticipated by organization.

Rapoport (1962) indicated that crisis is said to be produced by a hazardous event which is threatening instinctual needs where persons are more susceptible to influence.

Wiener and Kahn (1962) enumerated 12 generic dimensions of crisis: I) crisis is often a turning point in an unfolding sequence of events and actions, ii) crisis is a situation in which the requirement for action is high among participants, iii) crisis threatens goal and objectives of those involved, iv) crisis is followed by an important outcome whose consequences shape the future of the participants, v) crisis consists of convergence of events that results in a new set of circumstances, vi) crisis produces uncertainties in assessing a situation and in formulating alternatives for dealing with it, vii) crisis reduces control over events and their effects, viii) crisis heightens urgency which often produces stress and anxiety among participants, ix) crisis is circumstances in which information available to participants is usually inadequate, x) crisis increases time pressures for those involved, xi) crisis is marked by changes in the relations among participants and xii) crisis rises tension among participants, especially in political crisis involving nations.

Seligman (1963) defined crisis as a grave and sudden disturbance of economic equilibrium.

Miller and Iscoe (1963) reviewed traits of crisis as used in psychological and sociological studies and they elaborate that: I) a crisis situation is acute rather than chronic, although its length is unspecified, ii) crisis results in behavior that is frequently pathological, iii) crisis threatens the goals of persons involved, iv) crisis is relative; what is crisis for one party or participant may not be for another, v) crisis causes tension in the organism including physical tension and anxiety.

The simplest meaning of crisis accorded by North *et al.* (1963) was 'crisis is a turning point'.

Caplan (1964) defined crisis as concentrated periods of disturbance often characterized by intense upset, preoccupations, emotional churning, and sense of inadequacy and openness to the input of other people.

Hermann (1965) reported that stress, conflict, tension, panic, catastrophe and disaster are terms used more frequently by social scientists than crisis.

An analytical model described by Stoddard (1966) which regards the phenomenon of disaster as a social process of disaster emergence. The main elements are I) a catastrophic agent which creates a ii) social crisis. The type of crisis will greatly determine the emergent problems depending upon the specific combination of crisis dimensions occurring. The six major dimensions of crisis are: i) focus, ii) directness, iii) controllability iv) periodicity, v) transiency and vi) scope.

Young (1968) referred crisis to situation, which has important implications for stability for some pattern of interaction, system or subsystem.

Robertson (1970) referred that Chinese symbol for word crisis is composed of two characters, one meaning 'danger' and the other 'opportunity'. Danger is implicit in crisis but there is also an opportunity for constructive action to solve the problem.

Stallings (1971) claimed that a crisis-generating event is one, which distrusts existing patterns of relationship among members of a social system and/or between the system as a whole and its environment. The term crisis is a label applied to those collective states in which conventional norms are inappropriate as guidelines for group behavior.

Arguing on the origin of the term crisis Eysenck and Arnold (1972) wrote that the term crisis came into psychology from medicine, hippocrates used it for sudden cessation of a state which gravely endange4ring life. Analogously, a crisis is thought of as being a dramatic decision or coming to terms with mental conflicts.

Wolman (1973) proposed the idea that particular stages of development are crisis periods during w3hich the individual is susceptible to change. During these times, a person may progress or regress. Intervention at those times consists of aiding the individual to progress.

Giannotti (1975) opined that crisis generally evokes the catastrophic but functionally, it must be free of its apocalyptic implications and understood to be a serious condition.

Lateef (1980) pointed out that the crisis in Darwinian sense is the ruthless challenge to status quo. People either drown or learn to swim.

Johnston and Taylor (1986) were of the opinion that the term crisis can be substituted by problem without loosing any meaning.

Godelier (1987) stated that crisis is a critical juncture in an irreversible process from which a radical change has become necessary. Crisis is thus, a period of transformation or transition.

The literature cited above revealed that the concept 'crisis' is viewed variedly by scientists representing different disciplines. It is defined and understood variedly by different type of scientists to suit their situation. Therefore, before anything, a distinction could be first made between vernacular use of term crisis and different attempts to give it a theoretical status. Also, in view of this, an inclusive definition of crisis, which is broad enough to be applicable to the various meaning and application of term, has to be evolved.

But this is beyond the scope⁴ of the present study. However, in the light of aforementioned views it could be inferred that crisis is a situation created out of family or social and or natural environmental factors affecting psycho-socio-economic equilibrium of individuals, families and societies.

2. Crisis Management –Theoretical Orientation

There is no such thing as a theory of crisis or even theories of crisis. However, a beginning has been made to develop theories about the phenomenon. Notable theorizing has been undertaken by Hermann (1972) who inductively reviewed hypotheses and placed them in a chain of independent, intervening and dependent variables. In addition, she advanced adhoc predictions were arbitrary or contradictory theories.

Not only is crisis theory barren, but other social theories rarely accommodating crisis. However, the socio-psychological theories/ propositions, which explain the human reactions to the alterations in their environment, are reviewed and presented in the succeeding paragraphs. It is beyond the scope of this study to review all the propositions/theories. However, a review of selected theories provides a framework to this empirical study. Also, some of the theories delineated here, purport to explain the behaviour of individuals under normal or stress situation.

Lamarck (1914) maintained that: I) every fairly considerable and permanent alteration in the environment of any race of animals works a real alteration in the needs of that race, ii) every change in the needs of animals necessitates new activities on their parts for satisfaction of those needs and hence new habits and iii) every new need, necessitates new activities for its satisfaction.

Kaplan (1933) claimed that coping encompasses a wide range of variables. Three broad categories of coping variables are, coping resources, coping styles and coping efforts. Where, i) coping resources are generalized attitudes and skills that are considered advantageous across many situations; they include attitude about self, attitude about word,

intellectual skills and interpersonal skills, ii) coping styles are generalized coping strategies defined as typical, habitual preferences for ways of approaching problems, and iii) coping efforts are specific actions (covert or overt) taken in specific situations that are intended to reduce a given problem.

Murray (1938) proposed an extensive list of psychological needs involved in a wide variety of human functioning. These needs in combination with environmental 'press' permit the construction of hypothesis to explain individual behaviour. Individuals are motivated to behave because of tension states, which may be reduced by need satisfaction. In time, the organism is assumed to associate tension reduction with particular objects and behaviours. When certain recognizable tensions are perceived, the individual knows because of the associations what behaviour will reduce the tension and satisfies the motivating need.

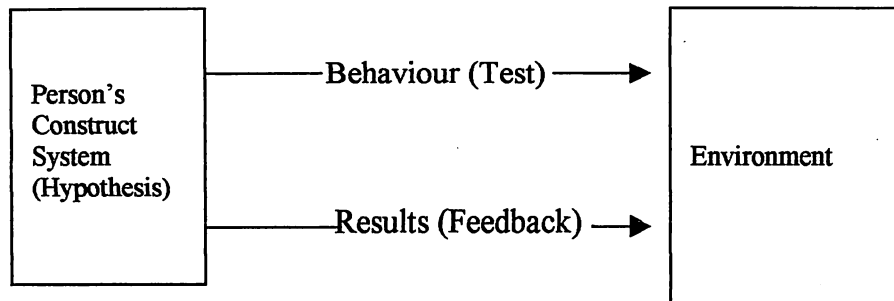
Weber (1947) put forth theory of social and economic organization. He stated that, social action includes both failure to act and passive acquiescence may be oriented to the past, present or expected future behaviour of others. Thus, it may be motivated by revenge for a past attack, defense against present or measures of defense against present or measures of defense against future aggression.

According to Lewin (1948) behaviour is a dynamic balance of forces working in opposite direction, the driving forces and the restraining forces. Change takes place when an imbalance occurs between them and such an imbalance unfreezes patterned behaviour, which is the normal behaviour.

Social action theory proposed by Parsons (1951) revolved that heredity and environments, means and ends, ultimate values and efforts were the four elements of social action. He further noted that actor, situation and motive were the three basis for social action.

One psychological theory that provides a useful frame work within which to understand individual behavioral change is personal construct theory advanced by Kelley (1955). He viewed man as a scientist as one whose ultimate aim is to understand, predict and control the environment or world in which he lives. Like a scientist he sets up hypotheses (constructs), tests them and observes the results. He thus tries to make sense out of this world by predicting it rather than reacting to it. His system of constructs may be thought of as an internal representation or model of the environment – unique to each individual. Throughout a person's life, it is continuously being tested against the reality of that environment and modified in the light of experience. Some results will be positive and

will confirm his system; others, however will be negative and will challenge his system. A simple diagram of this process is shown below.



Kelly further noted that the capacity to change varies among the individuals and as well tolerance limits for environmental changes.

Nelson's (1962) model describes the manager as possessing a biography of past experience (age, education, experience, urbanization etc.) drive and motivations and capabilities both conceptual and technical (antecedents) which produce managerial behaviour (process) and in turn produce an outcome or result.

The crisis theory of social change involves crisis confrontation, conciliation and change process. The three roles which moderator can play are: I) initiator, ii) conciliator and iii) educator (Iave and Leon, 1965)

According to theory of stress and coping proposed by Lazarus (1966), threat and cognitive appraisal are central elements of human actions. Where threat defined as the anticipation of harm which is considered as 'motive thwarting' that is, the individual anticipates that achievement of some goals will be blocked. If the motive is very important to the person, its possible frustration will be seen as threatening.

The appraisal of threat is viewed as an intervening variable between the stimulus situation, the threat and stress reaction. It is this appraisal which helps to explain the individual reactions to stimulus situations. Lazarus emphasizes characteristics of the individual such as motives, belief systems and abilities to cope with environmental pressures that shape reactions and ways in which the situation is appraised. Thus, people will tend to vary in the level of threat they perceive when confronted with similar environmental events.

Lazarus maintained that the cognitive appraisal is not complete with the evaluation of a threat. Cognitive appraisal is of primary importance in determining the strategies for

dealing with the threat (i.e., coping process) and in the emotional reactions expressed. The appraisal, which leads to the recognition of danger, is called "primary appraisal". That which determines coping process and reaction to the threat is called 'secondary appraisal'. It is argued that the types of coping strategies adopted by an individual depend on cognitive appraisal. Three factors are considered to be most important in this appraisal: degree of threat factors in the stimulus situation and psychological structure of the individual (e.g., pattern of motives and values, which may impose constraints upon the adoption of certain action).

Hollander (1967) concluded that there are many ways in which an individual adjusts to difficulties and obstacles. One obvious way of dealing with the barriers is to find an alternative goal, which can be called compromise. Instead of 'X' alternative goal, select 'Y' as a substitute. Another technique of adjustment is withdrawal or escape method. In this case, an individual will deny the desire. Direct aggression is usually thought of as an assault on the barrier. Here the individual strikes out verbally or otherwise toward the evident sources of frustration. The fourth type is displaced aggression-which is nothing but attacking other than barriers. The objective technique of surmounting the barrier is through problem solving and productive action, which is usually thought of on the highest order of these techniques. It illustrates instrumental behaviour which can also occur through a process of thought. This ability to indulge in higher level symbolic activity through thought, represent man's great potential for mastery over his environment and the force of circumstances.

3.Measurement of Management

An Iowa farm magazine 'wallace's farmer' conducted an opinion poll among Iowa farmers in the fall 1947 on the question "who is a farm success"? The respondents were asked to pick three statements from the seven listed by marking them 1, 2, 3 in order of choice. On the basis of first choices only, 43 per cent of the men interviewed, gave first choice to the best soil conservation, 16per cent to the most income per dollar invested, 12 per cent each to the biggest yields per acre and the non-material income and satisfactions.

Reiss (1949) identified management ability measuring factors applying to either job proficiency or characteristics of farmers. The mixed group of judges were asked to name

three farmers who are best known to them and pick the one from these three personalities who in their opinion does the poorest or best job of farming and describe as a man and a farmer. From the analysis of 360 describers, 328 items relating to management factor were identified.

Tonbary (1957) used criteria such as comparing the production levels to the group average, production per unit area and economic performance for measuring the farmers' management abilities.

Brayfield and Marsh (1957) employed ratings by vocational agriculture instructors and peers, on a criterion variable in their analysis of factors related to success of farm operators. This was unique in obtaining multiple reliability and to indicate the measurement variation due to the raters.

McCormick et al. (1959) in developing a tenant farm operator questionnaire based their performance on the ratings of over 675 tenants by the professional managers under whom these tenants worked. MacEachern et al. (1962) used essentially the same technique.

An index of management was developed by Kahalon and Acharya (1967). The decision, which contributed, to the differences in the two levels of farm income was identified as management factor. Decisions taken by different farmers pertaining to ten selected factors were ranked. The ranks were converted into scores. The sum of scores on all the factors was used as management index.

Justus et al. (1968) developed two rating technique namely local rating and expert rating to measure management performance of dairy farmers. Local agricultural professionals (local raters) rated the dairy farmers based on th4e observations. Whereas, experts used objective data about the operation of each dairy business.

Bassel (1970) stated that managerial efficiency is determined ultimately by the costs of production and the profit obtained from output. He developed following econometric model to assess the managerial efficiency of farmers:

$$P_n = a_1 T_n + a_2 M_n + C_1 \dots \dots \dots (1)$$

$$M_n = b_1 T_n + b_2 C_n + b_3 S_n + C_2 \dots \dots \dots (2)$$

Where, P = Productivity defined on "the output per acre"

T = Intensity of farming

M = Operating efficiency

C = Complexity of farming

S = Potential operating efficiency

N = refers to the nth farm.

Hebbar (1975) evolved a management ability index. The factors which contribute to efficient maintenance of coffee estate with consistently high productivity were identified in consultation with the specialists. Each management factor was given a maximum score of 10. Each coffee growers was scored on all the 28 items. The management ability index was worked out as follows:

$$\text{Management Ability Index} = \frac{\text{Total score obtained by farmer}}{\text{Max. possible score}} \times 100$$

A management orientation scale was devised by Samanta (1977). This includes three components namely, planning orientation, production orientation and marketing orientation. Each component had six statements with equal number of negative and positive statements. The response categories, strongly agree, agree, disagree and strongly disagree were 4, 3, 2 and 1 respectively. The scoring pattern was reversed for negative statements. The sum of the scores on all the items was management orientation score for a farmer.

Shanmukhappa (1978) developed a management ability index for arecanut growers by adopting methodology of Hebbar (1975). The 12 statements selected in consultation with specialists were rated on response continuum of good, better and best with the scoring of 1, 2 and 3 respectively. This rating was done by direct observation by the researcher. Finally, management ability index was computed as shown below:

$$\text{Management Ability Index} = \frac{\text{Total score obtained by farmer}}{\text{Max. possible score}} \times 100$$

Thimmappa (1981) and Sainath (1982) used similar procedure, to work out the management ability index of coconut and grape growers respectively.

Chari and Nandapurkar (1987) have developed a scale to measure managerial ability including seven main components. The components are: i) planning, ii) organizing, iii) human relationship, iv) supervision, v) communication vi) coordination and vii) control. The managerial ability index was obtained by multiplying component score with the respective scale value.

Similarly, Nagaraja (1989) developed a management efficiency scale involving 10 sub-components namely, knowledge, skills, planning ability, ability to make rational decisions, timely adoption, ability to mobilise resources, ability to coordinate activities, efficient use of resources, ability in rational marketing and competence in evaluation.

The aforementioned approaches to measure the management level of farmers leave many things unclear. These approaches lack multidimensional view of the concept and also situation based measurement techniques. The main focus of these approaches and their inadequacies are summarised below.

First, researchers had used the effect measures such as, production per unit area, comparison of production to group average and profit obtained from output. But, these reflect windfall profit and losses not due to management. And also, these factors are controlled by resource endowments and situational constraints of farmers. Further, those practices whose performance potential are expressed after a few years of implementation are not accounted by these indicators.

Second, several researchers have employed subjective rating techniques to assess the management ability of farmers by selecting items related to management factor. A few measured management performances by the local ratings on the basis of past exposures to rates and expert ratings based on objective data. But these two rating techniques have few limitations like I) expert ratings or researcher ratings involve rating errors like halo effect, error of leniency, error of central tendency and personal differences in conception of "What is and what out of be". ii) local ratings are a function of the extent of personal knowledge of the farmer, the rater's frame of reference and the personal abilities, knowledge and attitude of the rater with the probability of factors other than farm operator performance being involved in the ratings.

Third, use of subjective measures involving direct interview of farmers by administering a set of statements with a continuum (management orientation scale) or forced choice technique of asking farmers to select a few statements which best describe a successful farmer possess inherent lacunae of personal bias and misconception of statements by farmers as well as inability on the part of farmers to repost their exact response on distinct psychological continuum. The forced situation limits farmers thinking beyond the fixed set of statements and also statements listed may not be in line with the farmers' view of the concept.

Fourth, the measurement techniques for management of crisis induced by drought are not in the sight, and so also the approaches to combine subjective and objective indicators of management.

4 Crisis Management Components – Concept and Research Studies

4.1 Decision making ability – concept and research studies

Johnson and Haver (1953) had listed 5 steps of decision making.

- Observing the problem
- Making an analysis of it
- Defining the available course of actions
- Selecting one course of action
- Evaluating the consequences of that choice

Bates (1954) outlined a model for the single decision-maker case. Accordingly, decision-making process involves a decision-maker, an environment in which the decision-maker must operate a set of actions available and a set of goals. An optimal decision is made in terms of an operation, which chooses a member of the set of actions and the importance of the goals. The model must include some measure of the efficiency of an action for a goal, a measure of the value or importance of the goal and a measure of the adequacy or effectiveness of the operation. A suggestion has been made for each type of measure. It is believed that the ultimate model and kinds of measures can be found after an empirical investigation of actual decision-making as currently conducted is made. The model must be extended to multiple decision-makers in order to be a comprehensive conceptual framework for the science of decision.

Beneke (1955) maintains that central task of the farm manager is to make and carry out farming decisions. Farm management is a process involving the steps such as: I) observing and analysing alternative courses of actions, ii) deciding which course of action follow, iii) taking the steps necessary to carry out the decision once it has been made and iv) bearing responsibility for the outcome of the decision.

The steps or the stages outlined by Bratton (1956) about the decision making of dairy farm management seem to have a great bearing on subsequent attempts to streamline the systematic steps involved in decision making process. He outlined that decision making consists of:

- Definition of issue
- Analysis of the existing situation
- Calculations and delineation of alternatives
- Deliberation and
- Choice.

As a result of analysis of the information obtained from the agricultural agents of farm and Home Management programme, Alexander (1958) outlined the following nine steps of decision making:

- Problem
- Goals
- Study situation
- Experience of others
- Alternatives
- Consider costs and return
- Means
- Decide
- Trial

Griffiths (1958) said that decision making is the central function of administration that... it is not only central in the sense that it is more important than other functions ... but it is central in ... that all other functions of administration can best be interpreted in terms of the decision making process. In true sense, function refers to those observed consequences of social phenomena that a social system to adopt or to reject its own internal tendencies. Social phenomena, as such, is a decision making with the use of functional analysis. Decision-making is the process of selecting such alternatives open to the actor that will lead him to the intended future state of affairs (The Goal).

Lee and Chastain (1959) developed a model for basic adjustment at the farm level incorporating problem recognition into the total process of decision making. This proposed model has combined essential management functions by incorporating problem recognition.

Sitton (1960) had outlined three steps of decision making process as:

- Formulating the decision
- Putting the decision into action

Accepting the ultimate consequences of decision

Sherif and Hovland (1961) proponents of social judgment theory generalized that 'both internal factors (motivation, learning, attitude) and social factors (instructions, demand characteristics) influence judgments.

Broadford and Johnson (1962) claimed that management could be seen only through observing the decision making process and its results. A good manager should be self disciplined (i.e., pursue definite goals and objectives) so that he can:

- Direct thinking opportunity for attainment
- Attack problems preventing attainment of his objectives
- Extract the optimum information from his environment
- Carry analysis for each decision to a favorable degree
- Take prompt action on his decisions
- Accept the consequences of his actions

With reference to the study of farm management, Thornton (1962) discerned three steps in decision making process, namely:

- Recognition of the problem
- Preparation and
- Action

Randhwa and Heady (1963) concluded that small size of the farm characterized by shortage of sufficient capital in a majority of cases made the farm owners mostly conservative in decision making behaviour.

Kepner and Tregoe (1965) developed procedures that enable a manager to approach a problem systematically and to solve it efficiently by making that specific decision that will best take care of the problem. The main steps of the proposed model include: problem analysis, decision analysis and potential problem analysis. The rational processes behind those three approaches are spelled out in progression.

Kepner and Tregoe (1965) developed procedures that enable a manager to approach a problem systematically and to solve it efficiently by making that specific decision that will best take care of the problem. The main steps of the proposed model include: problem

analysis, decision analysis and potential problem analysis. The rational process behind those three approaches are spelled out in progression.

Haynes and Massie (1967) viewed that outlining decision steps would be an over simplification, for the sequence is not rigidity fixed in actual practice; however, it may be useful to break down the process arbitrarily into five steps viz., I) consciousness of the problem –provoking situation, ii) recognition of the problem and its definition, iii) search for and analysis of variable alternatives and their probable consequences, iv) selection of the best solution and v) implementing the decision.

A study conducted by Singh and Sinha (1968) Delhi territory in an attempt to delineate the stages of decision making process with respect to the use of artificial fertilizers and vegetable cultivation concluded eleven steps.

They were:

- Desire for change
- Getting information
- Recognition of the problem
- Legitimization and getting additional information
- Consideration of alternative means
- Consideration of resources
- Consideration of alternative use of means
- Choice of alternative use (decision)
- Getting further information before action
- Action upon the decision taken
- Evaluation

Eberhard (1969) listed the stages in decision making as: I) realization of the problems precedes the search for information, ii) the search for information precedes the working out of alternatives, iii) the working out of alternatives precedes the assessment of alternatives and v) the assessment of alternatives precedes decision.

Kosal (1970) outlined six steps of decision making:

- Awareness of the problem
- Diagnosis of the problem
- Search for the alternatives
- Analysis and evaluation of the alternatives

- Selecting the best solution
- Implementing the decision

In respect of public decision making process Hendee et al. (1974) defined five stages:

Issue definition: where various legal, environment and fiscal constraints help to identify a range of possible alternatives that might require public input.

Collection: Including all the varied processes, which yield input from citizens.

Analysis: The description of the nature, content, variation and extent of public input.

Evaluation: The subjective interpretation and weighing of all data that have been collected and analysed for the purpose of making a decision.

Decision implementation: The process of providing feed back to the public, securing review and translating a decision into a program of action.

According to Simon (1976) the task of a decision involves three steps.

- Listing of all the consequences that follow upon each of these strategies
- The comparative evaluation of these sets of consequences
- Determination of all the consequences that follow upon each of these

strategies

4.2 Economic Performance and its Influencing Factors.

A study by Bohlen and Beal (1950) in Iowa State showed that there was relationship between farm income and risk taking ability of farmers. Also, this finding was supported by observations of Fliegel (1960).

Parthasarathy and Meenakshi (1960) reported that the size of operational holdings was not found to influence the difference in net income of farmers.

Education had higher pay off in a technological dynamic economy, where the scope for exercise of discretionary abilities, adaptability and decision making ability were higher (Nelson and Phelps, 1966).

Mayer and Rieck (1967) found that extension efforts in Wisconsin contributed for 51.50 per cent increase in farm income. Whereas, Chaudhuri (1968) revealed that the level of agricultural productivity and income were significantly related to the level of education of farmers. Also, Clark and Fong (1970) indicated that higher earnings were associated with higher levels of education.

Further, Akino and Hayami (1974) revealed that an increase in education resulted in 25 per cent increase in agricultural output growth.

Reddy (1974) revealed that scientific orientation, economic motivation and risk preference were associated with farm productivity among the serviced small farmers.

According to Subramanian (1976) and Vijayakumar (1976) the farm credit increased the farmers' income significantly. The studies of Suryaprakash (1978), Ramareddy (1984), Purushurama reddy (1985) and Ramegowda and Umashankar (1987) also observed the similar results.

Chamala and Crouch (1977) in their study on patterns of adaptation and factors associated with economic success in the wool industry in Australia, found that achievement motivation, technical and conceptual skills were related to the economic performance of graziers and these factors differentiated more successful and less successful graziers.

Singh et al. (1979) in a study in Kalyanpur block of Uttar Pradesh observed that the cost benefit ratio as 1:11 due to extension efforts.

Desai (1981) found that, the economic performance of cotton growers of Karnataka was not significantly associated with their age, family size, empathy, achievement motivation, risk preference, economic motivation. Social participation and cosmopolitaness. However, production assets owned by the farmers had significant association with economic performance.

A significant relationship between economic performance of trained farmers and their competition orientation, personal guidance, innovation proneness, cosmopolitaness economic motivation and mass media participation was recorded by Renukaradhya (1983).

Sagar (1983) in his study of agro-economic, socio-psychological and extension communication variables related to the farmer's productivity of major field crops in Haringhata block of West Bengal, found that irrigation index, better farming were some of the variables related to farmers, productivity.

Kallianpur (1984) study provided evidence for the hypothesis that farm size and productivity are inversely related.

Badachikar (1985) found the mean benefit-cost ratio of large farmer was 3.71:1, whereas, small farmers' ratio was 2.58:1, and there was significant difference between small and large farmers' economic performance. Also, significant relationship was recorded between economic performance and competition orientation as well as achievement orientation among farmers in drought prone areas of Bijarpur district.

Banerjee (1985) revealed that marginal and small farmers are most efficient in using variable resources, with the result that productivity was higher in these farms.

Narayanagowda (1986) inferred that there was no significant difference among farmers' categories with respect to economic performance of ragi growers measured through benefit-cost ratio.

Rameshbabu (1987) observed that economic performance of big farmers was greater than that of small and marginal farmers and there was no significant difference between small and marginal farmers. Further, he reported that economic performance was not significantly associated with socio-economic status, risk orientation, extension participation and guidance.

Nagaraja (1989) in his study on sericulture farmers revealed that size of land holding, area under mulberry, silkworm rearing intensity, rearing equipment owned, type of rearing house, experience in sericulture enterprises, education, risk orientation, competition orientation, economic motivation, levels of aspiration, innovation proneness, self-confidence, self-reliance, cosmopolitaness, deferred gratification, scientific orientation, achievement motivation, participation in training, personal guidance contact with extension agency and exposure to mass media were significantly related with economic performance of farmers.

4.3 Factors Related with Management Level of Farmers.

Heady (1946) inferred that large farmers were better managers.

Westermarck (1958) reported that managerial excellence of farmers, studied in atleast rural farm schools were significantly better than those who had no educational background.

Nielson (1962) concluded that managers possessed a biography of past experience (age, education, experience, urbanization etc.,) drives and motivations and capabilities, both technical and conceptual (antecedents) which produce managerial behavior (process) and in turn produce an outcome or result.

Neil and Rogers (1963) revealed that achievement motivation is significantly related with the measures of management of farm. Also, the findings were lent support by Morrision (1964) and Singh and Singh (1975) studies.

A study by Reddy (1983) demonstrated that education, size of land holdings, material possession, extension contact, mass media participation and innovation proneness were associated with management orientation of groundnut growers in Kolar district.

Renukaradhya (1983) showed that management orientation of trained farmers was significantly associated with their personal guidance, competition orientation, innovation proneness, mass media participation, cosmopolitanism and economic motivation.

Badachikar (1985) study in drought prone district recorded that economic motivation, innovativeness, competition orientation and achievement motivation of farmers were positively and significantly correlated with their management orientation,

Rao (1985) found a significant and positive correlation between farming performance and the farmers characteristics such as, their education, farm size, cosmopolitanism, caste, training, social participation, knowledge, innovativeness, information seeking, decision making, self-confidence, achievement motivation, utilization of assistance, result orientedness and risk orientation.

A significant relationship of self-reliance and personal guidance with management orientation of farmers was reported by Sreekumar (1985).

Bora and Ray (1986) pointed out that returns to the farmers management as significantly correlated with farm size, status of land ownership, irrigation index, cropping intensity, education, utilisation of mass media, innovation, proneness, experience in farming, economic motivation, rationality in decision making, risk orientation, competition orientation and level of aspiration.

Sumathi (1987) in her study found significant relationship between management orientation of coffee growers and their education, cosmopolitanism, mass media participation, extension agency contact, extension participation, innovation proneness, risk orientation, competition orientation, self-confidence, self-reliance, level of aspiration and technical knowledge.

Nagaraja (1989) reported that size of land holding, area under mulberry cultivation, rearing equipment owned, type of rearing house, experience in sericulture enterprise, education, risk orientation, competition orientation, economic motivation, level of aspiration, innovation proneness, self-confidence, self-reliance, cosmopolitanism, deferred gratification, scientific orientation, achievement orientation, participation in training programme, personal guidance, contact with extension agency and mass media exposure were significantly correlated with management efficiency of sericulturists. Whereas,

irrigation potential, family types, family size, silkworm rearing intensity were not significantly related.

5 Conceptual Model

Conceptual model is a diagrammatic representation outlining the dominant elements of a system and their inter relationships with respect to a criterion variable (East-West Technology and Development Institute, 1977). Conceptual model is formulated on the basis of experience or intuition. It represents the researcher's understanding of a particular set of circumstances and of the simplifications which he feels may be made to inherently complex relationships (Jeffers, 1975). In the present study, in addition to experience and intuition, review of related studies was also formed the basis for the conceptual model developed for the study. The variables included in the study are grouped into antecedent and consequent variables.

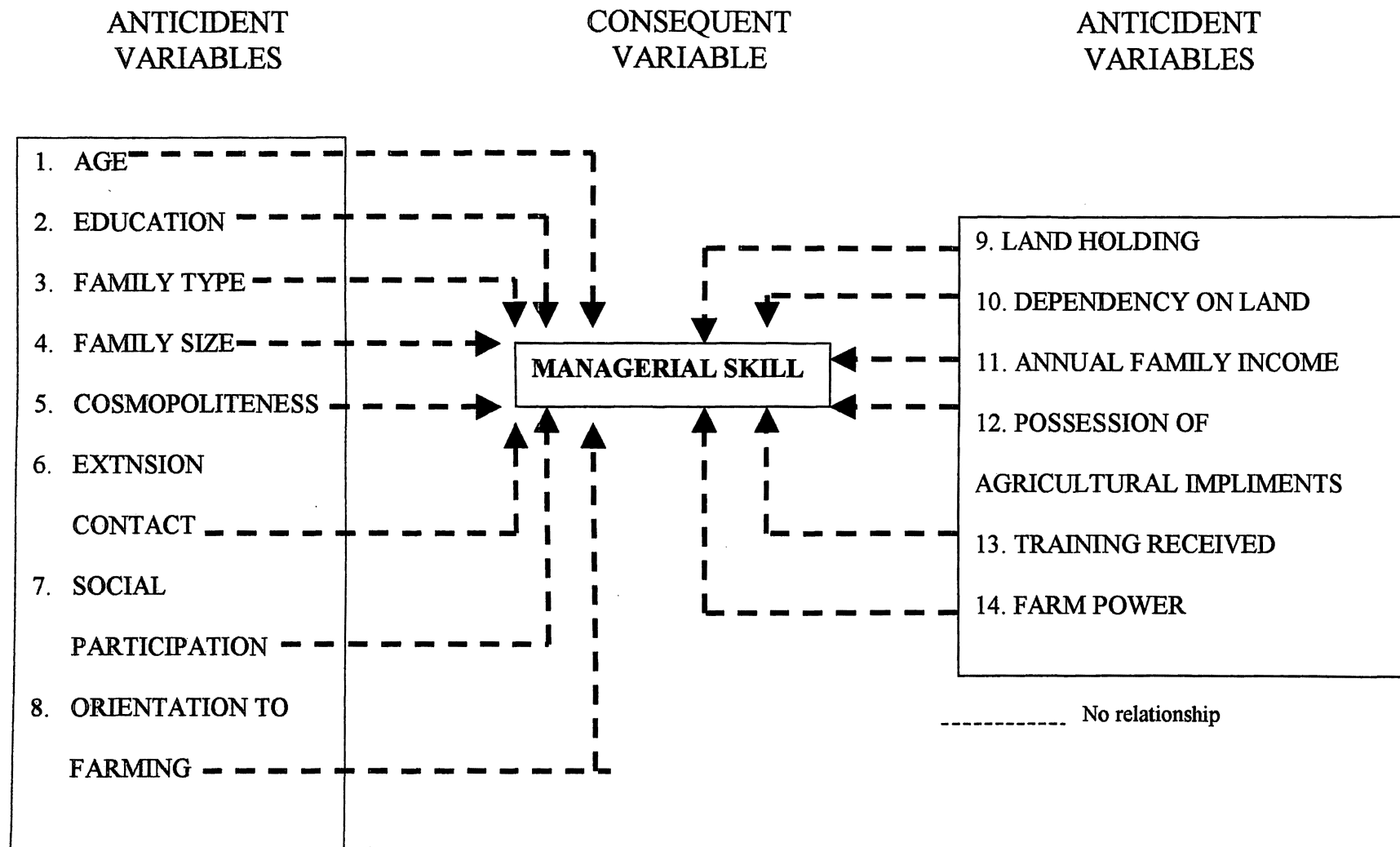


Fig.2. CONCEPTUAL MODEL OF THE STUDY

CHAPTER- III
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METHODOLOGY
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METHODOLOGY

The procedure in selection of village samples for the study, imperial measurement of different concepts and variables; devices used for collection of data and statistical analysis of data are described in this chapter under the following heads

1. Locale of the study
2. Population of the study
3. Selection of the respondents
4. Research design
5. Operationalisation and measurement of concepts used in the study
6. Measurement techniques of managerial skill
7. Construction of interview schedule, pre-testing and data collection
8. Statistical methods used for analyzing the data.

1. LOCATION OF THE STUDY:

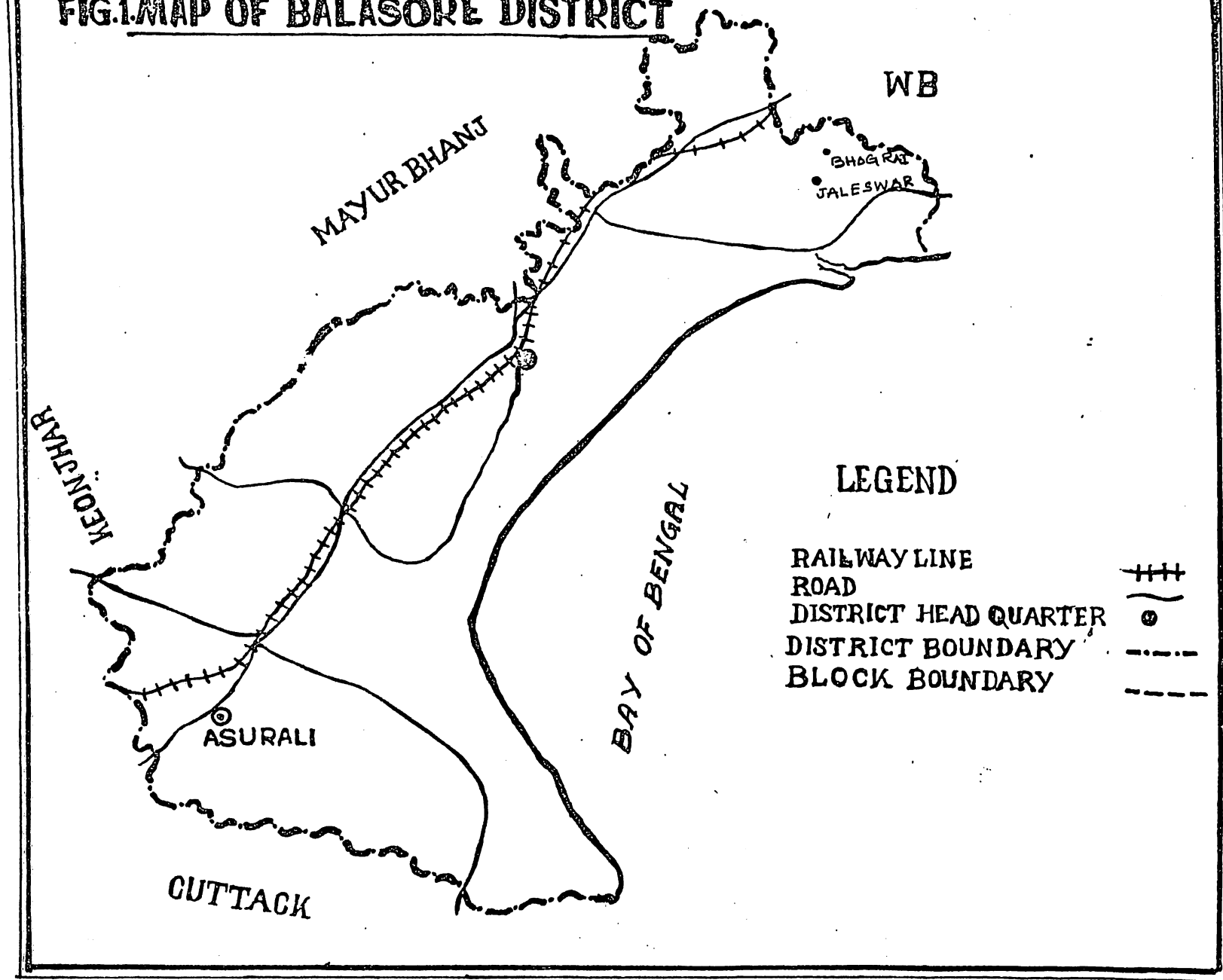
The present day study was conducted in the purposively selected Balasore district (fig 1) of Orissa state. The selection of district was purposive because this district is highly prone to different natural calamities like flood, drought, cyclone etc because of its coastal position of Bay of Bengal. Secondly, the farmers of this district are highly progressive who adopts the innovation immediately.

Two blocks were selected randomly out of 19 blocks of Balasore district. The blocks were Bhograi and Jáleswar. Further, from each of the blocks one village was selected purposively keeping the progressiveness of the farmer in mind of the researcher. Thus, the selected villages were Baunsdhia and Suga. (Fig 2)

2. POPULATION OF THE STUDY

A preliminary survey was conducted by the researcher in order to list out all the farmers of the two selected villages. Further, they were categorised into three categories

FIG. 1. MAP OF BALASORE DISTRICT



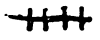




WB

MAYUR BHANG

BHADRAT
JALESWAR

KEONJHAR

LEGEND

- RAILWAY LINE 
- ROAD 
- DISTRICT HEAD QUARTER 
- DISTRICT BOUNDARY 
- BLOCK BOUNDARY 

BAY OF BENGAL

CUTTACK

ASURALI

depending upon their land holdings viz., big farmers having land size of more than 5 acres, small farmers having land size 2.5 acre to 5 acre, and marginal farmers having land size of less than 2.5 acres. These farmers constituted the population of the present study. The main intention here was to find out the managerial skill of different categories of farmers of the selected villages.

3. SELECTION OF RESPONDENTS

Forty-five farmers from each of the villages were selected randomly from the list of farmers prepared which comprised of 15 big, 15 small, 15 marginal farmers. Thus, a total of 30 big, 30 small, 30 marginal farmers from both the villages were treated as the sample respondents for the present study.

4. RESEARCH DESIGN

Survey research design was adopted for the present study. According to Mulay and Sabarathnam (1980), the term survey is applied to a wide variety of investigation such as classical poverty surveys, Gallop polls in United States or social condition of rural poor is concerned with examining the nature of social condition, activities and attitude of the people. The surveys are always carried out in a field situation. They could be either descriptive or analytical (diagnostic). It needs a companion of techniques which are standardised and which cover a large representative sample. A good survey design includes information on necessary matching characteristics and a carefully thought out classification of stimulus and effect variables.

5. OPERATIONALISATION AND MEASUREMENT OF CONCEPTS USED IN THE STUDY

Karlinger (1964) pointed out that operational definitions are indispensable ingredient of scientific research because they enable the researcher to measure the variables and they are the bridges between the theory. Hypothesis construct level and the level of observation.

The Table 3.1 below gives a picture about different personal and socio-economic variables used in the study along with their empirical measurement.

Table-3.1 Personal and socio-economic variables used in the study and their empirical measurement.

Personal and socio-economic variables		Instrument used
Variable No		
X ₁	Age	Schedule developed for the study
X ₂	Education	-do-
X ₃	Family Type	-do-
X ₄	Family Size	-do-
X ₅	Cosmopolitaness	Schedule Developed by Desai
X ₆	Extension Contact	Schedule Developed by Study
X ₇	Social Participation	-do-
X ₈	Orientation To Farming	-do-
X ₉	Land Holding	-do-
X ₁₀	Dependency on Land	-do-
X ₁₁	Annual Family Income	-do-
X ₁₂	Possession Of agricultural implements	-do-
X ₁₃	Training Received	-do-
X ₁₄	Farm power	-do-

X₁ Age

In the present study age was operationalised as the actual age of the respondent in completed years at the time of study i.e. June'1998. After observing the distribution of the respondents according to their age, they are categorised into the following four categories.

Sl No	Age category
1.	< 30 years
2.	30 - 40 years
3.	41 - 50 years
4.	> 50 years

X₂ Education

Education status refers to the educational attainment of the respondents at the time of study. The respondents were categorised into five categories according to their educational status. The scoring pattern to for each of the categories were as follows:

SI No	Categories	Score Assigned
1.	Illiterate	0
2.	Primary School Standard	1
3.	M.E School standard	2
4.	High School Standard	3
5.	College and above	4

X₃ Family Type

Family type in the present study refers to whether the adult members of the family were living jointly together or singly. Accordingly, they were categorised into two categories depending upon their family type. The scoring pattern were as follows:

SI No	Categories	Score Assigned
1.	Single /Nuclear	1
2.	Joint	2

X₄ Family Size

Family size in the study refers to the total number of male and female members of the family, including children. The family size was categorised into three categories as follows

Sl No	Categories	Assigned Score
1	> 5 Members	1
2.	5-10 Members	2
3.	> 10 Members	3

X₅ Cosmopolitaness

Cosmopolitaness is defined as the degree to which an individual is oriented outside his immediate social system.

The variable was measured by the procedure adopted by Desai (1981), with some modification depending upon the suitability. It involves two aspects namely, frequency of visits to the nearest town and the purpose of visit to the town.

The items included and scoring pattern adopted for frequency and purpose of visits outside the one's social system is presented here under

Frequency of visit

Sl No	Frequency	Score
1.	Two or more times a week	5
2.	Once in a week	4
3.	Once in a fortnight	3
4.	Once in a month	2
5.	Occasionally	1
6.	Never	0

Purpose of visit

Sl No	Purpose	Score
1.	Majority of visits relating to agril. And allied enterprises	3
2.	Some related to agril. And allied enterprises	2
3.	Personal domestic and entertainment	1
4.	No response	0

Consequently, the minimum and maximum obtainable score of a farmer ranges from 0 to 8. After getting the score of the farmers on this variable they were categorised into three categories by taking mean and S.D as a point of check. The categorization were as follows:

SI No	Categories	Criteria used
1.	High cosmopoliteness	$\geq \text{Mean} + 1\text{S.D}$
2.	Medium cosmopoliteness	In between $\text{Mean} \pm \text{S.D}$
3.	Low cosmopoliteness	$\leq \text{Mean} - 1\text{S.D}$

X₆ Extension Contact

Extension contact in the present study refers to the frequency of contact of the respondents with the extension personnel like village agricultural workers, J.A.O / A.E.O, subject matter specialists and the university scientists. The weightage given for contacting different extension personnel were as follows

SI No	Extension personnel	Score assigned
1.	Village Agril. Worker	1
2.	A.E.O / J.A.O	2
3.	Subject matter specialists	3
4.	University Scientists	4

Further, the scoring pattern for frequency of contact with extension personnel were as follows

SI no	Frequency of extn. Contact	Score assigned
1.	Regularly	3
2.	Often	2
3.	Rarely	1
4.	Never	0

Finally, the total score for each of the respondent on their extension contact was computed by multiplying their frequency of contact with the score assigned to different levels of extension officers. The minimum and maximum possible score ranges from 0 to 12. The respondents were categorised as high, medium and low extension contact by taking mean and standard deviation as follows

Sl No	Extension contact categories	Criteria
1.	High	$> \text{mean} + 1 \text{ S.D}$
2.	Medium	In between mean \pm S.D
3.	Low	$< \text{mean} - 1 \text{ S.D}$

X₇ Social Participation:

The scoring pattern for each of the categories Social participation in the present study refers to the active-passive involvement of respondents in different organisation present in their ocality and were categorised into four categories were as follows

Sl No	Categories	Score Assigned
1.	Not a member of any organisation	1
2.	Member of one organisation	2
3.	Member of more than one organization	3
4.	Office bearer	4

Further, the respondents were categorised into two categories depending upon their membership in different organisation. The respondents were under low social participation category while; others were included under high social participation category. The frequency distribution for each of the categories were finally recorded.

X₈ Orientation to Farming

The orientation of the farmers to farming refers to the way in which they view farming whether as a business or normal way of life or interested in scientific farming. Accordingly, the respondents were categorised into three groups as follows

SI No	Categories	Score assigned
1.	Farming as a way of life	1
2.	Farming as a business	2
3.	Interest in scientific farming	3

X₉ Size of holding

Size of holding refers to the possession of cultivated land by the respondents. The respondents were classified into following three categories depending upon their size. Basing on this variable, the respondents were selected

SI No	Land size	Type of farmer	Score assigned
1.	< 2.5 acre	Marginal	1
2.	2.5 to 5 Acres	Small	2
3.	> 5 acres	Big	3

X₁₀ Dependency on land

The dependency on land was operationalised as the extent to which the respondents were dependent on their land. The respondents were categorised into following three categories

SI No	Dependency	Score assigned
1.	Fully (>60%)	3
2.	Partial (20-60%)	2
3.	Not dependent (<20%)	1

X₁₁ Annual Family income

Annual family income in the present study refers to the total income of the respondents from all the sources in a year. They were categorised into five categories according to their total income. The scoring pattern for each of the categories were as follows

Sl No	Categories	Score assigned
1.	Upto Rs 15,000	1
2.	Rs 30,001 to 45,000	2
3.	Rs 45,001 to 60,000	3
4.	Above Rs 60,000	4

X₁₂ Possession of modern agricultural implements

Possession of agricultural implements by the farmers in this study refers to the different improved agricultural implements possessed by the respondent farmers. The farmers were categorised into three categories depending upon the total number of improved implements owned by them.

Sl No	Total no of improved implements	Score assigned
1.	< 5	1
2.	5 to 10	2
3.	More than 10	3

X₁₃ Training received

Training received refers to the total number of training programmes attended by the respondents. It may be on agricultural or on other areas. The total number of training attended by the respondents on agriculture was taken into consideration for further analysis.

X₁₄ Farm power

Farm power refers to the ways by which the farmers cultivate their land through their crop. For this purpose they commonly use bullocks, buffaloes, power tiller, tractors etc. the respondents were categorised into following four categories depending on the farm power possessed by them.

SI No	Farm power	Score Assigned	Categories
1.	Bullock	1	Low
2.	Buffalo	1	Low
3.	Power tiller	3	High
4.	Tractor	5	High

The respondents who use bullocks and buffaloes for different farm operations were categorised under low farm power while the others who use power tillers and tractors were categorised under high power possession.

6. MEASUREMENT TECHNIQUE OF MANAGERIAL SKILL

Managerial skill in the present study was operationalised on the way by which the farmers manage or tackle the different crisis which they commonly face such as flood, cyclone, drought, pests and disease problems.

In order to find out the managerial skill of the farmer the following procedure was followed.

6.1. Preparation of draft schedule

The different problem / crisis situations which the farmer commonly face were listed under different heads viz. flood, cyclone, drought and pests & diseases, in consultation with the farmers and scientists of the university. After listing out different problems, the possible

alternatives solutions to these problems were determined in consultations with the experts in respective fields viz. scientists on Agronomy and plant protection. Under each of the problem / crisis, about three or four possible alternatives were listed.

6.2. Administration of the Draft Schedule to the Farmers

In order to judge the suitability relevancy and appropriateness of each alternative the draft schedule was administered to the farmers of other areas. In this process some of the alternative solutions were added or deleted from the draft schedule. Finally, under the drought , pest and diseases, flood & cyclone, 7 and 20 problems / crisis along with their possible alternative solutions were included in the final schedule, respectively.

The minimum and maximum possible score on managerial skill ranges from 14 to 43 for flood & cyclone, 3 to 18 for drought and 1 to 13 for pests and diseases. The scoring pattern for the managerial skill has been given in Appendix-II.

After getting the score on each crisis, it was converted to the managerial skill index by using the following formula. The managerial skill was computed for each crisis as well as by taking all the crisis situation together for flood & cyclone, drought and disease and pest. The computed index was utilized for further analysis.

$$\text{Managerial Skill Index} = \frac{\text{Total score obtained by the farmer}}{\text{Max. obtainable score}} \times 100$$

Finally, the respondents were categorised into following three categories viz. high, medium and low managerial skill separately for flood, drought & cyclone and pest and disease management by taking mean and standard deviation as a point of check.

SI No	Categories on managerial skill	Criteria used
1.	High	\geq mean +1 S.D
2.	Medium	In-between mean \pm 1 S.D
3.	Low	\leq mean -1 S.D

7. CONSTRUCTION OF INTERVIEW SCHEDULE, PRE-TESTING AND DATA COLLECTION

The interview schedule was prepared by the researcher keeping all the objectives in the mind. In the first part of the interview schedule the different personal and socio-economic profile of the respondents viz., age, education, family size, family type, annual income etc were collected, while, in the second part, the managerial skill of the farmer was collected.

After preparing the draft schedule, it was pre-tested with 18 farmers (20% of the sample respondents) of other nearby villages. Some of the changes and suggestions were incorporated in the final interview schedule.

The data were collected by the researcher himself during June'1998 by personal contact with the farmers. Firstly, a good rapport was established with the farmers which facilitated the researcher to ask questions freely and discussed any matter pertaining to the study and to record information received from the respondents. The schedule was retranslated into local language i.e. Oriya to facilitate the researcher for data collection.

8. STATISTICAL METHODS USED FOR ANALYSING THE DATA

The different statistical tests used for analysing the data in the present study were as follows

8.1. Percentage

Percentages were used in descriptive analysis for making simple comparison between two responses. For calculating percentages, the frequency of a particular cell was multiplied by 100 divided by the total number of respondents in the particular category to which cell they belonged.

$$\text{Percentage(\%)} = \frac{\text{No of respondents}}{\text{Total no of respondents}} \times 100$$

8.2. Mean Score (M.S)

It is also another simple comparison, which is calculated by using the following formula

$$M. S. = \sum f_x / N$$

Where $\sum f_x$ = sum of total score obtained by the individual.

N = number of respondents

8.3. Standard Deviation

The standard deviation was found out by taking the differences of each item in the scores from the arithmetic mean, squaring the difference, summing all the squared differences, dividing by the number of items and then extracting the square root. Standard deviation was used for categorisation of the respondents.

$$\sigma = \sqrt{\sum (x - \bar{x})^2 / N}$$

Where, S.D. = standard deviation

N = Number of items

8.4. Spearman's Rank Co-rrelation Test

The Spearman's rank co-rrelation test (r_s) was applied to find out the relationship between the different personal and socio-economic characteristics with the managerial skill of different categories of the farmer. The r_s is a measure of association which requires that both the variables be measured in least ordinal scale the objects or individual under study may be ranked into two ordered series (Siegel, 1956)

$$r_s = 1 - \frac{6 \sum d_i^2}{N^3 - N}$$

Where, d = difference between two ranks

N = No of subjects

CHAPTER - IV



RESULTES AND DISCUSSION



RESULTS AND DISCUSSION

The results of the study have been presented and discussed in this chapter under the following heads:

1. Personal and socio-economic characteristics of the farmers.
2. Documentation of major crisis faced most commonly by the farmers.
3. Managerial skill of different categories of managing flood and cyclone.
4. Managerial skill of different categories of farmers in managing drought.
5. Managerial skill of different categories of farmers in managing pests and diseases.
6. Managerial skill of different categories of farmers in managing crisis as a whole.
7. Relationship of personal and socio-economic characteristics of the farmers with their managerial skill.

1. PERSONAL AND SOCIO-ECONOMIC CHARACTERISTICS OF THE FARMERS

Table 4.1 indicates the distribution of the different categories of farmers on the basis of their personal and socio-economic characteristics. The different personal and socio-economic characteristics of the respondent farmers were studied in detail in order to know their profile and to find out its relationship with their managerial skill. The different personal and socio-economic characters studied were age, education, family type, family size, cosmopolitaness, extension contacts, social participation, orientation to farming, size of holding, dependency on land, annual family income, possession of agricultural implements, training received and farm power.

1.1 Age

A perusal of table 4.1 indicates that a majority of big farmers i.e. 36 per cent belongs to the age group of more than 50 years. Twenty seven per cent each belong to the age group

Table 4.1 Personal and socio-economic profile of the farmers

Personal and socio-economic status category	Big farmers		Small farmers		Marginal farmers		Total	
	f	%	f	%	f	%	f	%
A. Age								
a. <30 years	3	10.0	3	10.0	5	17.0	11	12.0
b. 30 to 40 years	8	27.0	2	7.0	3	10.0	13	14.0
c. 41 to 50 years	8	27.0	14	47.0	12	40.0	34	38.0
d. > 50 years	11	36.0	11	36.0	10	33.0	32	36.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
B. Education								
a. Illiterate	8	27.0	4	13.5	0	0.0	12	13.0
b. primary	6	20.0	14	47.0	11	37.0	31	35.0
c. Middle	0	0.0	2	6.0	5	17.0	7	8.0
d. high school	14	47.0	6	20.0	7	23.0	27	30.0
e. college and above	2	6.0	4	13.5	7	23.0	13	14.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
C. family type								
a. joint	6	20.0	14	47.0	12	40.0	32	36.0
b. nuclear	24	80.0	16	53.0	18	60.0	58	64.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
D. Family Size								
a. < 5 members	4	13.0	14	47.0	3	10.0	21	23.0
b. 5-10 members	20	67.0	4	13.0	15	50.0	39	44.0
c. above 10 members	6	20.0	12	40.0	12	40.0	30	33.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
E. Cosmopolitaness								
a. high	6	20.0	2	6.0	8	27.0	16	18.0
b. medium	16	54.0	24	80.0	20	67.0	60	67.0
c. low	8	26.0	4	14.0	2	6.0	14	15.0

Personal and socio-economic status category	Big farmers		Small farmers		Marginal farmers		Total	
	f	%	f	%	f	%	f	%
Total	30	100.0	30	100.0	30	100.0	90	100.0
F. Extension contact								
a. High	8	27.0	4	14.0	6	20.0	18	20.0
b. Medium	20	66.0	20	66.0	22	73.0	62	69.0
c. Low	2	7.0	6	20.0	2	7.0	10	11.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
Mean	3.024							
S.D	1.422							
G. Social Participation								
a. High	26	87.0	24	80.0	25	83.0	75	83.0
b. Low	4	13.0	6	20.0	5	17.0	15	17.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
H. Orientation to Farming								
a. Farming as a way of life	15	50.0	26	67.0	22	73.0	63	70.0
b. As a business	10	33.0	4	13.0	6	20.0	20	22.0
c. Scientific Farming	5	17.0	0	0.0	2	7.0	7	8.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
I. Size of Holding								
a. < 2.5 Acre	0	0.0	0	0.0	30	100.0	30	33.0
b. 2.5-5 acre	0	0.0	30	100.0	0	0.0	30	33.0
c. >5 Acre	30	100.0	0	0.0	0	0.0	30	33.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
J. Dependency on Land								
a. Fully	0	0.0	16	53.0	14	47.0	30	33.0
b. Partially	26	87.0	12	40.0	12	40.0	50	56.0
c. Not dependent	4	13.0	2	7.0	4	13.0	10	11.0
Total	30	100.0	30	100.0	30	100.0	90	100.0

Personal and socio-economic status category	Big farmers		Small farmers		Marginal farmers		Total	
	f	%	f	%	f	%	f	%
K. Annual Family income								
a. < 30,000	0	0.0	5	17.0	19	64.0	24	27.0
b. 30,001-45,000	3	10.0	7	23.0	7	23.0	17	19.0
c. 45,001-60,000	15	50.0	12	40.0	4	13.0	31	34.0
d. >60,000	12	40.0	6	20.0	0	0.0	18	20.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
L. Possession of modern agril. Impliments								
a. < 5 number	6	20.0	14	46.0	17	57.0	37	41.0
b. 5-10 Number	21	70.0	15	50.0	13	43.0	49	54.0
c. > 10 Number	3	10.0	1	4.0	0	0.0	4	5.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
M. Training received								
a. Nil	30	100.0	29	97.0	26	87.0	85	94.0
b. On Agril.	0	0.0	1	3.0	4	13.0	5	6.0
c. Other than agril.	0	0.0	0	0.0	0	0.0	0	0.0
Total	30	100.0	30	100.0	30	100.0	90	100.0
N. Farm Power								
a. high	13	43.0	8	27.0	0	0.0	21	23.0
b. Low	17	57.0	22	73.0	30	100.0	69	77.0
Total	30	100.0	30	100.0	30	100.0	90	100.0

of 30 to 40 years and 41 to 50 years. While, only 10 per cent of them belong to the age group of less than 30 years. As regards to the small farmers, a majority i.e. 47 per cent belongs to the age group of 41 to 50 years. Further, it was observed that 40 per cent of marginal farmers belong to the age group of 41 to 50 years. The same table also indicates the distribution of the total respondents in different age categories.

1.2 Education

It was revealed from the table -4.1 that a majority of big farmers i.e. 47 per cent had educational status of above high school standard while, 47 per cent and 37 per cent of small and marginal farmers had educational status of upto primary school standard, respectively. The same table also indicates the distribution of the respondents on the basis of their educational status.

1.3 Family Type

Table 4.1 indicates the distribution of the respondents on the basis of their family type. It was revealed that majority i.e. 24 per cent, 16 per cent and 18 per cent of big, small and marginal farmers had family of nuclear / single type. The others belongs to the joint family when all the farmers were taken into account it was observed that 58 per cent of them had family of nuclear / single type.

1.4 Family Size

Table 4.1 indicates the distribution of the respondents on the basis of their family size. It was found that 67 per cent of big farmers had family size consisting of 5 to 10 members, while, 47 per cent and 50 per cent of small and marginal farmers had family size consisting of less than 5 members and 5 to 10 members, respectively. The same table also indicates the distribution of total farmers on the basis of their family size.

1.5 Cosmopolitaness

Table 4.1 indicates the distribution of the respondents on the basis of their cosmopolitaness. It was found that 20.0 per cent, 54.0 per cent and 26 per cent of big

Fig.3. Histogram showing the personal & socio-economic characteristics of the respondents

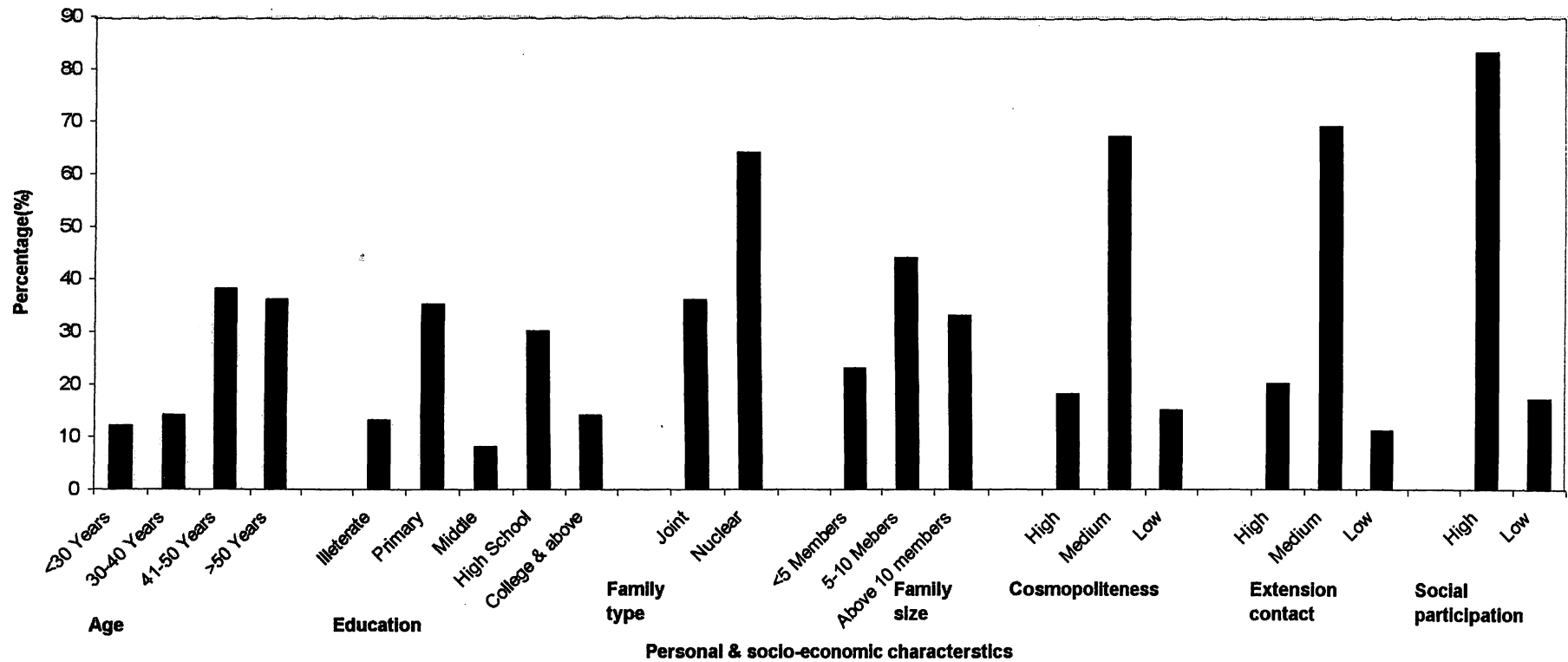
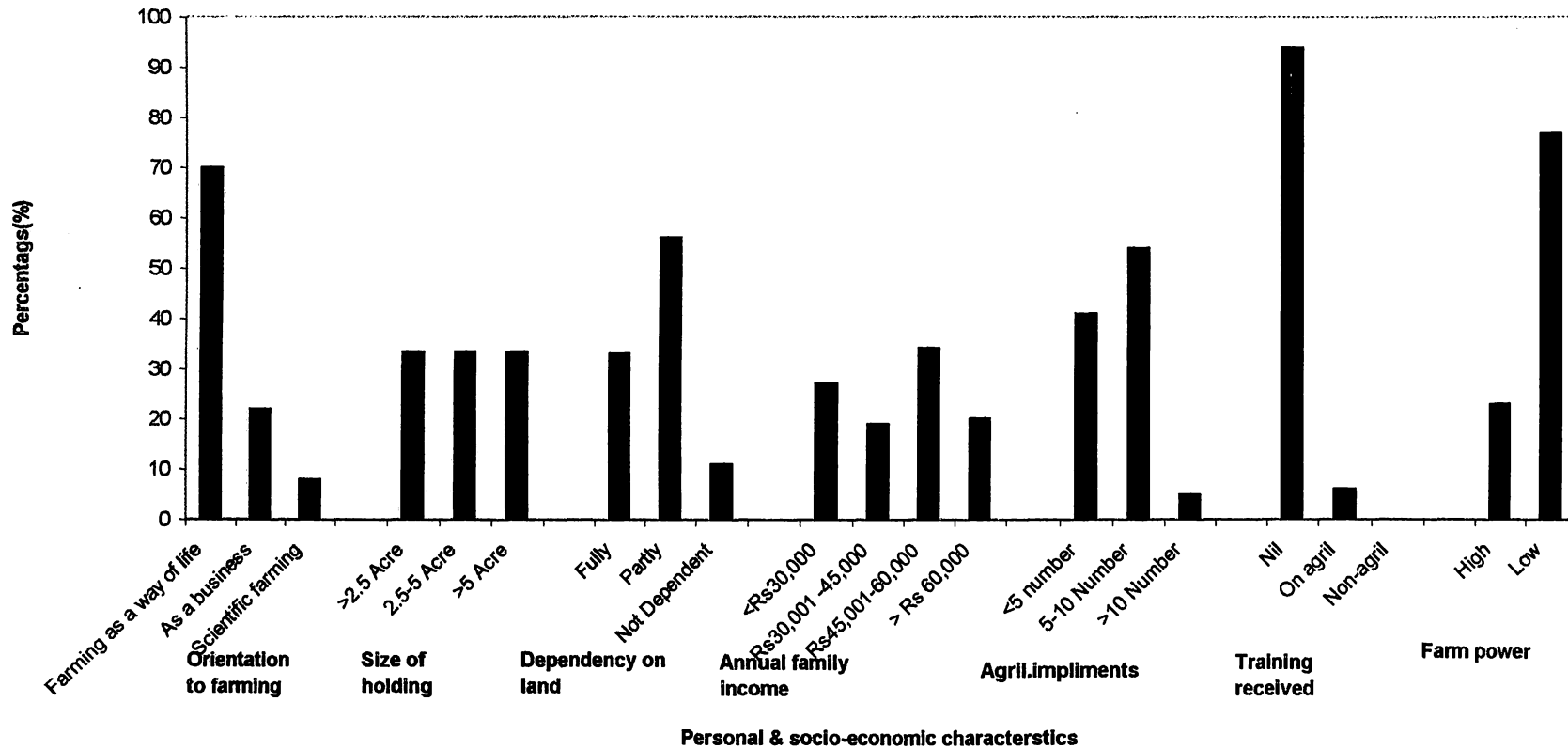


Fig3. Histogram showing personal & socio-economic characteristics of the respondents



farmers had high, medium and low level of cosmopolitanness, respectively. Six per cent, 80.0 per cent and 14.0 per cent small farmers had high, medium and low level of cosmopolitanness, respectively. Again 27.0 per cent, 67.0 per cent and 6.0 per cent of marginal farmers and 18.0 per cent, 67.0 per cent and 15.0 per cent of total farmers had high, medium and low level of cosmopolitanness, respectively.

1.6 Extension contact:

It was revealed from table 4.1 that a majority i.e. 66 per cent, 66 per cent and 73 per cent of big, small and marginal farmers had medium level of extension contact. The same table also indicates the distribution of the total respondents basing on their different level of extension contact i.e. high, medium and low level of contact.

1.7 Social Participation

A perusal of table 4.1 indicates that 83 per cent of the total farmers had high social participation while, only 17 per cent of the total farmers had low social participation. The same table also indicates that there was high social participation among the different categories of farmers viz. big, small and marginal farmers to the extent of 87 per cent, 80 per cent, and 83 per cent respectively.

1.8 Orientation to Farming

It was revealed from the table 4.1 that very few farmers from different categories are oriented towards scientific farming. It was observed that only 17 per cent and 7 per cent of big and marginal farmers are oriented towards scientific farming, respectively. None of the small farmers was found to be oriented scientific farming. Further, it was found that a majority i.e. 70 per cent of total farmers do farming as just a way of life i.e. they feel that they have to do something for their consumption.

1.9 Size of Holding

Size of holding was the indication basing on which the different categories of farmers were selected for the purpose of present study. Thirty farmers from each category

viz., big, small and marginal wise selected for the study. As a result of which altogether 90 farmers constituted the sample for the study. (Table-4.1)

1.10 Dependency on Land

Table 4.1 indicates that a majority i.e., 56 per cent of the total farmers partly depend on their land. While 30 per cent of them depend fully and 10 per cent do not depend upon their land at all. Similar is also in the case of big farmers. Where 87 per cent of them depend partly on their land. Further, 53 per cent and 47 per cent of small and marginal farmers depend fully on their land, respectively. The same table also indicates the distribution of all the respondents basing on their dependency on land.

1.11 Annual Family Income

Table 4.1 indicates the distribution of the respondents on the basis of their annual family income. It was found that 50 per cent of the big farmers had annual family income of Rs 45,000 to Rs 60,000. Sixty four per cent of marginal farmers had annual family income of less than Rs 30,000. Further, the same table indicates the distribution of different categories of farmers on the basis of their annual family income.

1.12 Possession of Modern Agricultural Implements.

It was observed from the table 4.1 that a majority i.e., 54 per cent of the total farmers had 5 to 10 numbers of modern agricultural implements. While 41 per cent and 5 per cent of them had implements of less of 5 numbers and more than 10 numbers, respectively. Further, 70 per cent, 50 per cent and 43 per cent of big, small and marginal farmers had modern agril. Implements of 5-10 numbers, respectively. The same table also indicates the respondents on the basis of their possession of modern agril. Implements.

1.13 Training Received

Table 4.1 depicts that 100 per cent, 97 per cent and 87 per cent of big, small and marginal farmers have not received or exposed to any type of training programme

neither on agriculture nor other than agriculture, respectively. Only 6 per cent of the total farmers were found to have received training of short duration on agriculture.

1.14 Farm Power

It was revealed from table 4.1 that 77 per cent and 23 per cent of the total farmers of all categories had possessed high and low farm power, respectively. The same table 4.1 also indicates the categories on the basis of their possession of farm power.

2. DOCUMENTATION OF MAJOR CRISIS FACED MOST COMMONLY BY THE FARMERS

It was revealed from the study that the major crisis faced most commonly by the farmers of the study area were flood, cyclone, drought and pest & diseases. Because of the coastal position of the study area (Balasore district of Orissa), it is prone to flood which is accompanied with cyclone. In every three years the people of the study area expect a flood and / or cyclone. In addition to flood and cyclone, drought is also a natural calamity of the study area which needs to be emphasized. How the people of the area manages skillfully with minimum loss to their crops. Lastly, the pest and disease problem also stands as a crisis in front of the farmers of all the areas / region.

Sl No	Crisis
1.	Flood and cyclone
2.	Drought
3.	Pest and diseases

In this study an attempt has been made by the researcher to find out the managerial skill of the farmers in combating with all the above crisis.

3. MANAGERIAL SKILL OF DIFFERENT CATEGORIES OF FARMERS IN MANAGING FLOOD AND CYCLONE

Table 4.2 indicates the managerial skill of different categories of farmers in managing different types of crisis situations due to flood and cyclone. It was revealed that

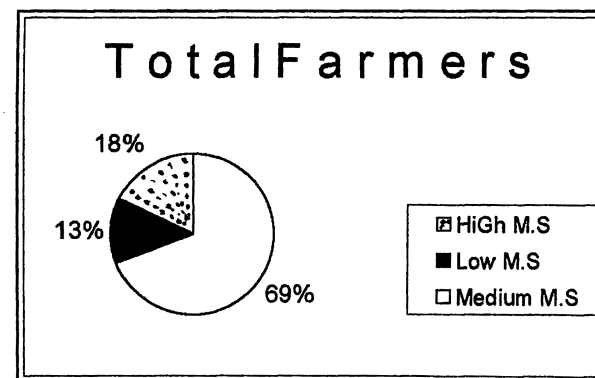
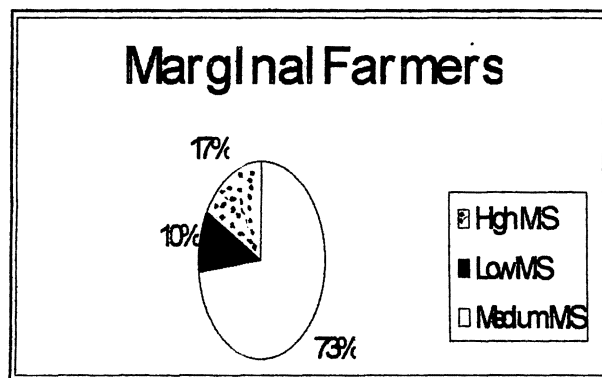
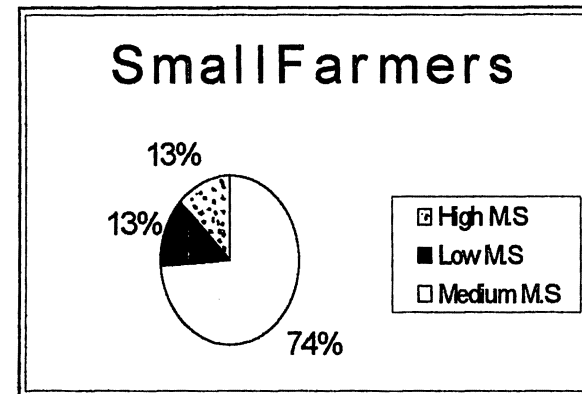
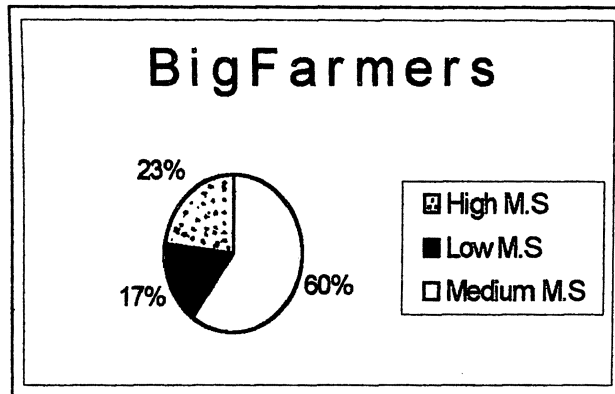


Fig.4 Pie-diagram showing the managerial skill of different categories of farmers in managing crisis due to flood and cyclone

the big farmers have highest managerial in respect of "deciding to take up new crops" after the flood and cyclone while, they have lowest managerial skill on "taking of contingency crop" which got the rank XVII. Big farmers have usually high economic status for which they take up the new crop after the flood and cyclone. They do not bother much for the loss made due to flood and cyclone and they take another risk by taking of a new crop after flood and cyclone. It may be possible reason for which the above situation got 1st rank so far as the managerial skill of big farmers is concerned. Further, in respect of crisis situation deciding to take up contingency crop by the big farmers got the last rank i.e their managerial skill is lowest. Because of high economic condition of big farmers they do not go for contingency crop to meet the loss made due to flood and cyclone. It might be the possible reason for which such type of result was obtained. The other crisis situation got the intermediate position as regards to the managerial skill of big farmers.

In case of small farmers it was found from the same table that their managerial skill was highest on "dependency on weather report". Because of the intermediate position of the small farmers they do not take challenging task before them. They depend on weather report first then they go for cropping. It may be the possible reason for getting such type of result.

Further, it was observed that "precautions taken for cyclone" got the lowest rank which means that their managerial skill was lowest on this situation probably due to the low risk bearing ability of small farmers they do not take precautions to minimise the loss caused due to cyclone. The other crisis situations got the intervening positions in respect of the managerial skill of small farmers.

It was observed that the managerial skill of marginal farmers in case of "ability to take up new crop". More involvement in agriculture by the marginal farmers might be the possible reason for which they take up new crop after the flood and cyclone. This situation got the rank I. Again, the situation "precaution taken for cyclone" got the lowest rank which indicates that marginal farmers have lowest managerial skill on this situation. The other crisis situations got the intermediate positions.

Lastly, an attempt was also taken to find out the managerial skill of all the farmers taken together (pooled sample). It was revealed that the "appropriateness in future action due to crop failure" got the rank-I, which, means that the managerial skill of all the farmers

Table -4.2 Managerial skill of farmers in managing different types of crisis situation due to flood and cyclone.

SlNo	Management of crisis situations due to flood & cyclone	MANAGERIAL SKILL							
		BIG FARMERS		SMALL FARMERS		MARGINAL FARMERS		TOTAL	
		M.M.S.I	RANK	M.M.S.I	RANK	M.M.S.I	RANK	M.M.S.I	RANK
1.	Type of crop taken after flood	84.0	V	75.0	IX	83.3	IV	80.9	I
2.	Appropriateness in the time of beushaning in flood	94.9	II	85.7	III	84.6	III	90.1	II
3.	Appropriateness in the time of fertiliser application	92.3	III	92.8	II	84.6	III	89.9	III
4.	Taking decisions knowing the consequences	88.5	IV	92.8	II	84.6	III	88.6	IV
5.	Dependency on weather report	84.6	V	92.9	I	78.6	VI	85.3	V
6.	Ability to take up new crop	100.0	I	62.5	XIII	92.3	I	83.2	VI
7.	Appropriate method of gap filling	76.9	IX	82.1	IV	88.5	II	82.5	VII
8.	Type of crop taken after flood	84.6	V	75.0	IX	83.3	IV	80.9	VIII
9.	Method used for quick germination of seeds	84.6	V	76.2	VII	80.5	V	80.4	IX
10.	Consultation with concerned officials	79.4	VII	80.9	V	74.3	VIII	78.2	X
11.	Solving the situation by sharing ideas with others	74.3	X	76.1	VIII	76.3	VII	75.6	XI
12.	Precautions taken for maximum utilization of fertilizer by the plant	80.8	VI	75.0	IX	70.8	XII	75.5	XII
13.	Using of proper type land for seedling raising	78.8	VIII	71.8	X	71.2	XI	73.9	XIII
14.	Developing nursery for fresh transplantation	69.2	XI	76.8	VI	72.4	X	72.8	XIV
15.	Co-operative community action	66.6	XII	76.1	VIII	74.2	IX	72.3	XV
16.	Use of submerged varieties	57.7	XV	67.8	XII	70.8	XII	65.5	XVI
17.	Crop insurance	51.2	XVI	71.4	XI	61.9	XIII	61.5	XVII
18.	Use of low cost fertilizer after flood	61.7	XIII	59.4	XIV	54.5	XV	58.6	XVIII
19.	Precautions taken for cyclone	61.5	XIV	42.0	XVI	50.0	XVI	51.1	XIX
20.	Contingency cropping	30.8	XVII	50.0	XV	57.2	XIV	45.9	XX

M.M.S.I - Mean Managerial Skill Index

was highest on this item. The managerial skill of "taking of contingency crop" it is due to the fact that because of long involvement in agriculture the farmers as a whole know the future action that has to be taken against the crop failure. It might be the possible reason for which this item got the rank-i. Further, usually a majority of farmers do not take any contingent crop to adjust the loss made due to the main crop. Probably, it may be the reason for which the managerial skill was lowest in respect of "taking of contingency crop" which got rank XX. The other crisis situations got the intermediate position which was revealed from the table 4.2.

Table 4.3 indicates the managerial skill level of different categories of farmers in managing crisis due to flood and cyclone. It was found that 69 per cent of the total farmers have medium level of managerial skill while, 18 per cent and 13 per cent of them belonged to high and low managerial skill level of big, small and marginal farmers. Twenty three per cent, 60 per cent and 17 per cent of the big farmers were found to be in the categories of high, medium and low level of managerial skill, respectively. In case of small farmers it was found that 13 per cent, 74 per cent and 13 per cent belonged to the high, medium and low level of managerial skill, respectively.

Among the marginal farmers, it was found that 17 per cent, 73 per cent and 13 per cent of them belongs to high, medium and low level of managerial skill, respectively.

Table- 4.3

Managerial skill level of different categories of farmers in managing crisis due to flood and cyclone

Sl No	Level of managerial skill	CATEGORIES OF FARMERS							
		Big farmers		Small farmers		Marginal farmers		TOTAL	
		F	%	f	%	f	%	f	%
1.	High managerial skill	7	23.0	4	13.0	5	17.0	16	18.0
2.	Medium managerial skill	18	60.0	22	74.0	22	73.0	62	69.0
3.	Low managerial skill	5	17.0	4	13.0	3	10.0	12	13.0
	TOTAL	30	100.0	30	100.0	30	100.0	90	100.0
	MEAN	76.65		76.27		76.02		76.38	
	S . D	9.67		9.71		24.23		18.30	

4. MANAGERIAL SKILL OF DIFFERENT CATEGORIES OF FARMERS IN MANAGING DROUGHT

The managerial skill of different categories of farmers in managing different types of crisis situation due to drought have been presented in table 4.4. It was found that the managerial skill of big farmers in respect of 'proper depth of placement of seeds on soil' was highest with a mean score of 89.7 and ranked I. Probably they do have good knowledge on different aspects of farming for which such type of result was obtained. The managerial skill in respect of 'use of life saving irrigation' and 'maintenance of proper plant population' got the second rank. The lowest managerial skill of big farmers was found to be in respect of 'use of drought resistant varieties' as well as 'adoption of moisture conservation techniques' such as mulching which got rank VI. Because of the high economic condition of big farmers they do not bother much for the loss caused due to the natural calamities like drought. It might be the possible reason for which they do not adopt mulching to conserve moisture in the soil and also they do not use drought resistant varieties to withstand drought situations. The same table also indicates the managerial skill level of big farmers on other identified crisis situations.

The same table 4.4 also indicates that the managerial skill on different types of crisis situations caused due to drought of the small farmers. It was found that the small farmers have highest managerial skill on 'maintenance of proper plant population' which got the mean score of 85.7 and rank I. Because of the maximum care taken up by the small farmers for the growing of different crops in their field, they do have highest managerial skill on this aspect 'use of life saving irrigation' was found to get the rank II. The lowest managerial skill was found to be in respect of 'use of drought resistant varieties'. Which got rank IX. Probably the small farmers do not use drought resistant varieties for which they do have lowest managerial skill on this aspect. The same table also indicates the managerial skill level of small farmers in combating with the crisis situation caused due to drought.

In case of marginal farmers it was found from table 4.4 that they do have highest managerial skill in respect of 'maintenance of proper plant population' which got a mean score of 92.3 and rank I. 'Use of life saving irrigation' was found to get the rank I and a mean score of 85.7. The marginal farmers entirely depend on their farm for maintaining

Table 4.4 Managerial skill of farmers in managing different types of crisis situations due to drought

Sl No	Management of crisis situations due to drought	MANAGERIAL SKILL							
		BIG FARMERS		SMALL FARMERS		MARGINAL FARMERS		TOTAL	
		M.M.S.I	RANK	M.M.S.I	RANK	M.M.S.I	RANK	M.M.S.I	RANK
1.	Maintenance of plant population	76.9	II	85.7	I	92.3	I	84.9	I
2.	Placement of seeds in proper depth of soil	89.7	I	80.9	III	83.3	III	84.6	II
3.	Use of life saving irrigation	76.9	II	82.1	II	85.7	II	81.6	III
4.	Irrigation at the time of seedling raising	53.8	IV	78.6	IV	83.3	III	71.9	IV
5.	Proper dose of fertilizer use	61.5	III	64.3	V	71.7	IV	65.8	V
6.	Taking up of rabi crop	53.8	IV	42.8	VI	57.1	V	51.27	VI
7.	Adoption of moisture conservation technique (Mulching)	30.8	VI	35.7	VII	57.1	V	41.2	VII
8.	Proper method of seedling raising	38.4	V	33.3	VIII	36.1	VII	35.9	VIII
9.	Use of drought resistant varieties	30.8	VI	14.3	IX	38.5	VI	27.8	IX

M.M.S.I - Mean Managerial Skill Index

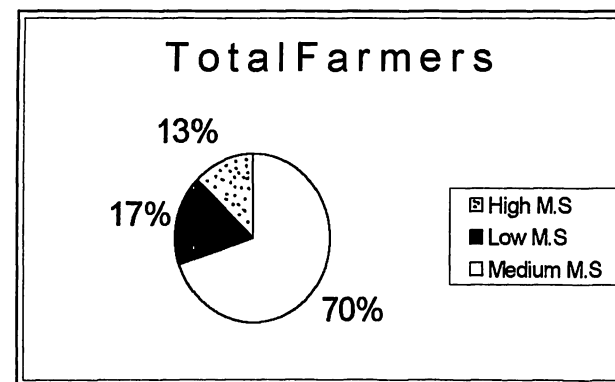
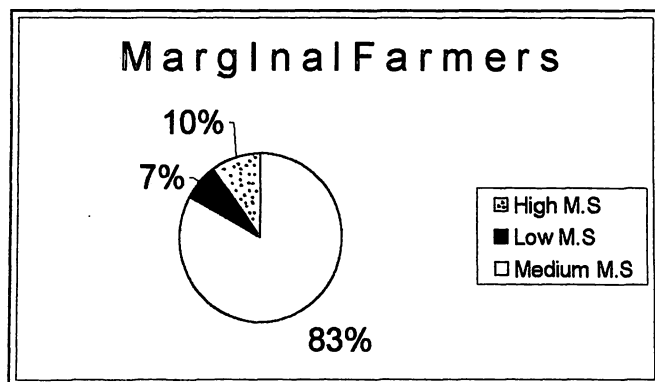
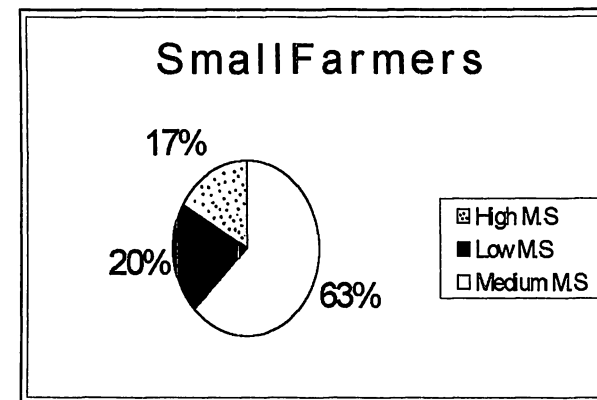
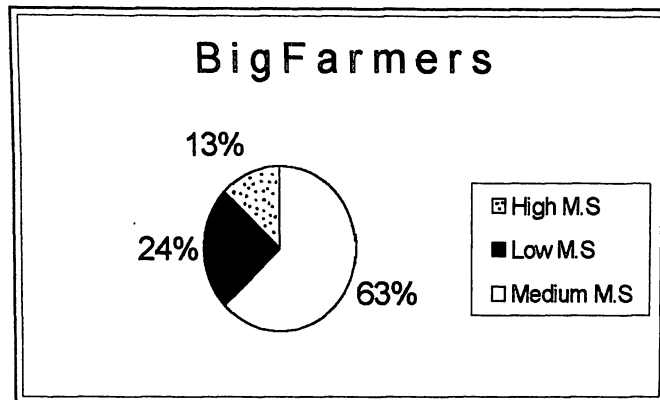


Fig. 5 Pie-diagram showing the managerial skill of different categories of farmers in managing crisis due to drought

their lively hood for which they take maximum care for growing the crops. It might be the possible reason for getting such type of result. Further, it was found that 'proper method of seedling raising' got the lowest rank i.e rank VII with a mean score of 36 per cent. Which indicates that on this aspect their managerial skill was lowest. The fact that because of their small land holding they require less seedling for which they either raise the same in their field in a simple method or they purchase from other farmers. For this reason they might not get the chance to know about the different methods of seedling raising. The same table also indicates the managerial skill of marginal farmers in combination with different type of crisis situations caused due to drought.

Lastly, an attempt was also taken to find out the managerial skill of total farmers in combination with the crisis situations caused due to drought. It was found that 'maintenance of proper plant population' got rank I with a mean score of 84.9. the other aspects on which the total farmers do have managerial skill in descending order were 'placement of seeds in proper depth of soil' 'use of life saving irrigation' 'irrigation at the time of seedling raising' 'proper quantity of fertilizer use' 'taking of rabi crop', 'adoption of moisture conservation technique' and 'proper method of seedling raising', which got the rank II, III, IV, V, VI, VII and VIII respectively. The lowest managerial skill was observed in respect of 'use of drought resistant varieties' which got a mean score of 27.8 with a rank of IX. This section an attempt was also taken to find out the managerial skill level of different categories of farmers in combating with the crisis situations occurred due to drought. Table 4.5 depicts that 13 per cent, 70 per cent and 17 per cent of the total farmers had high, medium and low level of managerial skill respectively in managing the crisis situation caused due to drought. In case of big farmers it was found that 13 per cent, 63 per cent and 24 per cent of them had high, medium and low level of managerial skill respectively. Among the small farmers it was found that 17 per cent, 63 per cent and 20 per cent pf them belong to high, medium and low level of managerial skill, respectively. Ten per cent, 83 per cent ad 7 per cent of the marginal farmers had high, medium and low level of managerial skill, respectively in managing the crisis situation caused due to drought.

Table 4.5

Managerial skill level of different categories of farmers in managing crisis due to drought.

Sl No	Level of managerial skill	CATEGORIES OF FARMERS							
		Big farmers		Small farmers		Marginal farmers		TOTAL	
		F	%	f	%	f	%	f	%
1.	High managerial skill	4	13.0	5	17.0	3	10.0	12	13.0
2.	Medium managerial skill	19	63.0	19	63.0	25	83.0	63	70.0
3.	Low managerial skill	7	24.0	6	20.0	2	7.0	15	17.0
	TOTAL	30	100.0	30	100.0	30	100.0	90	100.0
	Mean	56.8		55.23		63.18		58.70	
	S.D	20.92		17.61		17.2		18.58	

5. MANAGERIAL SKILL OF DIFFERENT CATEGORIES OF FARMERS IN MANAGING PESTS AND DISEASES

Table 4.6 indicates the managerial skill of different categories of farmers in managing different types of crisis situations due to pests and diseases. In case of big farmers it was found that the managerial skill was highest in respect of 'controlling leaf spot diseases'. Leaf spot disease which is caused due to a fungus affect most of the crops for which they had high level of managerial skill. It might be the possible reason for getting such type of result. A lowest managerial skill was observed in respect of 'integrated method of pest and disease management', which got a mean score of 30.8 and rank V. probably the big farmers do not know much about the integrated pest and disease management for which such type of result was obtained. The other crisis situation got the intermediate positions which will be clear from table 4.6.

In case of small farmers it was found that the managerial skill was highest in respect of controlling blast disease of paddy which got a mean score of 78.6 and rank I. While, in case of integrate method of pest and disease management, the managerial skill was lowest. Which got a mean score of 30.4 and rank VII. The managerial skill on other crisis areas which is caused due to pests and diseases in descending order were 'control of leaf spot

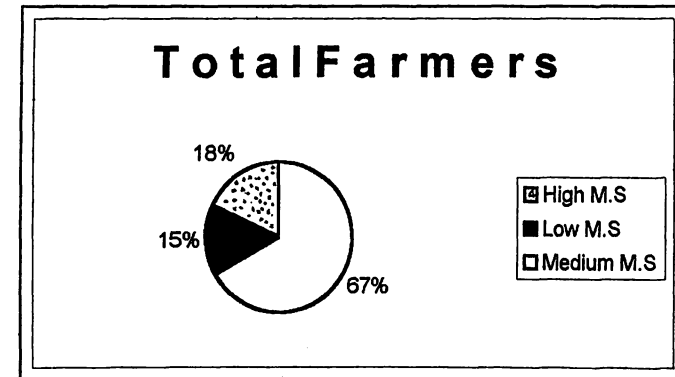
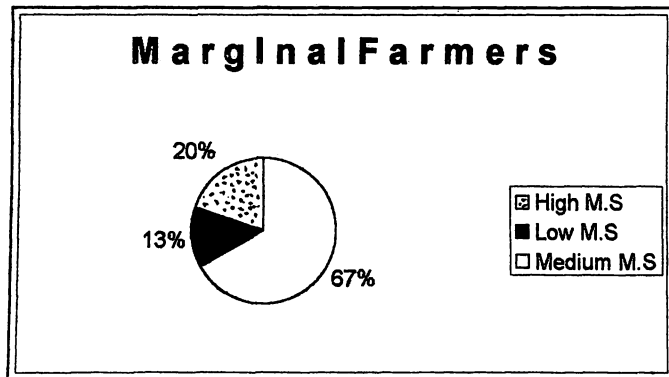
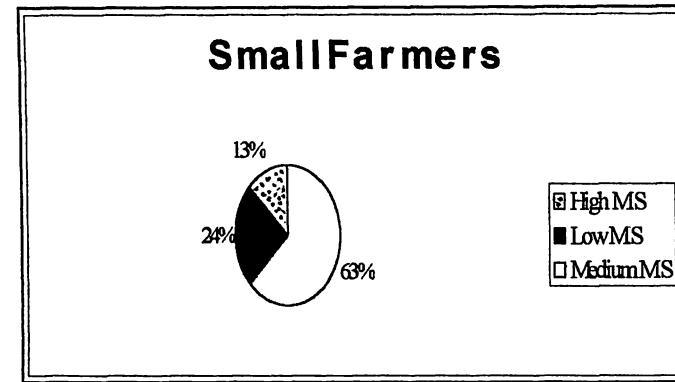
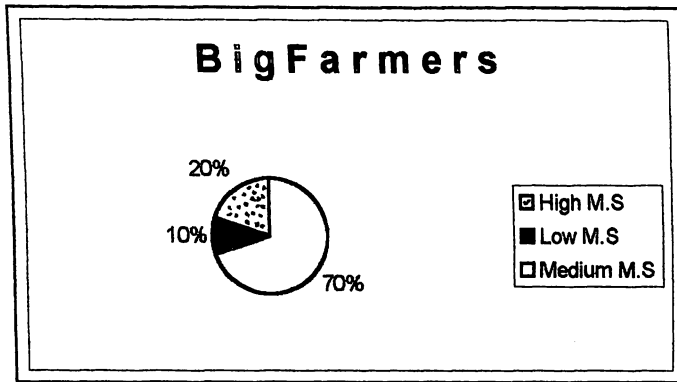


Fig.6 Pie diagram showing the managerial skill of different categories of farmers in managing crisis due to pest & diseases

disease', 'control of yellow stem borer', 'control of gundhi bug', 'control of gall midge' and 'control of B.P.H which got the rank II, III, IV, V and VI, respectively.

The managerial skill of marginal farmers found to be highest in case of 'control of leaf spot disease' which got a mean score of 79.3 and rank I. It was found to be lowest in case of 'control of gall midge' which got a mean score of 35.7 and rank VI. The other crisis situations got the intermediate position so far as their managerial skill is concerned which could be revealed from the table 4.6.

The managerial skill of total farmers was found to be highest in case of 'control of leaf spot disease' having a mean score of 75.9 and rank I (Table 4.6). It was found to be lowest in case of control of brown plant hopper' with a mean score of 32.7 and rank VII. The other crisis situations where in the different level of managerial skill was found in descending order were 'control of blast disease', 'control of yellow stem borer', 'control of gundhi bug', 'integrated method of pest and disease control' and 'control of gall' midge which got the rank II, III, IV, V and VI, respectively. The same could be revealed from table 4.6.

Table 4.7 indicates that the managerial skill level of different categories of farmers in managing crisis which is caused due to pest and diseases. It was revealed that 18 per cent, 67 per cent and 15 per cent of the total farmers had high, medium and low level of managerial skill, respectively. The big, small and marginal farmers were also categorized into three levels according to their managerial skill in managing the crisis situation caused due to pests and diseases. It was observed that 20 per cent, 70 per cent and 10 per cent of the big farmers belonged to high, medium and low level of managerial skill, respectively. In case of small farmers it was found that 13 per cent, 63 per cent and 24 per cent of them belong to high, medium and low level of managerial skill, respectively. Lastly, 20 per cent, 67 per cent and 13 per cent of marginal farmers had high, medium and low level of managerial skill, respectively in managing the crisis caused due to the pest and diseases.

Table 4.6 Managerial skill of farmers in managing different types of crisis situations due to pests and diseases

Sl no	Management of crisis situations due to pest and diseases	MANAGERIAL SKILL							
		Big farmers		Small farmers		Marginal farmers		TOTAL	
		M.M.S.I	Rank	M.M.S.I	Rank	M.M.S.I	Rank	M.M.S.I	Rank
1.	Control of leaf spot diseases	76.9	I	71.4	II	79.3	I	75.9	I
2.	Control of blast disease of paddy	53.8	III	78.6	I	78.6	II	70.3	II
3.	Control of yellow stem borer	57.7	II	53.7	III	50.0	III	53.8	III
4.	Control of gundhi bug	53.8	III	50.0	IV	50.0	III	51.3	IV
5.	Integrated method of pest and disease management	30.8	V	30.4	VII	41.7	IV	34.3	V
6.	Control of gall midge	23.1	IV	42.8	V	35.7	VI	33.9	VI
7.	Control of brown plant hopper	23.1	IV	35.7	VI	39.3	V	32.7	VII

M.M.S.I Mean Managerial Skill Index

Table 4.7

Managerial skill level of different categories of farmers in managing crisis due to pests and diseases.

SI No	Levels of managerial skill	CATEGORIES OF FARMERS							
		Big farmers		Small farmers		Marginal farmers		TOTAL	
		F	%	f	%	f	%	f	%
1.	High managerial skill	6	20.0	4	13.0	6	20.0	16	18.0
2.	Medium managerial skill	21	70.0	19	63.0	20	67.0	60	67.0
3.	Low managerial skill	3	10.0	7	24.0	4	13.0	14	15.0
	TOTAL	30	100.0	30	100.0	30	100.0	90	100.0
	MEAN	44.37		51.24		52.52		48.70	
	S.D	20.14		26.34		19.8		22.63	

6. MANAGERIAL SKILL OF DIFFERENT CATEGORIES OF FARMERS IN MANAGING CRISIS AS A WHOLE.

Table 4.8 indicates that the managerial skill level of different categories of farmers in managing the crisis as a whole i.e taking all the crisis viz. flood and cyclone, drought and pest and diseases together.

Table 4.8

Managerial skill level of different categories of farmers in managing crisis as a whole

SI No	Levels of managerial skill	CATEGORIES OF FARMERS							
		Big farmers		Small farmers		Marginal farmers		TOTAL	
		F	%	f	%	f	%	f	%
1.	High managerial skill	4	14.0	4	14.0	6	19.0	22	24.0
2.	Medium managerial skill	20	67.0	21	70.0	20	67.0	55	61.0
3.	Low managerial skill	6	19.0	5	16.0	4	14.0	13	15.0
	TOTAL	30	100.0	30	100.0	30	100.0	90	100.0
	MEAN	75.73		62.0		67.67		68.73	
	S.D	9.72		20.24		11.60		16.30	

It was revealed that 24 per cent of the total farmers belongs to high managerial skill category while 61 per cent and 15 per cent of them belongs to medium and low managerial skill categories, respectively.

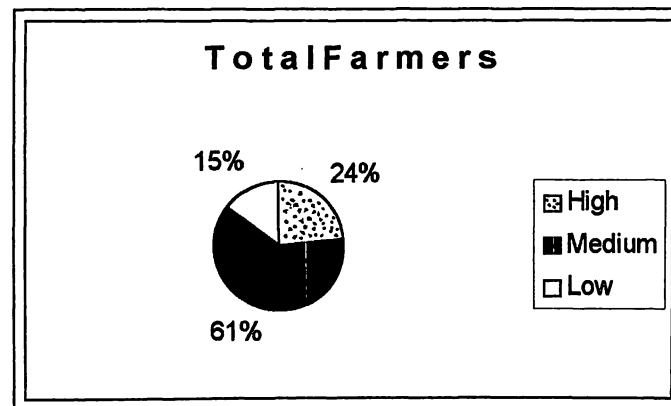
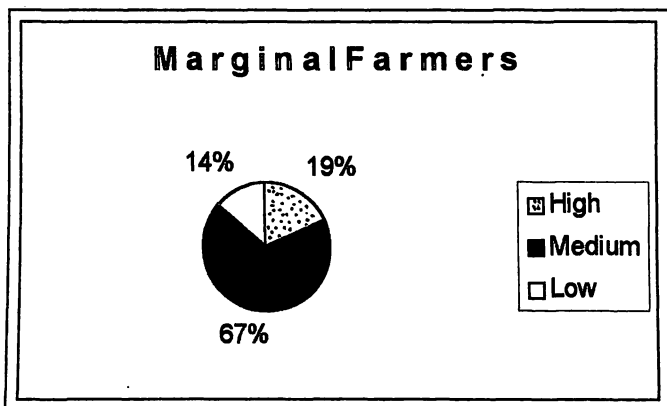
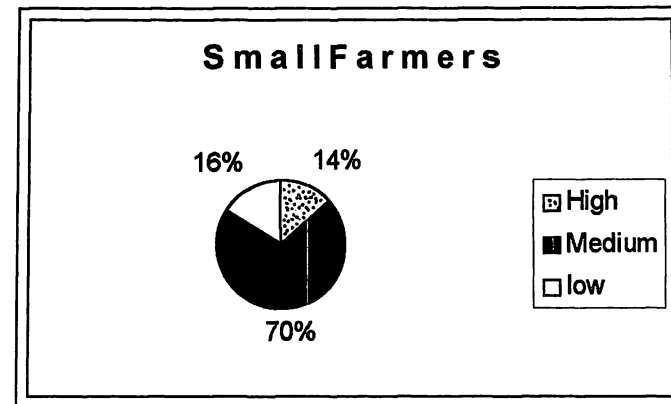
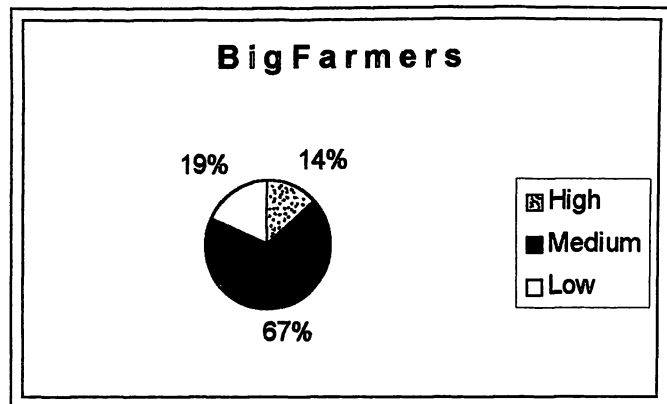


Fig.7 . Pie diagram showing the managerial skill of different categories of farmers managing crisis as a whole

In case of big farmers it was found that 14 per cent, 67 per cent and 19 per cent of them belongs to the high, medium and low managerial skill categories, respectively.

Fourteen per cent , 70 per cent and 16 per cent of the small farmers belongs to the high, medium and low managerial skill, respectively.

Finally, 19 per cent, 67 per cent and 14 per cent of the marginal farmers were having the high, medium and low managerial skill, respectively.

The high managerial skill mean value (75.73) of big farmers indicates that the big farmers were having high managerial skill followed by marginal (67.67) and small farmers (62.0). the high economic status of big farmers facilitate them to be exposed to different situational for which, probably, their managerial skill was high. Further, the marginal farmers are more close to different activities for which they get chance to manage different crisis faced by them. It might the possible reason for which they got the second position so far their managerial skill is concerned. Lastly, the small farmers occupied the lowest position as regards to their managerial skill. The less involvement of small farmers in forming might be the possible reason for getting such type of result.

8. RELATIONSHIP OF PERSONAL AND SOCIO-ECONOMIC CHARACTERSTICS OF FARMERS WITH THEIR MANAGERIAL SKILL

In this section an attempt was made to find out relationship of different personal and socio-economic profile of the farmers with their managerial skills. The Spearman's rank co-relation test was applied in order to find out the relationship of managerial skills of the farmers with their selected personal and socio-economic characteristics.

It was revealed from table 4.9 that out of 14 variables education, extension contact, land holding, annual family income and training received were found to be positively and significantly related to the managerial skills of big farmers. It indicated that with increase in the above five variables the managerial skill increases. The other variables such as age, family type, family size, cosmopolitaness, social participation, orientation to farming, dependency on land and possession of agricultural impliments and farm power were found to be positively related but relationship was not found to be statistically significant.

Table 4.9 Relation ship of personal and socio-economic variables with the managerial skill of farmers in crisis management.

Variable No	Personal and socio-economic characteristics	r_s value			
		Big farmers	Small farmers	Marginal farmers	Pooled
X1	Age	0.12	0.21	-0.17	0.23
X2	Education	0.41**	0.43**	0.38*	0.39*
X3	Family type	0.01	0.07	-0.13	0.11
X4	Family size	0.17	0.19	0.02	0.09
X5	Cosmopolitaness	0.23	0.14	0.19	0.08
X6	Extension contact	0.33*	0.39**	0.35*	0.36*
X7	Social participation	0.28	0.31*	0.46**	0.36*
X8	Orientation to farming	0.07	0.14	0.01	0.08
X9	Land holding	0.42**	0.23	0.35*	0.29
X10	Dependency on land	0.07	0.16	0.21	0.13
X11	Annual family income	0.38*	0.08	0.31*	0.23
X12	Possession of agricultural impliments	0.08	0.01	0.11	0.09
X13	Training received	0.47**	0.39**	0.41**	0.42**
X14	Farm power	0.09	0.12	0.08	0.09

*significant at 0.05 level

** significant at 0.01 level

In case of small farmers it found that (table 4.9) their managerial skill was positively and significantly related to their education, extension contact, social participation and training received by them. the other socio-economic profiles viz. age, family type, family size, cosmopolitaness, orientation to farming, land holding, dependency on land, annul family income, possession of agricultural impliments and farm power were found to be positively and non significantly related with their managerial skill.

The socio-economic profiles viz. education, extension contact, social participation, land holding, annual family income and training received of the marginal farmers ewre

positively and significantly related to their managerial skill. The others were positively but not related significantly except age and family type which were found to be negatively but not significantly related.

Lastly, it was observed that in case of total farmers the socio-economic characters viz. education, extension contact, social participation and training received were found to be positively and significantly related to their managerial skill. The other variables viz. age, family type, family size, cosmopolitaness, orientation to farming, land holding, dependency on land, annual family income, possession of agricultural impliments and farm power were found to be positively but non significantly related to their managerial skill. It is expected that a perso who has more education has more managerial skill / ability. It becomes easier on the part of the educated person to decide which is good or bad. Similarly the persos who have more extension contact i.e. contact with the different extension personnel viz. VAW, A.E.O, specialists or university scientists they do have more of managerial skill. More the social participation and training received more is the managerial skill of the farmers.

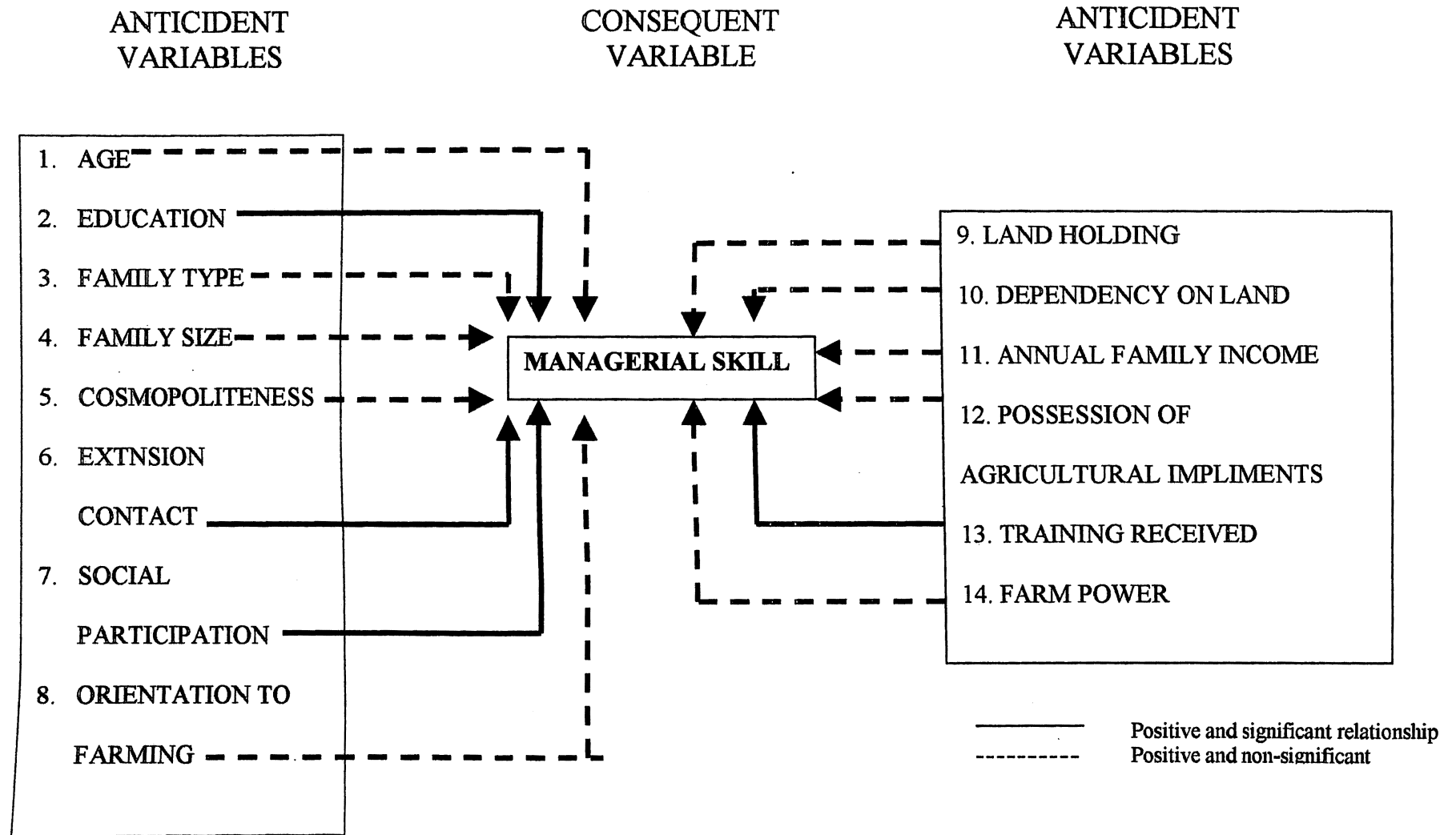
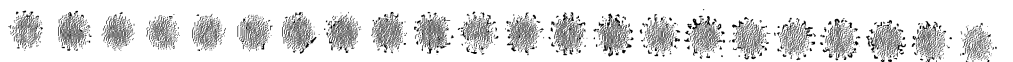


Fig.8. EMPIRICAL MODEL OF THE STUDY

CHAPTER - V



SUMMARY AND CONCLUSION



SUMMARY AND CONCLUSION

The study entitled "Managerial Skill of Farmers in Crisis management" was undertaken with the objectives to find out the managerial skill of different categories of farmers in managing different types of crisis situations viz. flood and cyclone, drought, pests and diseases which most commonly faced by the coastal farmers. Further, attempts were made to find out the relationship of managerial skill with some of the selected personal and socio-economic characteristics of the farmers.

Therefore, in the present investigation an attempt was made to find out the managerial skill of different categories of farmers in managing the crisis situations caused due to flood and cyclone, drought and pest & diseases. In addition to this the relationship of managerial skill with the different personal and socio-economic characteristics were also studied. The specific objectives of the studies were as follows:

1. To identify and document the different major crisis faced by the farmers.
2. To measure the managerial skills of the farmers in managing the different types of crisis identified.
3. To find out the relationship of managerial skills with some selected personal and socio-economic profile of the farmers.

The study was conducted in purposively selected Balasore district of Orissa state out of 19 blocks of the district two blocks viz. Bhogarai and Jaleswar were selected randomly. Further, one village from each of the block was selected purposively keeping the progressiveness of the farmers in the mind of researchers. Thus the selected villages were Baunshadhia and Suga. Forty five farmers from each of the villages were selected at random comprising of 15 each from big, small, marginal categories.

So altogether 30 each from big, small and marginal categories were taken as the sample respondents for the study.

In order to identify and document the different major crisis faced by the farmers the farmers were simply interviewed. Their expressed opinion about the major crisis they commonly face were enlisted.

The managerial skill of the farmers on the major crisis viz. flood and cyclone, drought and pest & diseases were also studied in detail. In order to determine the managerial skill of the farmers on different crisis situation a list of possible solutions were prepared for each of the crisis. In case of flood and cyclone, drought and pest & diseases 20, 9 and 7 possible solutions were listed out respectively. Further, under each of the solution 3 to 4 alternatives were given for attending to the solution. These alternatives were scored properly. Finally the total score for each of the crisis situations were computed after which the managerial skill index were calculated, which was utilized for further analysis. On the basis of mean managerial skill index the different possible solutions were ranked, which finally indicated the highest and lowest managerial skill of the different categories of the farmers. Finally the respondents were categorized into three categories viz. high, medium and low managerial skill separately for different crisis situations and also together by taking mean and standard deviations of the managerial skill index.

The relationship of the managerial skill of the farmers with their personal and socio-economic characteristics was also studied in order to find out the significantly related characters with their managerial skill level.

The data were collected by using a structured and pre-tested interview schedule during June' 1998. The statistical methods viz. mean, standard deviation and Spearman's rank correlation test(r_s) were used to analyse, interpret and drawing the inferences.

THE SALIENT FINDING OF THE STUDY WERE AS FOLLOWS

1. It was revealed from the study that the major crisis faced by the farmers of Balasore district were flood and cyclone, drought and pest & diseases.
2. It was found that out of several solution to crisis situation caused due to flood and cyclone the big farmers had highest managerial skill in respect of "deciding to take up new crops after the flood and cyclone" which got rank I and lowest in respect of "taking of contingency crop" which got the rank XVII.
3. The managerial skill of small farmers in managing the flood and cyclone was found to be highest in respect of "dependency on weather report" and lowest in respect of "precautions taken for cyclone".

4. The managerial skill of marginal farmers in managing the flood and cyclone was found to be highest in case of "ability to take up new crops" which got rank I and lowest in case of "precautions taken for cyclone" which got the rank XVI.

5. It was revealed from the study that in case of total farmers the managerial skill in managing flood and cyclone was found to be highest in respect of "Appropriateness in future action due to crop failure", which got the rank I while the "taking of contingency crop" was found to be lowest which got the last rank. The other crisis situation which got the intermediate positions in order of rank were "appropriateness in the time of beushaning", "appropriateness in the time of fertilizer application", "taking of decision knowing the consequences", "dependency on weather reports", "ability to take up new crop", "appropriate method of gap filling", "type of crop taken after flood", "method used for quick germination of seeds", "consultation with concerned officials", "solving the situations by sharing ideas with others", "precautions taken for maximum utilization of fertilizer by the plant", "crisis of proper type of land seedling raising", "developing nursery for fresh transplantation", "co-operative community action", "use of submerged varieties", "crop insurance", "use of low cost fertilizer after the flood" and "precaution taken for cyclone" which got the rank II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV, XVI, XVII, XVIII and XIX respectively.

6. Twenty three per cent, 60 per cent, 17 per cent of big farmers 13 per cent, 74 per cent, 13 per cent of small farmers, 17 per cent, 73 per cent, 10 per cent of marginal farmers and 18 per cent, 69 per cent, 13 per cent of total farmers had high, medium and low level of managerial skill in managing flood and cyclone respectively.

7. As regards to the managerial skill of big farmers in managing the crisis situations occurred due to the drought, it was found that they had highest managerial skills in respect of "proper depth of placement of seeds in soil" which got a rank I and mean score of 89.7. The lowest managerial skill of them was found to be in respect of "use of drought resistant varieties" as well as "adoption of moisture conservation technique" which got rank VI.

8. The small farmers had highest managerial skill on "maintenance of proper plant population" in managing drought", which got a mean score of 85.7 and rank I. Their managerial skill was found to be lowest in respect of use of "drought resistant varieties" which got rank IX.

9. In case of marginal farmers in managing crisis occurred due to drought, it was revealed that they have highest managerial skills in respect of "maintenance of proper plant population" which got a mean score of 92.3 and rank I. Their lowest managerial skill was found in respect of "proper method of seedling raising" which got rank VII.

10. In case of total farmers managing crisis situations occurred due to drought it was found that they have highest managerial skill in respect of "maintenance of proper plant population" which got rank I with a mean score of 84.9. The lowest managerial skill was observed in respect of "use of drought resistant varieties" which got a mean score of 27.8 and rank IX. The other situations which got the intermediate position in order of rank were "placement of seeds in proper depth of soil", "use of life saving irrigation at the time of seedling raising", "proper quantity of fertilizer use", "taking of rabi crop", "adoption of moisture conservation techniques" and "proper method of seedling raising" which got the rank II, III, IV, V, VI, VII and VIII respectively.

11. It was revealed that 13 per cent, 63 per cent and 24 per cent of big farmers, 17 per cent, 63 per cent and 20 per cent of small farmers, 10 per cent, 83 per cent and 7 per cent of marginal farmers and 13 per cent, 70 per cent and 17 per cent of total farmers had high, medium and low level of managerial skill in managing drought respectively.

12. It was found that out of several crisis caused due to pest & diseases, the big farmer had highest managerial skill on "control of leaf spot diseases" which got rank I and lowest managerial skill in respect of control of gall midge and "control of brown plant hopper" which got the rank IV.

13. In case of small farmers it was found that the managerial skill was highest in case of "control of blast disease of paddy" which got a mean score of 78.6 and rank I. It was found to be lowest in case of integrated method of pest and disease management.

14. The managerial skill of marginal farmers was found to be highest in case of "control of leaf spot disease" which got a mean score of 79.3 and rank I. It was found to be lowest in case of "control of gall midge" which got a mean score of 35.7 and rank VI.

15. The managerial skill of total farmer was found to be highest in case of "control leaf spot disease" having a mean score of 75.9 and rank I. It was found to be lowest in case of "control of brown plant hopper" which got a rank VII. The other crisis situation where different level of managerial skill was found in decreasing order were "control of blast disease", "control of yellow stem borer", "control of gundhi bug", "integrated method of pest and disease control and control of gall midge which got rank II, III, IV, V, and VI respectively.

16. It was revealed that 20 per cent, 70 per cent, 10 per cent of big farmers, 13 per cent, 63 per cent, 24 per cent of small farmers, 20 per cent, 67 per cent, 13 per cent of marginal farmers and 18 per cent, 67 per cent, and 15 per cent of total farmers had high, medium and low level of managerial skill respectively.

17. As regards to all the crisis situations taken together it was found that 14 per cent, 67 per cent, 19 per cent of big farmers, 14 per cent, 70 per cent, 16 per cent of small farmers, 19 per cent, 67 per cent, 14 per cent of marginal farmers and 24 per cent, 61 per cent, 15 per cent of total farmers had high, medium and low level of managerial skill, respectively.

18. In case of big farmers it was found that out of 14 socio-economic characters only 5 were positively and significantly related with their managerial skill. These characters were education, extension contact, land holding, annual family income and training received by them.

19. In case of small farmers it was found that out of 14 socio-economic variables only 4 variables were positively and significantly related to their managerial skill. The

variables were education, extension contact, social participation and training received by them. The other variables were positively but related non significantly.

20. In case of marginal farmers it was observed that 6 socio-economic variables viz. education, extension contact, social participation, land holding, annual family income and training received by them were positively and significantly related to their managerial skill.

21. In case of total farmers it was revealed that only 4 socio-economic variables viz. education, extension contact, social participation and training received by them were positively and significantly related to their managerial skill. The remaining 10 variables viz. age, family type, family size, cosmopolitaness, orientation to farming, land holding, dependency on land, annual family income, possession of agricultural implements and farm power were positively but non significantly related to the managerial skill.

CONCLUSION

The different crisis situations viz. flood and cyclone, drought and pest & diseases has to be managed properly by the farmers in order to increase their level of production. It was revealed from the study that different categories of farmers had different level of managerial skill in managing the crisis situation. They should be properly educated in order to increase their decision making ability which in term will increase their managerial skill in managing the different crisis situations. Further, the significantly related variables should be properly tackled for increasing the managerial skill level of different categories of farmers.

SUGGESTION FOR FUTURE RESEARCH

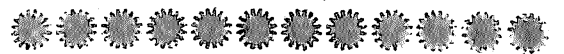
The suggestion for future research over and above this investigation are as follows:

1. Due to time and other limitations, the study was confined only to one district of the state. Therefore, similar type of studies of wider coverage need to be under taken by the future researchers in order to draw some valid conclusion.

2. A large number of different personal and socio-economic variables should be incorporated and their possible relationships with the managerial skill should be studied in detail in order to find out a clear and complete picture.

3. A large number of possible solutions to the different crisis situations should be incorporated in the schedule in order to determine the more refined managerial skill level of the different categories of the farmers. Further, these items should be standardized by the future researcher for development of a standardize scale for the measurement of the managerial skill of the farmers in managing the crisis situations.

BIBLIOGRAPHY



BIBLIOGRAPHY

- Akino, M. and Hayami, Y. 1974, Sources of Agricultural Growth in Japan 1880-1885. *Quarterly Journal of Economics*, 80: 459-462
- Anonymous, 1949, *Statistical Year Book for 1941-42 to 1944 -55*. Government of Hyderabad.
- Badachikar, S.V., 1985, A Critical Analysis of Extension Guidance Received and Management Orientation, Economic Performance and Adoption Pattern of Farmers from Different Levels of Drought Prone Areas of Bijapur District. *Ph.D Thesis* (unpub.). Department of Agricultural Extension, U.A.S., Bangalore.
- Banerjee, B.N., 1985, Concepts of Farm size, Resource, Sex and Productivity in Agriculture – A Case Study-*Economic Affairs*, 30(1): 17-72
- Barnard, C.I., 1938, *The Functions of Executive*. Harvard University Press, Cambridge.
- Bein, F.L., 1980, Response to Drought in the Sahel. *Journal of Soil and Water Conservation*, 35 (3): 121-124
- Bessel, J.E., 1970, The Measurement of Managerial Efficiency in Agriculture. *Journal of Agricultural Economics*, 21: 391-400
- Bohlen, J.M. and Beal, G.M., 1950, Sociological and Psychological Factors Related to Credit Use Pattern. Dept. Of Economics and Sociology, Iowa State University of Science and Technology, Iowa (Mimeo).
- Bora, S.P. and Ray, G.L., 1986, Management Attributes of Farmers as related to Profitability in Farming. *Decision*, 13 (2): 86-93
- Brayfield, A.H. and Marsh, M.M., 1957, Aptitudes, Interests and Personality Characteristics of Farmers. *Journal of Applied Psychology*, 41: 88-103
- Caplan, G., 1964, *Principles of Preventive Psychiatry*. Basic Books Inc., New York.
- Chari, A.P. and Nandapurkar, G.G., 1987, A Scale to Measure Managerial Ability of Farmers. *Maharashtra Journal of Extension Education*, 6: 146
- Desai, D.K., 1981, A Critical Analysis of the Contribution of Education and Extension Guidances to Economic Performance and Cotton Farmers of Karnataka State. *Ph.D. Thesis* (Unpub.), Department of Agricultural Extension, U.A.S., Bangalore.
- Fliegel, F.C., 1960, Obstacles to Change for the Low-income farmers. *Rural Sociology*, 26:347-351
- Freire, P., 1973, *Education for Critical Consciousness*. Sheed and Ward, London.

- Fuller, T.D., 1987, Resettlement as Desertification Control Measure: A case study in Darfur Region, Sudan –Part I: Review of the problem. *Agric. Admic. And Extension*, 25: 215-234
- Giannotti, G., 1975, Crisis of Industrial Society. *Rassegna Italiana di Sociologia*, 16(3): 369-378
- Godelier, M., 1987, Introduction: The Analysis of Transition Process. *International Social Science Journal*, No.114: 447.
- Heady, E.O., 1946, Production Function from Random Sample of Farm. *Journal of Farm Economics*, 28(4): 989-1004
- Hebbar, G.B., 1975, An Economic Analysis of Arabic Coffee Production on Small Holdings in Hassan District. *M.Sc. (Agri.) Thesis (Unpub.)*, Dept. Of Agricultural Economics, University of Agricultural Sciences, Bangalore.
- Hermann, C.F., 1963, Some Consequences of Crisis which Limit the Viability of Organisations. *Adm. Sci. Quart.*, 8(1): 61-82
- Hermann, M.G., 1965, Stress, Self-esteem and Defensiveness in an Inter-nation Simulation. *Ph.D. Dissertation*, North Wester University, U.S.A.
- Hermann, C.F., 1972, *International Crisis: Insights from Behavioural Research*. The Fress Press, New York.
- Hermann, M.G., 1965, Stress, Self-esteem and Defensiveness in an Inter-nation Simulation. Ph.D Disseratation, North Wester University, U.S.A.
- Hermann, C.F., 1972, *International Crisis: Insights From Behavioural Research*. The Free Press, New York.
- Hirschman, A.O., 1958, *The Strategy of Economic Development*. New Haven, Yale Univ. Press., U.S.A:176
- Hollander, E.P., 1967, *Principles and Methods of Social Psychology*, Oxford University Press, London:85-112
- Johnston, R.J and Taylor P.J., 1986, *A World in Crisis* .(ed), Basil Blackwell, Oxford and New york
- Justus, F.E., Hobbs, D.J. and Campbell, R.R., 1968, Measuring Management Performance of Dairy Farmers. *Canadian Journal Of Agricultural Economics*, 26(1):51-63
- Kallinpur, R., 1984, *Productivity and Technical cChangr in Emperical Analysis of India, U.S and Japanese agriculture*. Dissertation abstract International, A-45a(1):235
- Kaplan, H.B., 1933, *Psychological Stress: Trends in Theory and Research*. Academic Press, New York.
- Kelly , A.G, 1955, *The Psychology of Personal Constructs*. Vol.1, W.W and Co, Inc., New York

- Kgathi, D.L and Opschoor, J.B., 1979, Drought Impacts and Adaptions: Socio-economic Aspects of the 1979 Kgatlong drought, NIR Research Notes, National institute of Development and Cultural Research, Univ. College of Botswana, No.6, 162
- Khanna, S.S., 1989, Drought Management . Yojana (June): 16-30
- Lamarck, J.B., 1914, Zoological Philosophy. Mac-Millan Publishing Co., London.
- Lateef, N.V., 1980, Crisis in the Sahel: A Case Study in the Development Co-operation. Westview Press, Colorado.
- Laya, D., 1975, Document: Interviews with Farmers and Livestock owners in the Sahel, Daker, Senegal, African Environment, 1(2):49-93.
- Lazarus, R.S., 1966. Psychological Stress and Coping Process. Mc Graw hill, New York.
- Lewin, K. 1948, Resolving Social Conflicts, Harper and Row, New York.
- Mayer, R.E. and Reick, R.E., 1967, Evaluating the Unit approach. Journal of co-operative extension, 5(2) : 101-109.
- McCormick, E.J., Blanchard, R.E. and Thomas, D.W., 1959, an Objective Method of Selecting Farm Tenants, Purdue Agril. Sts. Res. Bull. P678
- Ministry of Agriculture, 1989, Natural Calamities Relief : a Statistical Profile. Government of India, New Delhi.
- Miller, and Iscoe, i., 1963., The Concept of Crisis: Current Status and mental Health Implications. Human Organisations, 22:195-201
- Morris, M.D., 1975, Weather Instability, Food Scarcity and Famine Policy. Zeitschrift fur Auslandsische Landwirtschaft, 14(4); 317 - 330
- Murray, H.A., 1938, Exploration in Personalities, New York , oxford.
- Nagaraja, N., 1989, A Study on Management Efficiency and Economic Performance of Sericulturists in Karnataka. Ph.D. thesis (Unpub), Department of Agricultural Extension, U.A.S., Bangalore.
- Narayanagowda , K., 1986, A Study on impact of Training and Visit System on Knowledge, Socio-economic Status and Economic Performance of Farmers in Bangalore district. M.Sc (Agri) Thesis (Unpub.) Department of Agricultural Extension , U.A.S., Bangalore.
- Nelson, R.R., and Phelps, E.S., 1966, Investments in Humans: Technological Diffusion and Economic Growth. American Economic review, 56: 69 -75
- Neil, R.E. and Rogers, E.M., 1963, measuring Achievement Motivation Among Farmers. Department of Agril. Economics and Rural Sociology, Agricultural Experimental Station, Ohio.

- Renukaradhya, B.N., 1983, A Critical Study of Farmers Programme in selected Command Areas of Karnataka State Ph.D. thesis (Unpub.), Department of Agricultural Extension, U.A.S., bangalore
- Roberson, F.r.,m 1970, Housing- Crisis or Opportunity? Extension Service Review,41-16
- Sagar, R.l.,1983,Study Of Agro-economic Socio-psychological and Extension Communication Variables related with Farmers' productivity of Major Field crops in Haryana Block. Ph.D thesis (Unpub.), Dept. of Agricultural Extension, Biden Chandra Krishi Viswa Vidyalaya; West Bengal.
- Sainath, S.,1982, a Study on Adoption Behaviour and Motivation Pattern of Grape Cultivers in Bangalore Dist. Of Karnataka. M.Sc,(Agril.) thesis (Unpub.), Department of agricultural Extension, U.A.S, Bangalore
- Seligman, E.R.A., 1963, Encyclopaedia of Social Sciences. Vol-3, The MacMillan Company, New York
- Siegel, S., 1954, Non-parametric Statistics for Behavioural Sciences, McGraw hill Company,Inc,New York
- Singh, D., singh, R.i.,and Singh, V.K., 1979, returns from Investment in Agriculture. Indian Journal of Agricultural Economics,34(4).
- Skrabanek, R.l., Banks, U.j., and Bowles, G.k., 1964, Farmers Adjustment to Drought in a Texas Country, Texas agril.Exp. Sta.,b1005,College Station,Texas.
- Stallings, R.A., 1971, A Comparative Study of Community as Crisis Management System,Columbus. Ph.D Dissertation (Unpub.), The Ohio State University, Columbus.
- Stoddard, E.R., 1966, Towards a Sociological Contribution to Disaster Research. Rocky Int. Soc.Sci.j., 3(2):181-191.
- Subramaniam, R., 1976, Impact of Bank Credit and Technology on the Net Returns of Farmers in Coimbatore Taluk of T.N. M.Sc,(Agril.) thesis (Unpub.), Department of Agricultural Economics, U.A.S, Bangalore.
- Suryaprakash,S., 1978, Impact of Credit and Services Provided by Farmers Service Society Ltd, Hessaraghatta on Net Farm Returns. M.Sc,(Agril.) thesis (Unpub.), Department of Agricultural Economics, U.A.S, Bangalore.
- Taal, h., 1981, a Comparative Study of adoption Behaviour and Motivation Pattern of Coconut Cultivators in tumkur District of Karnataka State, M.Sc.(Agril.) thesis (Unpub.), Department of agricultural Extension, U.A.S, Bangalore.
- Tonbary, A.A.E., 1957, Comparative Standards in Farm Management appraisal, Indian journal of Agricultural Economics, 12(3):12-19.

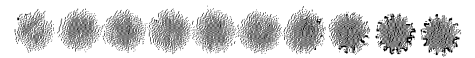
- Nielson, J., 1962, Aspects of Management of concern to Basic reserchers: Describing and Measuring Management Abilities and Services. Report No. 4, Farm Management Reserch Committee, Western Agricultural Economics, Reserch Council, Colorado, U.S.A.
- North, R.C. Holstic , O.R. Zaninovich, M.G and Zinner, D.A.,1963, Contents Analysis.North Western Univ. Press,Evanstan III, U..S.A, 4-5
- Parad, H.J.,and Caplan, G., 1960, A frame Work For Studying Families in Crisis. Social Work, ,5(3): 3-5
- Parsons, t.,1951, the Social System. The Free Press, New York.
- Parthasarathi, G. and Meenakshi, M., 1960, Inter Farm Productivity Difference. Agriculture Situation in India, 15(1):25-30.
- Puranikmath, K.V.,1989, A National Workshop on World Bank aided Watershed Development Project in Rainfed Areas. Report , Department of agriculture, Karnataka.
- Purushuramareddy,G., 1985, Credit Requirment, Availability and its adquacy On Farms in Upper Krishna Project Command Areas of Karnataka. M.Sc (Ag) thesis, (Unpub.), Department of Agricultural Economics, U.A.S., Bangalore.
- Rama Reddy, S. N.,1984, Impact of Commertial Bank Village adoption Scheme on Socio-economic Status of Farmers in bangalore North Taluk of Bangalore district, Karnataka. M.Sc.,(Agril) thesis (Unpub.) Department of agriculture Economics, U.A.S Bangalore
- Rameshbabu, R.,1987, a Study on Adoption Behaviour and Economic Performance of grape Growers of Bangalore and Kolar District, M.Sc.,(Agril) thesis (Unpub.), Dept of Extension, U.A.S Bangalore
- Rao, G.K.V.,1985, A Prediction Analysis of Farming Performance of Farmers through their Entrepreneurial Behaviour Factors. Ph.d thesis (Unpub.), Department of Extension Education, Andhra Predesh Agricultural University, Hyderabad.
- Rapport, L.,1962, Working with Families in Crisis -An Exploration in Preventive Intervension. Social Work, 7(3): 48-56
- Ramagowda ,B.L.,1991, Crisis Management by Farmers-An analysis,Ph.D thesis,(Unpub.),Department of Agricultural Extension,U.A.S, Bangalore
- Reddy, G.k., 1983, a Study of Management Orientation - Farming Efficiency and Consultancy Pattern of Rainfed Groundnut Growers in kolar District of Karnataka State. M.Sc.,(agril.) thesis (Unpub.), Department of Agricultural Extension, U.A.S., Bangalore.
- Reiss, F., 1949, Measuraring the Management Factor. Journal of Economics., 31(4):1065-1072

Weber, m., 1947, *The Theory of Social and Economic Organisation*. The Free Press, Glencoe III, USA.

Westermack, N., 1958, *Management and Success in Farming: Part I, Managerial Operations of Family Farms*. *Acta Agriculture Scandinavia*, 8(4): 175-403.

Wiener, A.J., and Khan, h., 1962, *Crisis and arms Control*.

APPENDICES



APPENDIX- I

INTERVIEW SCHEUDLE

SI No:-----

Date:-----/-----/98

Name of the respondent:-----Village:-----

Block:----- G.P:----- District:-----

(A) PERSONAL & SOCIO-ECONOMIC PROFILES

1) Age (as on June 1998) ----- Years.

2) Education

(a) Illiterate -----

(b) Primary School -----

(c) High School -----

(d) College and above -----

3) Family Type

(a) Joint -----

(b) Nuclear -----

4) Family Size

(a) <5 Members -----

(b) 5-10 Members -----

(c) >10 Members -----

5) Cosmopoliteness

Frequency of visit (Please indicate the number of times you visit the nearest town)

(a) Two or more times a week -----

(b) Once in a week -----

(c) Once in a fortnight -----

(d) Once in a month -----

(e) Occasionally -----

(f) Never -----

Purpose of visit

What generally would be the main purpose of your visit?

- (a) Majority of visits relating to agriculture and allied enterprises -----
- (b) Some relating to agril. And allied enterprises. -----
- (c) Personal, domestic and entertainment. -----
- (d) No response -----

6) Extension contact

Sl No	Extension personnel	Frequency			
		Regularly	Often	Rarely	Never
1.	Village agricultural worker	-----	-----	-----	-----
2.	A.E.O / J.A.O	-----	-----	-----	-----
3.	Subject matter specialists	-----	-----	-----	-----
4.	University scientists	-----	-----	-----	-----

7) Social Participation

- (a) Not a member of any organisation -----
- (b) Member of one organisation -----
- (c) Member of two or more organisation -----
- (d) Office bearer -----

8) Orientation to farming

- (a) Farming as a way of life -----
- (b) Farming as a business -----
- (c) Interest in scientific farming -----

9) Size of holding

- (a) Less than 2.5 acre -----
- (b) 2.5 to 5 acre -----
- (c) More than 5 acres -----

10) Dependency on land

- (a) Full (more than 60%) -----
- (b) Partial (20 to 60%) -----
- (c) Not dependent (below 20%) -----

11) Annual Family income

- (a) Less than 30,000 -----
- (b) Rs 30,000 to Rs 45,000 -----
- (c) Rs 45,001 to Rs 60,000 -----
- (d) More than 60,000 -----

12) Possession of agricultural Implements

- (a) Iron plough -----
- (b) Sprayer -----
- (c) Duster -----
- (d) Pumpset -----
- (e) Thresher -----
- (f) Weeder -----
- (g) Seed drill -----
- (h) Any other (specify) -----

13) Training Received :

Have you received any types of training?

Yes / No

If yes

Numbers

- (a) Other than agriculture -----
- (b) Agriculture -----

14) Farm power

Numbers / pairs

- (a) Bullock -----
- (b) Buffalo -----
- (c) Power tiller -----
- (d) Tractor -----
- (e) Any other (specify) -----

(A) MANAGERIAL SKILLS

I. FLOOD & CYCLONE

1. Do you like to share your ideas and materials with other farmers?
Strongly Agree / agree / Undecided
2. Do you like to be a participant for co-operative community action?
Strongly Agree / agree / Undecided
3. A farm with several crop is no way better than mono crop farm in providing insurance against crop failure .
Strongly Agree / agree / Undecided
4. When you are to take up a new crop what you do?
 - (a) Fear to be the first
 - (b) Do it by your own
 - (c) Do it by consulting others
5. Before you take up a new crop what you do?
 - (a) Usually do not bother about it.
 - (b) Think the positive and negative consequences.
6. Faced by uncertainties of weather
 - (a) Go for contingency crop
 - (b) Do nothing
7. Do you listen to radio for weather report?
Yes / No
8. If you come to know that there will be flood, what you do
 - (a) Discuss it with others
 - (b) Contact concerned officials
 - (c) Usually do not bother about it
 - (d) Any other (specify)
9. Anticipating flood at the 15 days of transplanting
 - (a) Use of stand by nursery for fresh transplanting

- (b) Go for pre-germinated seeds
- (c) Go for broadcasting
- (d) Do nothing specific
- (e) Any other (specify)

10. Anticipating flood you raise your seedlings at

- (a) High land
- (b) Medium land
- (c) Low land
- (d) Usually do not bother about it

11. If you wish for pre-germinated seeds for sowing after flood

- (a) Treat the seeds with warm water
- (b) Treat the seeds with cold water
- (c) It does not matter
- (d) Any other (specify)

12. If you face flood frequently do you opt for?

- (a) Submerged varieties
- (b) Have no idea about it
- (c) Any other (specify)

13. Anticipating flood do you go for fertilizer application?

Yes /No

14. If flood comes at later stage (September) and you have applied fertilizer earlier, than after flood

- (a) Take up cautions not to let the fertilizer leach any more
- (b) No idea about it
- (c) Any other (specify)

15. After flood what type of crop you take up

- (a) Short duration
- (b) As usual
- (c) Long Duration

16. If your crop is devastated by flood, what you do?
- (a) Prepare for next crop
 - (b) It does not matter
17. For applying fertilizer after flood, what you do?
- (a) Go for some low cost fertilizer
 - (b) Always keep some fertilizer for future use
 - (c) Do not apply fertilizer at all
 - (d) Any other (specify)
18. If beushaning is not done, after flood you do beushaning
- (a) Wait for some time
 - (b) Immediately after flood
 - (c) Any other (specify)
19. If older seedlings are not available after flood what you do for gap filling
- (a) Clonal propagation
 - (b) As usual
 - (c) Do nothing
 - (d) Any other (specify)
20. To avoid severeness of cyclone on your crop
- (a) Take up dwarf varieties to minimise harm
 - (b) No idea about it
 - (c) Any other (specify)

II.DROUGHT

1. Anticipating drought while sowing what you do?
- (a) Placement of seed in deep soil
 - (b) Placement of seeds in surface soil
 - (c) Nothing specific
 - (d) Any other (specify)
2. Anticipating drought do you take up drought resistant varieties?

Yes / No

3. If there is a short spell of drought, what you do?
- (a) Give some life saving irrigation
 - (b) Nothing specific
 - (c) Any other (specify)
4. If there is drought at the time of seedling raising, you go for
- (a) Raising seedlings where irrigation is available
 - (b) No idea about it
 - (c) Any other (specify)
5. If drought persists at the time of seedling raising, you go for
- (a) Dapog method of seedling raising
 - (b) Nothing specific
 - (c) Bed preparation
 - (d) Any other (specify)
6. After drought you maintain
- (a) Low plant population
 - (b) No idea what will be done at that time
 - (c) High plant population
 - (d) Any other (specify)
7. Usually you apply fertilizer after drought in
- (a) Low dose
 - (b) Moderate dose
 - (c) High dose
 - (d) Do not apply at all
8. When kharif crop fails due to drought you intensify rabi crop
- Yes / No
9. To conserve moisture what you do
- (a) Go for mulching
 - (b) No idea about it
 - (c) Any other (specify)

III. DISEASES & PESTS

1. To control yellow stem borer
 - (a) Application of systemic insecticide
 - (b) Systemic insecticide along with summer ploughing
 - (c) No idea hoe to control

2. To control Brown Plant Hopper
 - (a) Application of systemic insecticide
 - (b) Prior measure like summer ploughing if problem persists systemic insecticide is used
 - (c) No idea about it

3. To control gundhi bug
 - (a) Prior measure like summer ploughing & chemical control
 - (b) Application of systemic insecticide
 - (c) No idea about it

4. To control gall midge
 - (a) Growing of resistant varieties
 - (b) No idea about it

5. To control blast disease
 - (a) Application of appropriate fungicide
 - (b) No idea about it

6. To control leaf spot
 - (a) application of fungicide at the time of detection
 - (b) No idea about it

7. To control all types of pests
 - (a) Summer ploughing
 - (b) Summer ploughing + Soil treatment
 - (c) Summer ploughing + Soil treatment + Growing resistant variety
 - (d) Summer ploughing + Soil treatment + Growing resistant variety + Neem cake incorporation.

APPENDIX-II

MANAGERIAL SKILLS

I. FLOOD & CYCLONE

	Score assigned
1. Do you like to share your ideas and materials with other farmers?	
(a) Strongly Agree	3
(b) Agree	2
(c) Undecided	1
2. Do you like to be a participant for co-operative community action?	
(a) Strongly Agree	3
(b) Agree	2
(c) Undecided	1
3. A farm with several crop is no way better than mono crop farm in providing insurance against crop failure .	
(a) Strongly Agree	3
(b) Agree	2
(c) Undecided	1
4. When you are to take up a new crop what you do?	
(a) Fear to be the first	1
(b) Do it by your own	2
(c) Do it by consulting others	3
5. Before you take up a new crop what you do?	
(a) Think the positive and negative consequences.	2
(b) Usually do not bother about it.	1
6. Faced by uncertainties of weather	
(a) Go for contingency crop	1

(b) Do nothing	0
7. Do you listen to radio for weather report?	
(a) Yes	1
(b) No	0
8. If you come to know that there will be flood, what you do	
(a) Contact concerned officials	3
(b) Discuss it with others	2
(c) Usually do not bother about it	1
(d) Any other (specify)	
9. Anticipating flood at the 15 days of transplanting	
(a) Use of stand by nursery for fresh transplanting	4
(b) Go for pre-germinated seeds	3
(c) Go for broadcasting	2
(d) Do nothing specific	1
(e) Any other (specify)	
10. Anticipating flood you raise your seedlings at	
(a) High land	4
(b) Medium land	3
(c) Low land	2
(d) Usually do not bother about it	1
11. If you wish for pre-germinated seeds for sowing after flood	
(a) Treat the seeds with warm water	3
(b) Treat the seeds with cold water	2
(c) It does not matter	1
(d) Any other (specify)	

12. If you face flood frequently do you opt for?
- (a) Submerged varieties 2
 - (b) Have no idea about it 1
 - (c) Any other (specify)
13. Anticipating flood do you go for fertilizer application?
- (a) Yes 0
 - (b) No 1
14. If flood comes at later stage (September) and you have applied fertilizer earlier, than after flood
- (a) Take up cautions not to let the fertilizer leach any more 2
 - (b) No idea about it 1
 - (c) Any other (specify)
15. After flood what type of crop you take up
- (a) Short duration 3
 - (b) As usual 2
 - (c) Long duration 1
16. If your crop is devastated by flood, what you do?
- (a) Prepare for next crop 2
 - (b) It does not matter 1
17. For applying fertilizer after flood, what you do?
- (a) Go for some low cost fertilizer 3
 - (b) Always keep some fertilizer for future use 2
 - (c) Do not apply fertilizer at all 1
 - (d) Any other (specify)
18. If beushaning is not done, after flood you do beushaning
- (a) Wait for some time 2
 - (b) Immediately after flood 1

(c) Any other (specify)

19. If older seedlings are not available after flood what you do for gap filling

- | | |
|-------------------------|---|
| (a) Clonal propagation | 2 |
| (b) As usual | 1 |
| (c) Do nothing | 0 |
| (d) Any other (specify) | |

20. To avoid severeness of cyclone on your crop

- | | |
|--|---|
| (a) Take up dwarf varieties to minimise harm | 1 |
| (b) No idea about it | 0 |
| (c) Any other (specify) | |

II DROUGHT

1. Anticipating drought while sowing what you do?

- | | |
|--|---|
| (a) Placement of seed in deep soil | 3 |
| (b) Placement of seeds in surface soil | 2 |
| (c) Nothing specific | 1 |
| (d) Any other (specify) | |

2. Anticipating drought do you take up drought resistant varieties?

- | | |
|---------|---|
| (a) Yes | 1 |
| (b) No | 0 |

3. If there is a short spell of drought, what you do?

- | | |
|--------------------------------------|---|
| (a) Give some life saving irrigation | 2 |
| (b) Nothing specific | 1 |
| (c) No idea about it | 0 |

(d) Any other (specify)

4. If there is drought at the time of seedling raising, you go for

- | | |
|---|---|
| (a) Raising seedlings where irrigation is available | 1 |
|---|---|

- | | |
|--|---|
| (b) No idea about it | 0 |
| (c) Any other (specify) | |
| 5. If drought persists at the time of seedling raising, you go for | |
| (a) Dapog method of seedling raising | 3 |
| (b) Nothing specific | 2 |
| (c) Bed preparation | 1 |
| (d) Any other (specify) | |
| 6. After drought you maintain | |
| (a) Low plant population | 3 |
| (b) No idea what will be done at that time | 2 |
| (c) High plant population | 1 |
| (d) Any other (specify) | |
| 7. Usually you apply fertilizer after drought in | |
| (a) Low dose | 3 |
| (b) Moderate dose | 2 |
| (c) High dose | 1 |
| (d) Do not apply at all | 0 |
| 8. When kharif crop fails due to drought you intensify rabi crop | |
| (a) Yes | 1 |
| (b) No | 0 |
| 9. To conserve moisture what you do | |
| (a) Go for mulching | 1 |
| (b) No idea about it | 0 |
| (c) Any other (specify) | |

III. DISEASES & PESTS

- | | |
|--|---|
| 1. To control yellow stem borer | |
| (a) Systemic insecticide along with summer ploughing | 2 |
| (b) Application of systemic insecticide | 1 |

- (c) No idea how to control 0
2. To control Brown Plant Hopper
- (a) Prior measure like summer ploughing if problem persists systemic insecticide is used 2
- (b) Application of systemic insecticide 1
- (c) No idea about it 0
3. To control gundhi bug
- (a) Prior measure like summer ploughing & chemical control 2
- (b) Application of systemic insecticide 1
- (c) No idea about it 0
4. To control gall midge
- (a) Growing of resistant varieties 1
- (b) No idea about it 0
5. To control blast disease
- (a) Application of appropriate fungicide 1
- (b) No idea about it 0
6. To control leaf spot
- (a) application of fungicide at the time of detection 1
- (b) No idea about it 0
7. To control all types of pests
- (a) Summer ploughing 1
- (b) Summer ploughing + Soil treatment 2
- (c) Summer ploughing + Soil treatment + Growing resistant variety 3
- (d) Summer ploughing + Soil treatment + Growing resistant variety +
Neem cake incorporation. 4