In this study, it was intended to identify the major contributing factors for the agricultural progressiveness and how far they influence the same. After a close scrutiny of the earlier studies the following variables were identified and listed below. The theoretical background for the so identified variables and the relevant literature were reviewed and presented.

THEORETICAL ORIENTATION
MECHANIZATION

Technological changes are one of the most important forces which have altered the structure of the agricultural production process. The physical and value productivity of farm resources are changing in a continual process in the developing countries due to the constant flow of intelligence about the innovations in agriculture. With the introduction of new techniques of production, production functions are shifting upward. Technological changes, as a result of recent innovations, are increasing the efficiency of resources. Increased efficiency has also contributed to the social and economic development of the developing countries.

Technological changes, in general, can be described as including those changes in the production process, which reduce the marginal cost of output. This change can occur either by the
employment of the existing input but in different composition (a change in technique) or by introducing new factors of production either by replacing old ones or simply through additional inputs (technological innovation). Thus, technological change in either case is associated with shift in the production functions comprehending the technical relations between input and output. "Technological change can be broadly defined as a change in the parameters of a production function resulting directly from the use of new knowledge" (Stout and Rutton, 1958).

Technological change is a shifting of production functions. Technological improvement is a superior resource that goes to produce for the economy a higher rate of return relative to its cost than produced by the established (normal) inputs employed in production. According to Schultz "Technological changes are particular (new) factors of production that are adopted and employed because it is profitable for farms to do so" (Schultz, 1964). Thus the notion of a technological change is in essence a consequence of either adding or dropping or changing at least one factor of production. Technological change, in its consequential symptom, takes place when input yields proportionally more output.

Technological change in agriculture can be classified broadly into two categories as follows:
(1) Labour-Augmenting Changes

These changes refer to those which increase the marginal physical productivity or labour. Under this category falls mechanization of agricultural operations. Many agricultural operations can be carried out by tractors with various related implements. This type of technological change is distinct from others in the sense that it causes immediate replacement of human and animal power.

2. Land-Augmenting Changes

The changes consist of introduction of new or improved inputs which increase the marginal yield of cultivated areas. Introduction of chemical fertilizers, high yielding varieties of seeds and pesticides constitute the major changes that are taking place in this direction.

Mechanization of agriculture is an important technological revolution in the field of agriculture. Farm power required to carry out various agricultural operations is supplied mainly through three sources, namely human labour, dray animals and machines. Its quantum per hectare to obtain optimum output depends on the agro-climatic and geographical factors and hence, can vary considerably not only from region to region but within a region also. Both in developing and developed countries, the available evidence shows that, in general, the yield per hectare is positively correlated with the availability of farm power (Brenner, 1971).
Mechanization in agriculture has been a gradual process. For example, the implements for tilling the land have changed from the crude form of hand-operated ploughs to pull-up bullock drawn ploughs, tractors run by steam power and finally to modern tractors. At each stage a new device with better performance has replaced the older one resulting in an increase in the level of output, other things remaining equal. This process of mechanization is termed as technological change as it involves replacement of a device used so far, resulting in eventual form in marginal cost through reduction in operating costs and/or increase in the level of output (B.I.S.R., 1980).

COMMUNICATION

The Social Structure of India, according to Singh (1967) is built on and around agricultural villages. In order to foster, encourage and support the progressiveness in agricultural sector; there is a need to understand the farmer's behaviour in relation to utilization of various communication sources:

"Communication is a process where by Systems-Mass media and Extension Contact-influences another system-Agricultural progressiveness-through regulation of the transmitted information" - Kadlec, J.E.

Katz and Lazars (1955) commenting on communication research observed that effective analysis of communication is an important area (the other two being, audience research and content
analysis). Mares (1966) observed that "much of the guidance on matters of communication has, in the past: been atomistic—it has concentrated on single aspects of the communication process and failed to present a unifying framework". He meant to emphasize the need for an inter-disciplinary approach on communication research. Inkeles and Bauer (1967) identified some factors influencing communication behaviour as: (i) educational and occupational factors, (ii) environmental (situational) factors which bring about changes in intellectual stimulation, and (iii) attitude towards the media of communication. These are highly correlated with social class. Second age differences were found to affect communication behaviour surprisingly little. By implication, the personal and situational factors of individuals with reference to their profession like farming was empirically found to influence the communication behaviour. Klapper (1967) suggested a phenomenistic approach which could be applied to pervasive communication as in agricultural extension. The Hovland school followed this approach which identifies the role of a stimulus in a total observed phenomenon rather than presuming that the stimulus works alone. He suggested that research on communication effects must identify the process of effect and the directions of effect. Such researches, Klapper (1967) feels are likely to lead towards the goal of empirically documented theory of communication.
VALUE ORIENTATION

Behaviour of an individual is normatively regulated. Adoption of new ideas and practices is discouraged in a system having traditional norms. An individual while interacting with others influences and is influenced by others. The socialization of individual occurs within social systems. Individuals through communication of shared symbols collectively build a complex system of cultural meanings and values which provide norms for behaviour. Individuals are required to conform to the expected behaviour based on these accepted norms. The values, therefore, act as criterion for decision regarding alternative choices of behaviour. Differences in goal orientation occur as the norms and values may be held in varying degree of intensity by individuals. This is so because they system norms prescribe only the range within which one may attempt to meet his needs, i.e., it allows some freedom of choice. Parsons (1954) observed that the institutional patterns of cultural, "defines the goals the actor is expected to perceive, the means along which he may choose and the sentiments and attitudes he should manifest".

The values are the standards upon which evaluation are made, the criteria by which both ends and means are chosen. Certain means and ends are valued highly as they are found satisfying the needs. These values are acceptable and relevant to individuals. One's value system becomes a criterion for decision making. The value system and the belief provides men with sets of attitudes
towards physical and social objects. Beal et al, (1967) defined attitudes as a relatively enduring system of positive or negative evaluations, emotional feelings and pro or con tendencies to act toward physical or social objects. An individual seeking a desired outcome chooses stimulus and action according to his values and attitudes. Attitudes may also affect one's response to a stimulus. It can, therefore, be assumed that the cultural norms and values define a range of acceptable alternatives in the choice of means to accomplish specified ends.

ECONOMIC MOTIVATION AND RISK PREFERENCE

The planned change through science and technology, which seeks to alleviate human suffering and eradicate poverty and ignorance from the masses, depends much upon psychological and social factors rather than on economic factors alone. Darwin's theory of evolution and Freud's theory of the unconscious mind have changed the concept of human behaviour. Man is no longer considered as the rational animal. His behaviour is determined by irrational rather than rational forces. The behaviour of man is governed by forces which do not come within the purview of objectives laws of economics. In this line Rostow (1952) has insisted that economic theory must be linked ultimately to sociological and psychological constructs if it is to be maximally useful. Gunnar Myrdal (1963) state that "attitudes" and "institutions" play significant role in rapid economic development. Thus there is a shift in the neo-economists'
thinking who is recent years have come out against the classical economic approach and have accepted the importance of psychological factors in rapid economic development. The neo-economists have realized that economic development is the result of interaction of numerous factors, such as economic, institutional and psychological (Kapp, 1962; Lewis, 1962; Myrdal, 1968). They agree that economic development could not be conceived in purely economic terms and that programmes for economic development of underdeveloped world must take into account psychological factors. As Gunnar Myrdal (1968) points out, "our planning approaches must change radically from purely 'economic' planning towards more 'social engineering'". Sociologists and Anthropologists have been very busy for a long time in isolating social factors associated with economic development. They have provided several good hypothesis which could be tested experimentally by psychologists. Max Weber, the noted German Sociologist, has explained the rise of modern capitalism through the rise of Protestant movement in the west. Parsons and his students (1951, 1956, 1958) have analysed the social structure of industrialized and traditional societies. Sociologists proceed to analyse social structure of a society on the assumption that it is the very characteristics of a society that lead to material growth. Such approach is fallacious because it gives wrong notion of economic development. If the argument of sociologists is accepted, then it can be said that it is the social characteristics of developed countries which have
caused them to grow rapidly, which is illogical. Hoselitz (1954) has remarked in his comment on recommendations made by United Nations experts to promote the economic development of under-developed areas: "These men envisage that economic development is only possible if the social relations of under-developed countries are reformed so as to resemble those of western capitalist countries" (Mc Clelland, 1961).

Most of the Indian sociologists have followed the same approach in their analysis of the social structure of India. The cast system has been often singled out as a barrier in our economic development. It should suffice to point out that sociologists and economists could hardly go beyond it for they are not trained to think in the way psychologists and social workers think.

Psychology, as a science of human behaviour, could help in describing economic growth with the help of a few constructs. It can trace the human factors which accelerate or impede the rapid acceptance of technological innovations. It can describe fairly stable personality characteristics which can explain the generation gap in economic development. Though it has not developed to the extent natural sciences have, yet it has reached the stage where it can employ its theories and methods for practical purpose. It can use its tools in testing some of the major hypotheses advanced by economists and sociologists.
Psychologists' interest in phenomenon such as economic growth is of recent origin. Most of the psychologists still prefer to confine themselves within the walls of laboratories. George Katona (1960), Mc Clelland (1961), Mc Cleland and Winter (1969) and Sinha (1966) may be credited for applying psychology in the sphere of economics Mc Clelland has examined the implication of achievement motivation in relation to economic growth. He conducted cross-cultural study all over the world which he reported in Achieving Society (1961). It was concluded that there is a significant relationship between n Achievement and economic development. It is manifested in risk-taking preference and entrepreneurial activities. Since rapid economic development involves risk of various kinds, people with high n Achievement will tend to fulfill such demands. People with high n Achievement tend to perform better than people with low n Achievement.

An individual with strong motive to achieve tends to derive satisfaction from overcoming obstructs by his own efforts. McClelland viewed that under-developed countries should direct their energies towards increasing the n Achievement of their people. McClelland and Winter (1969) further examined the key hypotheses of Achieving society under more controlled situations. Their findings reported in Motivating Economic Achievement confirmed the main hypothesis that increase in achievement motivation is accompanied by increase in economic activities.
They have demonstrated that achievement of adults could be increased through suitable psychological education.

In India, Sinha (1966) is the first psychologists who has shown interest in this area. He attempted to map out the need-structure of villagers in his study of 'Motivational analysis of villagers'. The analysis of 'Performance Test' revealed absence of risk taking and fear of failure in villagers. Since modernisation of agriculture with the help of new technological innovations is test with uncertainty, it would have the desired effect only when villagers are willing to take some amount of risk. As Sinha (1969) points out, "reluctance to take risk and general attitude of playing safe is proving a stumbling block in the acceptance of these innovations". He further remarks that certain amount of risk-taking is an integral factor in economic development.

Modern agriculture is like any other industry. It involves experimentation with naval ways and right decisions. So the modern scientific farming heralds a situation of uncertainty and more hazard. To the peasant, acceptance of innovations involves greater risk. "The peasants' natural conservation is compounded by the fact that in this realm he is risking his family's subsistence when he innovates" (Leuis, 1962). "Cultivators are reluctant to accept a new technique, because to do so would compromise their way of life" (Gunnar Myrdal, 1968). Thus
acceptance of innovations and modern scientific farming is test with an element of uncertainty and implies some amount of risk. The success of efforts to introduce modern agricultural practices largely depends upon the willingness of the peasant to take risk, his willingness to invest his savings in purchasing fertilizer, ploughing machines, pumping sets etc. "If the farmer is reluctant to try out newer techniques and better seeds, and invest his meager resources and labour for higher output, he is not likely to bring about increase in agricultural production" (Sinha, 1969). That innovations create psychological problems has been emphatically pointed out by Taylor (1956). "New ways of doing and thinking always create psychological insecurities and some times create ethical and spiritual insecurities. Change automatically creates uncertainty about what is really happening and what can be expected. Furthermore, old ways practiced for generations are likely to be considered Sacred. Beliefs about the rightness are taken as much for granted as the air the people breathe". Today the U.S. produces surplus food because it farmers have been always willing to invest in new agricultural techniques. Chester Bowles (1963) has rightly stated that "Americans have always been willing to get their hands dirty experimenting with new techniques for improving their output". Israel and Japan have increase their agricultural output not only because of machines but also because of their people who take great pain and long hazards.
Thus, the major hurdles in the adoption of modern agricultural practices turn out to be psychological. It appears to be a question of willingness to take risk; motives to achieve economic prosperity. It is often said that rural people had 'limited aspirations' and that they lack 'entrepreneurship'. The factors responsible for it are said to be the traditional beliefs, case-system, illiteracy, extended family system etc. In order to test the validity of such assumptions empirically it was felt that an inquiry into the risk-taking behaviour and economic motivation of villagers was called for.

**LEADERSHIP**

The leaders in farming community are persons who are more important in the communication of information than others. They are generally defined in terms of high mentions received in response to questions regarding persons as sources of information used for general or specific purposes. They have been called "opinion leaders", "local leaders", "adoption leaders", "informal leaders," "communicators", or just simply "leaders". Wilkening (1950) defined them as persons named as sources of farm information by two or more persons in response to a question directed to that end. Lionberger (1952) used much the same type of questioning, but required five or more mentions and referred to them as "influentials". Marsh and Coleman (1964) required two or more mentions as information sources for specific practices to qualify as a "leader", while Hofter (1969) defined "community
leaders" in terms of their presumed likelihood of being able to get new ideas accepted among farmers in such areas as dairying, farm management, and soil conservation. Fanelli (1970) designated "high" and "low communicator's" on the basis of nominations as consultants about selected community problems. Rogers (1958) used a self-designating question to find persons frequently sought sources of form information. These were designated as "farming leaders".

INNOVATION

The concept of innovation has been over the years, a subject-matter of rigorous and critical examination in social sciences (Havelock, 1973; Rogers and Shoemaker, 1971). By innovation is meant the process of introduction or reception of new element or elements into a social unit. The element is new for the members of a given social unit regardless of the objective character of the element itself (MacDonald, 1980). According to Barnett "Innovation is any thought, behaviour or things that is new because it is qualitatively different from existing forms. Strictly speaking every innovation is an idea, or a constellation of ideas; but some innovations by their nature must remain mental organizations only, where as others may be given overt and tangible expression. Innovation is, therefore, a comprehensive term covering all kinds of mental construct, whether they can be sensible representation or not" (Barnett, 1953). According to Lapiere "An innovation is a idea for
accomplishing some recognized Social ends in a new way or for a means of accomplishing some new social end. The idea or patterns of ideas may become manifest as a new kind of tool or mechanical device, as a new process or technical procedure, as a new material or substance, ... as a new mode of human action, or a new concept or belief. Innovation consists of the creation of a unique and to a significant degree unprecedented mental construct, the idea that makes possible the things" (Lapiere, 1965).

Thus innovation is a new idea. More particularly technological innovations are new developments or combinations of the material, as distinguished from the non-material, culture. In the case of technological innovation, it is the idea about the new material product that is diffused as well as the object itself.

An innovation has two different aspects:

(A) Theoretical: Which is the rationality behind the innovation, and

(B) Practical: Which is the way in which the innovation is actually used and which does not necessarily require an understanding of the theoretical aspect (Rogors and Shoemaker, 1971).
Havelock and his colleagues have distinguished three general models that are used to investigate and explain the creation, introduction and diffusion of innovations. The models are as follows (Havelock, 1973).

1. The Problem - Solver Model

This model is general and applicable to any level of analysis, provided that it is possible to consider the entity as a system, a society, an organization, etc. This model involves two roles, viz (1) that of a client who has a problem which he wishes to solve and (2) that of the problem-solver - usually an entity or organization which will provide a solution to the problem. This model emphasizes the close collaboration that must be maintained between the client and problem-solving entity, so that the latter can make an adequate diagnosis of the nature and characteristics of the problem.

2. The Research Development and Diffusion Model

In this model, the problem can be purely theoretical, that is there is no client confronted with a specific difficulty. The model presupposes that a solution will consequently create the corresponding demand. The process of innovation in agriculture in the U.S.A. has followed the stage set out by the research development and diffusion model.
3. The Social Interaction Model

In this model, the attention is centered primarily on the introduction and diffusion of innovations, a process which requires interaction and communication among individuals within a social unit. In this model, the influences exerted by opinion-leadership, interpersonal contact, social integration, formal and informal organization have been given much importance. This model cannot contemplate the origin of innovations, nor does it usually take into account the social unit as a cybernetic system searching for means to attain a common goal. This Social unit in this model (i.e., a group of labourers, a group of communities, a society, etc.) is represented by a network of roles and channels of communication within organizational as well as formal and informal associations, which form barriers and overlapping connections. For the study of technological changes in agricultural society, the social interaction model has been used most widely (Rogers, 1979; Mac Donald, 1976).

In sociological literature, the following factors are considered relevant to the acceptance of innovation.

1. Characteristics of the Change-Agent

The role of the change-agent includes: developing a need for change among the clients; establishing the change relationship with them; diagnosing the clients' problem; examining the clients' goals and alternatives; creating the intent to change in the clients; encouraging the clients to innovate; stabilizing the
change behaviour so as to prevent stagnancy; and achieving a
terminal relationship with the clients. Thus the change-agent
has a rote to play at each significant stage of the clients' innovation-decision.

2. Characteristics of Innovation

In order to be accepted successfully an innovation must possess a series of characteristics that facilitate its acceptance. The most relevant intrinsic characteristics cited in social science literature are communicability or observability, complexity, and divisibility of an innovation. Similarly the most relevant extrinsic characteristics cited are computability and relative advantage of a given innovation (Rogers and Shoemaker, 1971; Havelock, 1973; Mac Donald, 1976).

3. Characteristics of a Social Unit

A social unit may be analyzed on two levels: structurally, i.e. the arrangement of existing positions within the social unit; and culturally, i.e. totality of norms, ideas, beliefs and values existing in the social unit. Both structure and culture exercise positive or negative influences on the acceptance and adoption of innovations into a social unit. These influences are called systematic effect, contextual effect, structural effect, or compositional effect (Rogers and Shoemaker, 1971, Balu, 1957, 1960, Davis, 1961, Tannenbaum and Bachman, 1964, Compbell and Alexander, 1965-66). The introduction of innovations tends to
modernize traditional Society and is one of the reasons for their introduction. The effectiveness of the adoption of an innovation will be positive or negative depending on the degree of the modernization or traditionalistic outlook of a social unit.

4. The Models for Acceptance of Innovation

In Sociological literature, generally three models for acceptance of innovation have been delineated. These are individual optional acceptance, collective acceptance and imposed acceptance. In individual optional acceptance, the individual is relatively free to accept and use the offered innovations depending upon their usefulness to the individual concerned. Collective acceptance refers to the acceptance of innovation through consensus or majority decision. This type of decision making takes place when an innovation affects all the members of a community. Imposed acceptance refers to arbitrarily imposed innovations by some superior authority.

5. The Nature of Channels of Communication

There are generally two types of communication channels distinguished in the process of introduction and diffusion of innovations. These are: (a) communication by way of mass-media and (b) interpersonal contact.

ADOPTION

The research effort of many rural sociologists, social workers and Extension Departments in recent years has been
directed towards the study of the diffusion and adoption of farm and home practices. It has been recognised that for any individual, the adoption of a complex new farm or home practice is not a single-unit act. The adoption process is probably a specific application of the general pattern by which human beings learn to make changes of any kind. A marked similarity has been noted between the process by which farm practices one adopted, the concept of diffusion as used by anthropologists (Neal C.Gross, 1942) and the learning theories of certain social psychologists, especially Dewey (1910).

Rural Sociology research workers have recognised, at least implicitly, that there may be stages in the adoption process, and that people may use different sources of information at different stages. This is indicated by the use of concepts such as first source of information about a practice, main one most influential (or important, valuable, helpful) source of other additional information.

Wilkening (1953) suggested that the adoption of new farm practices is a process, and indicated four stages in this process. A committee of rural sociologists (1955), who were doing research in this field later described a series of five stages through which farm people pass in the adoption of new agricultural practices. The committee developed this theoretical construct from a review of the literature but did not empirically test it. Later George M.Beal, Evertt.M. Rogers and Joe M.Bohlen
(1957), stated five stages in which two of the designations differ from those of the committee but the stages are otherwise similar to those of the committee:

Awareness: At this stage the individual is exposed to the idea—he only knows about it. He is aware that the new practice exists, but he lacks details concerning it. The motivation to seek information has not yet been created.

Information: At this stage the individual is motivated by his curiosity and interest in the new practice. He interprets the new idea by relating it to other experiences and phenomena which are part of his environment. He is attempting to get general information about the idea—the kind of information that will help him relate it to other experiences.

Application: Here the individual is concerned with applying the idea to his present or predicted situation. He goes through a "mental trial" that involves reflection of past interpretations of similar stimuli, and project to the future in regard to goals and objectives. The relative advantage of the new practice over other alternatives is considered. A decision to try or not to try the new practice is made.

Trial: The individual is now interested in actually trying out the idea in his own situation. At this point, he is concerned with the specifics of how, what, when and where. Information and
data regarding the technique and method are sought - rather than evaluative information, as in the previous stage.

Adoption: The thought process at this stage consists of evaluation, satisfaction with the trail, and the decision for continued use.

Consideration of the results of theoretical investigations of the adoption of agricultural innovations in Less Developed Countries (LDCs) is useful before reviewing empirical findings, since theoretical studies define adoption variables rigorously, set precise relationships for estimation, and suggest hypotheses which can be tested empirically. Furthermore, theoretical analysis can lead for better understanding of the interdependences among adoption decisions and thus, help in determining appropriate specification for simultaneous adoption models. Finally, rigorous analysis helps to define in more precise terms the conditions under which certain arguments are valid.

Rogers (1962) defines the adoption process as "the mental process an individual passes from first hearing about an innovation to final adoption. However, for rigorous theoretical and empirical analysis, a precise quantitative definition of adoption is needed. Such as definition must distinguish between individual (farm level) adoption and aggregate adoption. Final adoption at individual farmer's level is defined as the degree of
use of a new technology in long-run equilibrium when the farmer has full information about the new technology and its potential. This definition corresponds to T.W. Schultz's (1975) contention that the introduction of new technologies, results in a period of disequilibrium behaviour, where resources are not utilized efficiently by the individual farm. New equilibrium levels are attained through a process of learning and experimentation. In the context of aggregate adoption behaviour, let the diffusion process be defined as "the process of spread of a new technology within a region" (Edwin Mansfield, 1966). Aggregate adoption is reassured by the aggregate level of use of a specific new technology within a given geographical area or within a given population.

In most cases, agricultural technologies are introduced in packages that include several components, for example, high-yielding varities (HYV), fertilizers, and corresponding land preparation practices. While the components of a package may compliment each other, some of them can be adopted independently. Thus, farmers may face several distinct technological options. They may adopt the complete package of innovations introduced in the region or subsets of the package that can be adopted individually. In these cases, several adoption and diffusion processes may occur simultaneously.
MANAGEMENT

Ever since people began farming groups to accomplish goals they could not achieve as individuals, managing has become essential to assure the coordination of individual efforts. As we have come to rely increasingly on group effort and as many organised groups have become large, the role of managerial science has risen in importance.

We all have things that we want - our goals. These goals may include wealth, good health, a happy family life - yearly vacations, and social prestige, to name a few.

We also have certain resource with which to pursue our goals: time (hours, days, weeks, years), physical abilities, and mental abilities. In addition, some have savings, land, stocks, bonds, a good credit profile, training for a particular profession, and other assets.

<table>
<thead>
<tr>
<th>RESOURCES</th>
<th>ALTERNATIVES</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Study</td>
<td>Income</td>
</tr>
<tr>
<td>Physical ability</td>
<td>Sleep</td>
<td>Security</td>
</tr>
<tr>
<td>Mental ability</td>
<td>party</td>
<td>Health</td>
</tr>
<tr>
<td>Training</td>
<td>Work</td>
<td>Leisure time</td>
</tr>
<tr>
<td>Capital</td>
<td>Buy Stock</td>
<td>Good Social image</td>
</tr>
<tr>
<td></td>
<td>Buy land</td>
<td></td>
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Fig. 1. Illustrates the basic parts of Management
Finally, our resources can be used in a variety of ways, and each of these uses have different pay off in terms of the things we want (see figure I). The Science of Management includes the decisions and actions that allocate limited resources among alternative uses so that achievement of goals is maximized.

Form management is the science of allocating land, buildings, machinery, operating capital, and labour among different crops, livestock, production systems, buying systems and selling systems so that goals such as income, income stability, risk minimization, as well as personal goals, are attained (see Figure 2). Differences in decisions about the use of resources and differences in the ability to put these decisions into action can have a great impact on farm profit.

<table>
<thead>
<tr>
<th>RESOURCES</th>
<th>ALTERNATIVES</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>land</td>
<td>Crops</td>
<td>Income</td>
</tr>
<tr>
<td>Matching</td>
<td>Livestock</td>
<td>Income</td>
</tr>
<tr>
<td>Stability</td>
<td>Production System</td>
<td>Security</td>
</tr>
<tr>
<td>Buildings</td>
<td>Purchasing</td>
<td></td>
</tr>
<tr>
<td>Operating</td>
<td>Selling</td>
<td>Simplicity or case of management</td>
</tr>
<tr>
<td>Capital</td>
<td>Total business size</td>
<td></td>
</tr>
<tr>
<td>Labour</td>
<td>Level of efficiency (crops livestock)</td>
<td>Personal goals of owners, managers, workers, Society.</td>
</tr>
</tbody>
</table>

Fig. 2 Basic parts of farm management
Progressiveness

Progress in agriculture depends to a large extent on the adoption of better farm practices by farmers. Experience indicates, however, when improved practices are developed by research stations or farmer innovators, that the new practices are not immediately adopted by all farmers. Considerable resistance must be overcome before general adoption of an improved practice can take place. In order to decrease the time lag between the discovery and general adoption of new practices, there is a need for better understanding of farmer resistance. One may to gain this understanding is to compare the more progressive and the less progressive farmers in the socio-economic and psychological characteristics, and to search for the explanation of the differences.

Considerable research of this type has been done in the United States [Loomis, C.P., Beegle, T.A. 1950; Report of a sub committee of the Rural Sociological Society, 1952; Wilson, M.C. and Gladys Gallop, 1955]. Other studies carried out in the Netherlands, where the cultural pattern in very different. The studies have been done since 1952 by Van Den Ban, Germing, Kneppelhout, and Overeem, under the leadership of E.W.Hofstee.

In these (Netherlands) Studies three measures of "progressivism" were used, in various combinations in the several studies: (1) Locally well-acquainted persons were asked to rate farmers on their farm managerial ability. These persons were
instructed not to rate the quality of the farm but only the managing capacities of the farmer. Usually the ring for a given community was done by the country extension agent, but sometimes by prominent farmers or others. There appeared to be no differences which could be attributed to the occupation of the person who did the rating. (2) In most of the studies, a schedule was used to learn from the farmers how many modern practices they had adopted. The researchers considered as "modern" were those practices advised by the Extension Service. (3) Farmers were asked whether they had been in personal contact with the country agent during the past year and the contacts were deemed in a leap towards progressivism. In two studies, however, this information was not gathered by interviewing the farmers but only by interviewing the agent.

In general, it was found that each of the three measures identified the same group of farmers as more progressive.
REVIEW OF LITERATURE

In this section, the agricultural progressiveness related to variables i.e., Mechanization, Social participation, Communication variables, Value orientation, Economic motivation, Risk preference, Leadership ability, Innovative proneness, Adoption behaviour, Farm management ability and Political participation have been discussed with respect to individuals' ability to effect agricultural development and their influence on entrepreneurial performance. In addition to the above said factors, the influence of certain personal variables like Age, Education, Caste, Family Status and Composition, Income and Land holding on agricultural progressiveness have also been discussed.

2.1. AGE AND AGRICULTURAL PROGRESSIVENESS

There are divergent views regarding the age of the farmers and adoption. Bhan (1987) found that there is no relationship between age and adoption. The above finding was in conformity with the findings reported by Marsh and Coleman (1955), Lionberger (1960), Reddy (1962), Sinha (1963), Shankariah (1965), Kolte (1967), Roy et al. (1968), Fliegel et al. (1968), Kivlin et al. (1971), Tripathy and Mishra (1971), Murthy and Singh (1974), Opara (1978) and Desphande (1980).

Sen (1972) stated that the farmer-leaders who have influenced the village level adoption had come from all age groups. Sangle (1984) found that there is no relation between age and adoption of new technology among farmers.
The elderly farmers seem to be less inclined to adopt new practices than younger ones, as evidenced by studies of Gross and Taves (1952), Hess and Miller (1954), Lionberger (1955), Marsh and Coleman (1955) and Copp, Sill and Brown (1958).

Supe and Singh (1969) found that the correlation between age and rational behaviour was not significant but it was found in the positive direction. Dube (1961) and Reddy (1962) found that older farmers adopted innovations more than others.

Researchers have shown that there is no unanimity of findings about the relationship between the age of the farmer and the adoption of new farm practices. In general, younger farmers tend to be more inclined to adopt new agricultural practices than the older farmers (Bakshi, 1960; Gross and Taves, 1952; Rogers, 1962; Padmarao, 1968 and Lakshminarayana, 1970).

Hoffer (1942) stated that the age of adopters was negatively associated with the adoption of improved farm practices, when certain other factors were held constant.

In the Integrated Agricultural Development Programme areas of Andhra Pradesh, Reddy and Kivlin (1968) found that younger people are more likely to have adopted high yielding varieties, though the relationship was not statistically significant.

Sachchidananda (1972) reported that level of adoption to a large extent depends upon the age of the head of the household, the person who takes a decision in these matters. He further
reported that the younger age group leads in adoption, which was found in all the three blocks combined together.

Jetley (1977) has studied both developed and less developed villages. The innovators in the developed villages are found to be a little older than the other categories, but in the less developed villages, the innovators belong to younger age group. In general, it was found that the younger farmers are more adoptive, irrespective of the blocks i.e. whether they have originated from developed blocks or less developed blocks.

According to Mohammed and Majeed (1979) the age composition is inversely related to the adoption of innovation, i.e. with the increase in age the rate of adoption decreases and vice versa.

Aslam (1981) stated that in the developed and underdeveloped villages there is a negative correlation (significant at 0.01 level) between age and adoption.

Salim (1986) concluded that the high adopters have been found in large proportion in the middle age group than among other age groups which was supported by Wilson and Gallup (1955), Lionberger (1960) and Nandapurkar (1982).

Waghmare and Waghmare (1987) found that regarding the adoption of new technology, the majority (75 percent) of respondents were in the age group of 31 to 55 years. The possible reason for this would be that farmers of more than 30 years might have better experience in different aspects of agriculture than the younger respondents. This finding is in agreement with the
views expressed by the Kolte (1973), Patel (1975) and Shetay (1976).

Murthy and Singh (1974) stated that the age was found to have no significant relationship with communication behaviour which was supported by other researchers like Inkelas and Bauer (1967), Roy et al. (1968) and Murthy (1972).

The older peasants who are likely to have relatively low level of formal education and lower social status seem to pay less attention to the mass media. Older villagers are probably less neurotic in their attitude and values, so that selectively they exposed themselves less to the mass media than do younger peasants (Rogers and Svenning, 1969).

Waghmare and Waghmare (1987) found that as the age of the respondents increased the use of formal source of information also increased. The relationship between age and the source of information was found to be significant. The findings are in consistence with the findings reported by Nanjaiyan, Srinivasan and Oliver (1977).

According to Muthayya (1971), the lower and higher age groups (30 years and below and 46 years and above) do not maintain a high aspiration compared with 31 to 45 years age group. But Chaubey (1974) found that the aspiration was higher among the adults and low among the older people.

Wallach and Kogan (1959) reported significant age difference in confidence and judgement. They found that young men were
significantly higher in confidence than old men. In addition, they found that confidence was associated with risk taking behaviour (Kogan and Wallich, 1961). Several studies have demonstrated that confidence is one of the basic qualities of high need achievement people (Winterbottom, 1948 and McClelland, 1961) which leads them to behave in a more enterprising way.

Jetley (1977) quoted that the age has been considered as a significant factor in the decision making process. The eldest has the power of decision making for the family. The above finding was confirmed by Sinha (1966).

MacDonald (1976) found that with respect to age, there are no differences between primary and secondary agriculturists, whereas communeoros (respondents) who are tertiary agriculturists are shown to be younger than those belonging to the other categories.

Singh (1985) found that most of the agricultural entrepreneurs are between 31 to 60 years of age. Their number in the age groups 21 to 30 and those above 60 years is not much significant with agricultural entrepreneurship.

In general, there are divergent views regarding the age of the farmers and their adoption practices (Rogers and Shoemaker, 1971).

From the above findings, it may be concluded that the agriculturalists belonging to young age group adopt innovations
and modern agricultural management practices very quickly compared to the older generation.

2.2. EDUCATION AND AGRICULTURAL PROGRESSIVENESS

Education gives knowledge and sharpens the skills of human beings and helps in the effective functioning of his job assignment, and agricultural progressiveness is no exception to this. Nelson (1964) rightly suggested that the basic literacy is almost a prerequisite for both learning a new job and executing a new job. Now-a-days, a farmer should possess at least some level of education, so that he can discharge his farming operations well. He can take risk to adopt new technologies and try to be innovative. An attempt has been made in this section to know how education contributes to the progressiveness and development of the farmers.

In a survey, Muthayya (1971) found that about 52.4 percent of the farmers are illiterate, 38.6 percent are literate, 4 percent only crossed the school level education and the rest have varying degrees of education. But Jetley (1977) indicated that more than 50 percent of the respondents can neither read nor write. Another quarter of them have three to four years of schooling and remaining have more than 4 years of schooling.

In a recent survey among the Indian farmers Salim (1986) stated that 40.33 percent of the respondents are illiterate, 37 percent are educated upto middle school level, 18 percent reached intermediate level and 4.67 percent continued upto graduate and post graduate levels. Further, he stated that the level of
literacy is higher among the small and big farmers; a considerable number of them possess medium educational qualification.

Bhatnagar (1972) found that among villagers majority of the cultivators are illiterate. The owner-cultivators' educational status is also slightly higher than the tenant-cultivators.

MacDonald (1976) has stated that the respondents from the most developed region (Mantaro) have a high level of education than those from less developed region (Andabuaylas).

Sinha (1974) indicated that the correlation between the educational level and scores on the ladder test, both in the developed and undeveloped villages showed negligible relationship.

Fliegel et al. (1968) found that the caste of the village leaders are not significantly related with education.

In the Columbian study, Rogers and Svenning (1969) found a positive and significant relationship between literacy and farm size.

The standard of living is determined by level of productivity and level of education during the life time of the farmers (Pipping, 1953 and Erasmus, 1961).

Fliegel et al. (1968) have shown that education does not relate to the caste, empathy, secular-orientation and extension agency contact but relates to the level of living and urban contact.
Patil (1972) indicated that the farmer's level of living is directly determined by the level of productivity and by the level of education. Level of education is a crucial determinant of level of living in the sense, that it exerts a direct and prominent causal influence on level of living on the one hand and it amplifies the causal effect of level of productivity on level of living on the other.

There was a negative linear relationship between the degree of involvement in agriculture and the level of education obtained by the farmers (MacDonald, 1976).

The more literate respondents were more apt to use the mass media (Roy et al., 1968). Patil (1972) found that the level of education determines awareness indirectly through mass media exposure and also with the change agents.

According to Ambastha (1986), the non-package and package farmers' education have positive and significant correlation with information input as well as farm output.

Patil (1972) observed that the level of education determines urban exposure of the farmers directly as well as indirectly through level of living.

According to different scholars, the role of formal education is of strategic importance. Levy (1966) contends that a higher level of literacy is required in the use of scientific agriculture.

The general trend in U.S.A. is that some formal education is

Sangle (1962) found that formal education of the farmers was a factor positively associated with adoption. The above study was supported by the following researchers, Hoffer (1942), Ryan and Gross (1950), Dimit (1954), Bose (1961), Patel and Modelia (1974), Jetley (1977), Mohammed and Majeed (1979).

Educational status has generally been associated with readiness to adopt the agricultural innovation (Marsh and Coleman, 1955 and Supe, 1960).

Sachchidananda (1972) found that there is a strong correlation between education and adoption. However, the importance of education is relatively less in the I.A.D.P. (Integrated Agricultural Development Programme) blocks as compared to the non-I.A.D.P. blocks. This is due to the fact that in the non-I.A.D.P. areas education is only one of the factors promoting adoption but in I.A.D.P. areas opportunities and incentives for adoption are many.
Fliegel et al. (1968) found that the educational status of the village leaders is not significantly related to village level adoption.

Waghmare and Waghmare (1987) found that there is no significant relationship between the education and adoption. The findings of Rajguru and Satapathy (1973), Kishore and Rai (1974), Patel and Modelia (1974) are also in conformity with the above finding.

Golden and Ralis (1957) reported that literate Thai villagers are more innovative than illiterates. Rahim (1961) found that literacy is positively related to adoption of farm innovations in Pakistan. Lerner (1964) found that the literate Turkish peasants are more likely to perceive themselves as innovators in their village.

Roy et al. (1968) indicated that the literate farmers and the better educated are significantly more prone to accept innovation in agriculture. The above finding was supported by Rogers and Herzog (1966), Rogers and Svenning (1969) and Patil (1972).

Jetley (1977) found that the innovators are having an average of 7 to 8 years of schooling in the selected villages. At the same time the innovators were also more educated. The correlation between education of the respondents and innovativeness among high and low developed villages was significant.
The National Council of Applied Economic Research (1964) has concluded a study in seven states of India and reported that the farmers with some education (Primary and above) were high level users of fertilizers than illiterate farmers.

Evenson (1973) found that education plays a strong role in determining the rate of adoption of the new technology in the development of agriculture.

Huffman (1977) has stated both theoretically and empirically, that the farmers with higher education possess higher allocative ability and adjust quickly to reduction in nitrogen prices by adopting nitrogen-intensive technologies.

Sangle (1984) reported that education is significantly related with technology use. Thus, educational level of the farmers helps to adopt new and scientific methods of agriculture.

2.3. CASTE AND AGRICULTURAL PROGRESSIVENESS

Caste is a very important determinant of socio-economic structure of Indian villages. A large body of literature has been produced on Indian caste system (Irving, 1853; Sherring, 1879; Ketkar, 1909; Ghurye, 1932, 1952, 1961; Mukerji, 1951; Prasad, 1957; Majumdar, 1958; Sinha, 1960 and Srinivas, 1962). It is often said that the caste-system is the greatest obstacle in the path of economic progress of India (Kapp, 1963 and Myrdal, 1968). However, the caste has always been emphasized as the basis of status in Indian society (India, 1968).

People belonging to higher castes are more westernized and
modernized in their values and behaviour than the middle and lower caste groups of the society (Mohammed and Majeed, 1979). However, in the contemporary Indian society, the traditional caste system is in the melting pot, because of the changes in the economic structure, land reforms and agricultural modernization. The middle and lower caste groups are rising in the economic ladder and new agrarian relationships are emerging (Srinivas, 1962 and Beteille, 1966).

Salim (1986) stated that majority of the farmers belong to backward caste groups. Further, he found out that the high caste farmers have better socio-economic status in comparison with the scheduled and backward caste farmers.

Many-a-time, the efficiency of family amongst the social strata is not found to be uniform and also the receptivity for improved agricultural practices amongst them.

Lionberger (1960) found that the higher caste status was related to higher adoption. The above finding was in conformity with Bose (1961), Desai and Mehta (1964), Salvi (1968), Roy et al. (1968), Fliegel et al. (1968), Sachchidananda (1972) and Bhan (1987).

Mundra and Batham (1967) reported that the adoption of plant protection chemicals was low amongst all the castes and the adoption index for improved seeds was high in higher castes and low in lower castes. Seed treatment acceptance rate was not very high in all the castes.
Reddy (1976) found that there was a significant relationship between the castes of farmers and progressiveness of the villages, whereas Patnaik (1967) found that in a peasant community in Orissa, caste exerted a negative influence on agricultural adoption.

According to Chaubey (1974) prestigious and dominant caste group of adults of developed villages have lower mean score on the indices of risk taking in comparison to the adults of other caste groups. But analysis of variance reveals no significant effect of caste on their risk-taking behaviour. Also caste did not seem to have any impact on the risk-taking behaviour of adults of undeveloped villages. But the caste did influence their risk-taking strategies.

In India generally the backward caste group is dominating in agriculture but there has been no attempt so far to find out the relationship between caste system and agricultural progressiveness in different geographical regions.

2.4. FAMILY TYPE, SIZE AND AGRICULTURAL PROGRESSIVENESS

Family Type

All over the world the agricultural structure has been closely linked with the joint family. The nature of agricultural activities demand the participation of many individuals for which the joint family organisation becomes the most suitable organization for the performance of different types of work associated with the agricultural occupations. In India, from time
immemorial, there has been a land based agricultural economy and the joint family organization has been the dominant one. In the Indian village community, the agricultural land has been owned by all the family members jointly. They jointly participate in the agricultural activities and jointly share the agricultural products. The traditional agrarian structure in India could not be conceived without the existence of joint family organization. However, in recent times because of the population explosion, pressure on land, exodus from villages, increased mobility, mechanization of farming and changes in the means of socio-economic promotion, not only the agrarian structure undergoing a metamorphosis but also accompanying joint family structure undergoing a change. These trends are leading towards the small size family (Salim, 1986).

Keeping in view of the importance of family organization, Aslam (1981), Kulkarni (1960) and Bhan (1987) indicated that the joint family system still has a stronghold in the villages.

Salim (1986) found that among the low socio-economic status, most of the families are nuclear. On the other hand, among the respondents of high socio-economic status, most of the families have been found to be joint type.

Jetley's (1977) study has shown that joint family is norm and reality. All of the early innovators and three fourths of the other respondents come from joint families.

Salim (1986) indicated that in both the medium and high adopter categories, most of the respondents belong to joint
families and in the low adoption category most of the respondents belong to nuclear families.

Chaubey (1974) observed that in the case of developed villages intermediate risk was associated with joint family system while in undeveloped villages, it was related to single family system.

Joint family system is giving way to nuclear family system. Singh and Sahay (1972) reported that joint family is gradually disintegrating due to the changes in their economic conditions. The growing economy is taking them towards individualism.

Nicholas (1961) in the study of Economics of family type in the Bengali villages reported that families are predominantly nuclear type. This was supported by Madan (1965) who reported that joint family does not form a high proportion among the Brahmins of rural Kashmir.

Muthayya (1971) found in his survey on agricultural families that majority of the respondents belonged to single family and only fourteen respondents belonged to joint family system.

There are some studies where attempts had been made to relate family types with family income and education. Morrison's (1959) study of Badlapur, and Driver's (1959) study of "Family structure and socio-economic status" have indicated that the highest and the lowest income groups shows the predominance of nuclear families and that the highly educated are confined only to nuclear families.
There are differences of opinion with regard to types of families in relation to agricultural progressiveness. Hiramani (1977) has stated that the studies are inadequate to come to a conclusion with regard to family type and agricultural progressiveness.

Family size

Salim (1986) found that in most of the cases, the respondents' families are of average size consisting 6 to 10 members. Waghmare and Waghmare (1987) found that 84 percent of the respondents had a family size of above 5 members. The probable reason for this might be that more people are required in agricultural operations such as weeding, fertilizing and harvesting, etc.

The family size was the largest among tractor owners followed by bullock cart owners and non-owners respectively (Bhan, 1987).

Salim (1986) observed that the correlation of caste status with the size of the farmer's families indicates that the small size family is found in large proportion (53.85 percent) among scheduled castes. The average and large size families have been found in significant proportion among high and backward castes. Further, the land ownership and high economic status associated with the upper castes are the major contributing factors for the prevalence of the large size family among these caste groups.

Ambastha (1986) found that family size has no significant
correlation with information input as well as output.

Wilkening (1953) reported that family factors were positively related to adoption of farm practices. He found that adoption of improved farm practices was low on those farms on which almost all labour was provided by farm family than those where a substantial part of labour was hired.

Sinha (1963) reported that the family size was significantly related to each stage of adoption process.

Mukherjee (1970) observed that there was a correlation between size of family and adoption behaviour of farmers which is supported by Chaubey (1972) and Shahi (1974).

Sachchidananda (1972) found that the co-efficient of correlation between size of the family and the adoption index was significant. It shows that large families find it easier to arrive at a decision regarding adoption of an innovation.

Jetley (1977) observed that in all the villages (less and more developed villages) the size of the family has a strong correlation with the dependent variable — acceptance of modern agricultural practices.

The findings of Desphande and Nikhade (1965) had shown that there is no association between the size of the family and adoption. Similar findings were reported by Salvi (1968), Singh (1974) and Bhatia (1974).

Roy et al. (1968) found that neither the family size nor
family structure were meaningfully related to agricultural adoption. There is a low significant correlation between family size and adoption. Therefore, family size cannot be viewed as an important determinant of adoption behaviour.

Sangle (1984) found that farmer's family size was not related to the extent of technology used.

The above findings on family size have revealed no uniformity pertaining to the adoption of new technology with increase in size of family. Different views prevail on family size and adoption behaviour.

2.5. INCOME AND AGRICULTURAL PROGRESSIVENESS

A person's social status is based on his annual income, caste, education, land-ownership, type of house and ownership of agricultural implements. The income variable plays a major role in assessing the agricultural progressiveness. An attempt has been made in the present research about income level and how it influences the other variables.

In a survey Muthayya (1971) found that 33.6 percent of the respondents have an annual income of above Rs.2,000, 48.6 percent of them between Rs. 1,000 and Rs. 2,000 and 17.8 percent below Rs.1,000 per year. Thus a majority of the respondents have an income below Rs.2,000 per annum.

Sangle (1984) observed that the gross average income from agriculture in system A (irrigated villages) is substantially higher than that of system B (Dry villages). And also the per
hectare income in system A (Rs. 2,147) was more than double the income compared to system B (Rs. 1,042).

Nanjaiyan (1985) concluded that majority of the farmers (56.50 percent) belong to low income group, 30 percent and 13.50 percent belong to medium and high income group respondents.

Salim (1986) stated that 45.66 percent of the respondents had an annual income up to Rs. 5,000, 26 percent between Rs. 5,001-7,500, 12.33 percent between Rs. 7,500-9,000 and 16 percent more than Rs. 9,000.

Bhan (1987) revealed that the annual net income of non-owners is the lowest followed by bullock cart owners and tractor-owners respectively.

Waghmare and Waghmare (1987) found that majority of the respondents have an annual income below Rs. 4,000.

Balasubramanian (1980) observed that in both progressive and less-progressive villages the earlier adopter differed significantly with late adopters on net income.

Fliegel (1960, 1967) observed that the income is positively associated with the adoption of farm practice. The above finding is in conformity with the following researchers: Hoffer, 1962; Sharma, 1966; Sinha and Prasad, 1966; Roy, 1968; Reddy and Lakshmana, 1969; Jaiswal et al., 1971; Chaubey, 1972; Shahi, 1974; Zia-ul-Karim and Mehboob, 1974; Bhatia, 1974; Gangappa, 1975; Mahadevsamy, 1978; Nanjaiyan, 1985 and Salim, 1986.
Aslam (1981) reported that there is a positive correlation between the developed and under-developed village respondents' income levels and adoption.

Mahajan (1981) pointed out that the extent of adoption of agricultural technology is found to be positively associated with family income.

Sangle (1984) observed that the extent of technology used to increase with the increase in the income of the farmers. The relationship is found to be significant.

Ragavacharyalu (1983) found that annual income of small farmers is positively and significantly related to their entrepreneurial behaviour. This finding derives support from the findings reported by Nandapurkar (1982).

Chavan (1979) reported that the relationship between annual income and adoption of hybrid and high-yielding varieties is not significant. Similar trend is also observed by Deshpande (1980).

Research studies mentioned above clearly state that the annual income of the farm respondents influence the adoption of agricultural innovations.

2.6. FARM SIZE AND AGRICULTURAL PROGRESSIVENESS

Farm size is one of the important factors on which the adoption literature is focussed. Farm size can have different effects on the rate of adoption depending on the characteristics of the technology, institutional settings and individual's
entrepreneurial ability.

Chamala (1981) stated that the progressive villager farm size was lesser than the non progressive villagers, but the difference is not significant.

Yet, no difference has been observed in land holding between the developed and under-developed village farmers (Aslam, 1981), whereas MacDonald (1976) found slight difference in land holding of the developed and less developed village respondents in Peru.

Muthayya (1971) found that 31.7 percent of respondents had six acres and below, 32.7 percent between 7 and 12 acres and 34.6 percent above 13 acres.

Singh (1985) found that there is a positive relationship between the adoption of agricultural innovations and the size of land holding of the agricultural entrepreneurs. Further he stated that the emergence of agricultural entrepreneurship is confined to big land owners.

Bhan (1987) found that the tractor owners possessed more cultivated areas (33.6 acres) as compared to bullock cart owners (12.2 acres) and non-owners (8.3 acres). In varied farm size groups, the tractor-owners generally hold higher cultivated area than the bullock owners and non-owners.

Wilkening (1954) found that the size of land-holding was positively correlated with adoption behaviour. The above finding was supported by Wilson and Gallup (1955), Fliegel (1956), Beal and Bohlen (1957), Lionberger and Coughenour (1957), Copp, Sill

Sachchidananda's (1972) study also revealed that with the increase in the size of holding, the adoption index also increased. But the rise in the adoption index begins to fall as soon as the holding reaches a particular level.

Jetley (1977) found that the amount of total land owned and the adoption of agricultural practices showed a positive and significant coefficient of correlation in the more developed villages, whereas the correlation was insignificant in the less developed villages. The actual operation unit of land was significantly related to innovativeness.

The farmers of large size holding are adopting the agricultural innovations much earlier as compared to the farmers of small and medium size holding (Mohammed and Majeed, 1979).

Aslam (1981) stated that there is a positive correlation between the size of the farm and adoption of improved practices in both developed and under-developed villages. However, village A (developed) has got comparatively higher average adoption score at all levels of contact than village B (under developed).

Murthy and Singh (1974) supported Indian Institute of Management's (1968) research findings in Thanjavur district of
Tamil Nadu, where some tenants and small land holders were also reported to have adopted the high yielding varieties. The intensity of High Yielding Variety (HYV) adoption of small farmers exceeds that of larger farmers. Muthayya (1971), Schluter (1971) and Sharma (1973), found out that small and medium size farmers in India adopted HYV in a larger proportion of acreage than the large farmers.

Waghmare and Waghmare (1987) found that the adoption level of majority of the respondents (80 per cent) having upto 0.40 hectare farm size was high. Likewise, there was also high adoption level in other farm size groups. The difference between farm size level and adoption levels were not significant. This indicates that variation in adoption is independent of farm size.

The National Council of Applied Economic Research (NCAER) in 1964 conducted a wide survey to study the factors affecting fertilizer consumption. The findings of this study revealed that the fertilizer user on an average holds a much larger farm than the non-user.

The studies regarding the intensity of fertilizer and pesticide use per unit of land have shown a more confusing pattern of behaviour. Many studies (Perrin and Winkelman, 1976; Clawson, 1978 and Singh, 1979) indicated a positive relationship between the amount of fertilizer applied per hectare of fertilized land and farm size, while, other studies (Lipton, 1978; Parthasarathy and Prasad, 1978; Singh, 1979 and Burke, 1979) indicated no significant difference in chemical input use
per acre between farms of different size. On the other hand, Veen (1975) suggested three possible explanations: i) Small farms may cultivate the lands more intensively to meet their subsistence needs, ii) Small farms may irrigate more efficiently, and iii) Small farms use relatively more low-cost family labour. Srinivasan (1972) has analytically shown that some of these factors explain the higher use of variable input per hectare by small farmers.

The farm size is an important factor in adoption of new agricultural varieties, because the large farmers can put a trial plot for new crop varieties or cultivate different types/varieties of crops in his farm. In the case of small farmers, it is not possible to experiment with such innovations.

2.7. MECHANIZATION AND AGRICULTURAL PROGRESSIVENESS

Farm mechanization has been defined as the use of labour saving (human and animal), time saving and efficient working devices for farm operations.

Mechanization in agriculture has been a gradual process. In that process, at each stage the older ones have been replaced with new devices with better performance resulting in an increase in the level of output, other things remaining equal. This process of mechanization is termed as technological change as it involves replacement of a device used so far "resulting in eventual form in marginal cost through reducing in operating costs and/or increase in the level of output" (Birla Institute of
Scientific Research, 1980).

The major purpose of farm mechanization is to alleviate the labour bottlenecks, to effect more timely farming operations, to increased production, to reduce labour demands and sometimes for double and multiple cropping (Alviar, 1972; Spencer and Byerlee, 1976 and Veil, 1970).

Salim (1986) suggested the use of agricultural mechanization i.e. improved plough, tractor and power thresher which are comparatively more prominent among high caste, big land holders and high adopters.

Bhan (1987) revealed that the number of farm machinery increased with the increase in farm size. Further, tractor-owning farmers had more farm machinery as compared to bullock cart owners. Non-owners have practically no improved farm machinery of their own. Tolpekin (1958), Schillar (1959), Sarkar and Prahladachar (1965) and Sisodia (1971) also observed similar findings. However, Singh and Rai (1973) did not find any relationship between mechanization and farm size.

The adoption of mechanized agricultural innovations is high among the land-owning farmers and tenant-cultivators when compared with share-croppers and agricultural labourers (Ansari, 1985).
Sangle (1984) reported that farmers in the irrigated area possessed more improved agricultural implements and machinery than farmers in the dry area.

Bhan (1987) showed that per acre yield of tractor owners is higher than that of bullock-owners and non-owners. Further, he stated that tractors are positively associated with farm yield. Sharma (1972), Lawrence (1970) and a study of NCAER (National Council of Applied Economic Research, 1973) also supported the above findings. There are equally large number of studies which show neutral effect of tractors on farm yield (Vashishtha, 1975; Rao, 1975; Rudra, 1970 and Agarwal, 1983).

Sagar (1989) found that farm mechanization contributed significantly to the prediction of productivity of crops of farmers.

Samantha (1989) observed that the regular credit-users of nationalised banks differ significantly from defaulter credit-users of nationalised banks with respect to the farm mechanization.

The mechanization is associated with more participation in social activities such as school, recreational activities and civil programmes, etc. (Bertrand, 1954).

Aslam (1981) found that 80 percent of the developed village respondents were using the modern farm implements (Tractor, Shalimar plough, Thresher and Harvesting Combines). Contrary to
this, in under-developed villages only 32 percent of the farmers adopted either of the above mentioned improved farm implements.

Singh (1989) found that farm mechanization contributed significantly to the level of fertilizer use of the medium farmers. Further, he stated that the use of farm machinery reflected a progressive outlook of the farmers and in general, influenced the level of fertilizer use.

Parthasarathy and Abraham (1974) indicated that there is a very high and significant correlation between tractor-use and adoption of new varieties of seeds.

Jetley (1977) reported that the number of bullocks and mechanized implements showed a significant correlation with innovativeness.

The agricultural development and farm mechanization seems to influence each other. The past research studies have clearly shown that farm mechanization has worked as one of the powerful instrument in bringing about widespread change in social and economic life of the rural people. While all the farmers with or without mechanization have experienced these changes in varying degrees, the intensity was greater among mechanized farmers than among non-mechanized ones. This was confessed in the above referred findings.
2.8. SOCIAL PARTICIPATION

Social participation refers to the farmer's participation in any social or statutory organization or whether he is an elected representative of any one of the organization. Chamala (1981) found that the progressive villagers have showed greater social participation than the non-progressive village farmers.

Alao (1981) indicated that about 63 percent of the farmers belong to one or more social organizations while the rest indicated that they did not belong to any such organization.

Bhan (1987) observed that the level of social participation in institutions like Panchayats, cooperatives, etc. was found to be higher in zone II (bullock cart-owners) followed by zone I (tractor-owners) and the lowest was in zone III (non-owners).

Supe and Singh (1969) reported that the social participation has been found to be positively related to the adoption level which was supported by Rural Sociological Committee Report (1955), Copp (1956), Bose (1960), Sinha (1963), Choudhari (1964), Reddy (1964) and Ernest (1973).

Lionberger (1960) stated that membership in office and formal organization was positively related to adoption.

Roy et al. (1968) found that only 25 percent of the respondents were members of any formal organization and they were not higher in adoption. However, holding office showed the expected relationship. A possible inference is that formal
organizations do not play a vital role in the village community, except for those few individuals who control the organizations.

But in combined membership and holding office in a single index, the relationship with adoption is significant.

Somasundaram (1976) found a significant correlation in social participation between small farmers with their extent of adoption. De (1977) reported positive and significant correlation between social participation and change in agricultural practices. Rogers and Shoemaker (1971) quoted that earlier adopters have more social participation than later adopters.

Patel (1965) found that about 77.5 percent adopters obtained low score in social participation and 20 percent of the adopters had medium score of social participation. Only 1.67 percent of the adopters did not participate in any social organization.

Patel (1975) observed that most of the adopters had low level of social participation whereas one fifth of them attained medium level of social participation. Only a few had high level of social participation.

Waghmare and Waghmare (1987) found that only 5 percent respondents have high level of social participation, 65 percent have middle level of social participation, while 30 percent have low level of social participation. The variation in adoption depends on social participation.
Supe and Sulode (1975) stated that there was no significant relationship between social participation and technological or innovation adoption.

Desphande (1980) reported that there was no association between social participation and adoption.

Supe and Singh (1969) found that the higher socio-economic status means usually bigger farm size, higher education, higher social participation and belonging to higher caste of the farmers. The above findings were supported by earlier researchers like Sinha (1963), Jaiswal (1965) and Sharma (1966).

Chattopadhyaya (1963) indicated that only about 56 percent of farm practice adoption behaviour could be explained by the change proneness, education, formal social participation, conservatism and fatalism.

Mulay and Ray (1973) found that the high-urban group was more mobile and participated more in the contractual form of association in comparison to the low-urban group.

Sharma et al. (1971) found the significant difference between mechanized and non-mechanized farmers regarding their level of living and social participation.

Sangle (1984) observed that the farmers level of institutional participation is related to the extent of technology use. The difference between low and high participation was narrow. However, the technology use was higher in system A
(irrigated village) in each category, than farmers of the same category in system B (Dry village).

Social participation is very much needed for a human being. Active participation in social activities helps the personality development of the individual. Above all, the social participation widens the knowledge of individuals in adoption process. Most of the above said studies state that social participation favours adoption of agricultural innovations.

2.9. COMMUNICATION

Communication plays a major role in the development of agriculture all over the world. The innovations, ideas and methods are diffused through various communication methods.

Communication research of recent times have focussed on the effect of source, message or channels or change in knowledge, attitude and adoption behaviour of the receiver.

The sociologists, social workers, psychologists, extension educators and other social scientists have evinced much interest in communication research and their contribution to communication researches are given below under three headings.

1. Extension contact
2. Mass media and
3. Utilization of information (communication) sources
Extension contact

The importance of extension services in adoption of new agricultural technology by farmers at all levels is most needed for a developing country like India. The Government has introduced various training programmes and schemes to train the farmers on modern scientific lines such as the Farmers Training Centre, National Demonstration Scheme and Krishi Vigyan Kendra. However, the farmers are not only getting agricultural information from the above said sources but also from the other sources like friends, neighbours, relatives, etc.

In short, the extension contact by farmers and other personal information sources influences to a large extent on their adoption of innovations. Regarding this aspect, references to a few studies are presented below.

Waghmare and Waghmare (1987) revealed that a majority of the respondents used the formal source for seeking information, followed by the informal source and mass media. With the increase in age of the respondents, there were an increased use of formal sources of information. The relationship between age and the sources of information used was significant.

The progressive and educated farmers are usually expected to have frequent contact with change agents and vice versa (Wilkening, 1950 and Coleman and Marsh, 1955). Similarly, the farmers exposed to urban centres and mass media are usually expected to have frequent contacts with change agents and vice versa (Emery and Oeser, 1958 and Jones, 1963).
Dhaliwal and Sohal (1965) observed that better educated and economically well-off farmers were considerably much ahead of the poorly educated and low-economic status farmers in developing and maintaining contacts with the extension agency. Further his study indicated that farmers under high urban influence who had higher education and higher socio-economic status, have also higher contact with the extension agency.

Patil (1972) found that the level of education determines the awareness indirectly through mass media exposure. And the level of education also determines the contact with change agents directly as well as indirectly through mass media exposure.

Photiadis (1962) observed that the high social status farmers probably tend to retain their status, have more contacts with agricultural agents and get more out of the same contacts than the low social-status farmers do.

The knowledge gained through exposure to the information sources influence the rationality of the farmers' decisions. The farmers seek information about the improved farm practices from different sources of informations. Beal and Rogers (1960) observed that the farmers are exposed to different sources of information at different stages of the adoption process. However, under the Indian conditions, it has been found that the farmers are using the present sources of information such as gram sevaks, friends, neighbours at every stage of the adoption process (Supe 1960; Singh and Jha, 1965; Singh and Pareek, 1965; Kapoor, 1966;

Chamala (1981) found that there were no significant differences in the physical facilities available for both progressive and non-progressive villagers, but there was a significant difference between the farmers on contact with village level workers, contact with block level extension officers and contact with the pusa scientists.

Singh and Sahay (1972) reported that personal cosmopolite sources (communication with extension agents, farm supply-store personnel, farmers from other neighbourhood, etc.) mass media provided the first sources of information to the progressive villagers, while few cosmopolite and more personal localite sources (communication with friends, relatives, neighbours and village leaders, etc.), provided information to the majority of farmers in the non-progressive village.

Bhan (1987) reveals that contacts with extension agency have increased more in case of tractor-owners than bullock-cart owners and non-owners.

Supe and Singh (1969) found that there is no significant relationship between the farmers' use of other farmers as information source and their rational behaviour. The above finding is in conformity with those reported by Sharma (1966), Singh and Jha (1965) and Supe (1960), who found that other farmers are not as effective as an information source in adoption of innovations involving high level of technical knowledge.
The formal or institutional sources of information are usually technologically competent and therefore it is natural that the farmers contact these sources while adopting innovations. These sources of information provide the farmers first hand, accurate and complete information about improved farm practices (Supe and Singh, 1969). Similar findings were obtained by Chopde et al. (1959), Rogers (1962), Supe (1960), Sharma (1966) and Singh and Jha (1965).

Rahudkar (1958) found that neighbour to neighbour communication was of greater importance in the diffusion of farm innovations than any other communication channel.

Wilkening (1952) reported that the farmer's contact with extension agency was highly associated with adoption of improved farm practices. The above finding was supported by Paul and Coleman (1955), Moulik (1965), Amarsingh (1965), Singh (1971) and De (1977).

Kivlin et al. (1971) concluded that the extension contact was positively correlated with agricultural adoption.

Sen (1972) found that the farmer's contact with the extension agency is the most influential variable in the village level adoption of improved agricultural practices. The relationship between the two variables is significant.

Patil (1972) has indicated that change agents can influence innovation decisions. The direct causal relationship between the contact with change agents and the innovativeness is often supported by number of studies (Beal et al., 1967; Coughnour, 1960; Rogers and Havens, 1962 and Sawhney, 1967).
Mass Media

The older peasants who are likely to have relatively low level of formal education and lower social status seem to attend less to the mass media. Older villagers are probably neurotic in their attitude and values, so that selectively they expose themselves less to the mass media than do younger peasants (Rogers and Svenning, 1969).

Roy et al. (1968) have, in otherwords, stated that the age of the respondents has no significant relationship with mass media.

Lerner (1963) found that the level of education and level of living may have indirect rather than direct causal effect on awareness through mass media exposure. Further, he stated that the level of productivity cannot directly determine the mass media exposure, because in order to use mass media, the level of education and level of living are needed most.

Rogers and Svenning (1969) concluded that literacy is more highly related to newspaper exposure than to non-print media exposure. The past investigations have found a positive association between literacy and mass media exposure both (1) at the aggregate level of analysis (Lerner, 1958 and UNESCO, 1961), and (2) when individuals were used as the units of analysis (Lerner, 1958, 1964 and Deutschmann, 1963).

Roy et al. (1968) revealed that the literate respondents were more apt to use the mass media.
The farmers' social status is positively related to mass media exposure (Roger and Svenning, 1969).

Salim (1986) indicated that the high media exposure is more noticeable among the big land holders than among the small and marginal land holders.

Rogers and Svenning (1969) revealed that opinion-seekers have lower mass media exposure than the opinion givers.

Mulay and Ray (1973) showed that the high urban group in comparison to the low urban group has a significant difference in media participation.

Coughenour (1960) in his study revealed that the greater exposure to media, the larger the number of adopters of practices.

Rajagopalan and Singh (1971) assessed the importance of different mass media as sources of information regarding agricultural practices. Other than the officials and demonstrations, the largest number of farmers gained agricultural information through cinema (64.5 percent), Radio (42.7 percent) and the Newspaper. Magazines and pamphlets are found to be the least important (6.4 percent) sources.

Aslam (1981) observed that the major sources of information regarding improved implements in village A (progressive village) were the mass media followed by personal cosmopoliteness and personal localite. In contrast to this in village B (less-progressive village), the major sources of information were
personal localite followed by mass media and personal cosmopolitaness. In general, mass media was found to be the major source of information followed by personal cosmopolitaness and personal localite.

Lionberger (1960) reported that the mass media like radio was the first in the order of information sources at the awareness stage of adoption behaviour. Further, he stated that early adopters used mass media sources whereas late adopters used other local farmers, dealers, etc., as their sources of farm information.

Bureau of Agricultural Economics (1946) reported that radio has become a highly valuable part of everyday living in most rural homes in the United States. Lazarfield and Field (1946) have reported that two-third of the people contacted in their sample said that radio added information to their knowledge. Dayton and Massachusetts State Extension Evaluation Committee (1950) reported that from thirty studies on radio reviewed by them, the less educated farmers depend on radio as a means of information more than the college trained farmers.

Nicol, Shea, Summins and Sim (1965) reported that radio broadcast fostered the inquiring attitude as a result of attempts made by members individually and through groups, to acquire further knowledge.

Under the Indian conditions, Mathur and Neurath (1959), Bhatt and Krishnamurthy (1965), Bharadwaj (1966) and Pandey
(1967) have all found the beneficial effects such as gain in knowledge, favourable change in attitudes and adoption by exposure to radio broadcasts for farmers. Kishore (1968) has found the gain in knowledge, attitude and retention of information among farmers, who owned radio sets.

Alao (1981) reported that about 28.6 percent farmers read the daily newspapers regularly, 14.3 percent indicated that they read the agricultural news letters regularly. Furthermore, 68.6 percent of the farmers listened to radio and rediffusion at least once a week, another 21 percent listened twice a week and 10 percent farmers did not have access to radio or rediffusion.

Salim (1986) has also found out that 18.67 percent farmers read the newspaper consistently, 26.66 percent farmers read sometimes and 51.67 percent farmers had no habit of reading newspapers.

Bhan (1987) indicated that the frequency of radio listening has registered a greater increase in mass media contact in case of tractor-owners as compared to bullock-cart owners and non-owners. The difference between the three groups in this respect were found to be significant.

Fliegel et al. (1968) found that the relationship of mass media access and contact, and the more personal agricultural agency access and contact were significantly and positively related to adoption. The mass media exposure is positively related to innovativeness (Rogers, 1969 and Kivlin et al., 1971).
Patil (1972) found that mass media exposure, which is often considered as important one in communication studies or adoption studies, does not have a direct causal effect on innovativeness, but it affects innovativeness indirectly.

Reddy (1968) suggested that demonstration was found to be credible in non-progressive villages and incredible in progressive villages. The written materials consistently received low credibility.

Singh and Shankariah (1969) reported that the newspapers and bulletins were accorded least credibility. In the farmers' consultation pattern, the credibility of different communication sources varied between progressive and non-progressive villages. He further found that farmers of non-progressive villages accorded high credibility to radio forum than the farmers of progressive villages.

Wakade (1980) indicated that in progressive villages, the mass media were accorded the highest credibility followed by personal formal sources and personal informal sources, while in traditional villages mixed pattern of credibility was observed.

Rogers (1969) indicated that there is a positive relationship between mass media exposure and achievement motivation, and he further stated that fatalism is negatively related to mass media exposure.
Communication/Utilization of Information Sources

Murthy (1972), Murthy and Singh (1974) stated that the age was found to have no significant relationship with communication behaviour. They further stated (1974) that education is positively related with communication behaviour. Sinha (1972) revealed that there is positive (significant) correlation between socio-economic status and communication behaviour.

Chamala (1981) stated that the residents of the progressive villages talk more freely among themselves, irrespective of socio-economic differences, than those in the traditional villages (non-progressive).

Ambastha (1986) found that there is a positive (significant) correlation between information input as well as information output and education, socio-economic status and farm size of the respondents.

Sangle (1984) stated that the farmers in system A (irrigated village) used more number of sources than system B (dry village). The use of information sources increased with increase in size of holding. The difference between the systems A and B is significant.

Waghmare and Waghmare (1987) indicated that the difference between the various levels of participation and sources of information were found to be significant.
Murthy (1972) stated that the localite - cosmopolite value orientation was significantly correlated with communication behaviour.

Murthy and Singh (1974) found that more the localite lesser the communication behaviour; more the cosmopolite value orientation higher the communication behaviour and also more the external conformity higher the communication behaviour.

Rahudkar (1958) found that neighbour to neighbour communication was of greater importance in the diffusion of farm innovations than any other communication channel.

Rogers (1962) reported that mass media were generally the most important in creating awareness of new ideas but personal influence from neighbours and friends was regarded as the most effective in convincing farmers to actually try out the new idea.

Mulay and Ray (1973) indicated that both the high and low urban group farmers with a high media participation had high socio-economic status possessing more of urban material items, had more contact with extension agency, more knowledge of improved farm practices and a high level of farm practice adoption.

Roy et al. (1968) found that the communication variables--total mass media contacts, personal contact with the extension agents, and a physical contact with urban centres--shows strong correlation with agricultural innovation.

Waghmare and Waghmare (1987) found that the extent of
adoption of innovations was influenced by the utilization of information sources. The above study was supported by many researchers (Rogers, 1958; Rahudkar, 1962; Sawhney, 1967; Dudhani and Rao, 1969; Lakshmana and Satyanarayana, 1967 and Bhilegaonkar, 1976).

Murthy (1972) pointed out that except age, communication behaviour of the farmer was significantly related with situational and personal variables, social system variables, economic system variables and personality system variables.

Agricultural innovations are diffused through various sources like mass media, extension department etc., perhaps, the diffusion result depends upon the individual's readiness to adopt the innovations. In order to overcome such hurdles, the Government and other agencies are spending more money on diffusion of agricultural information through motivation, giving incentives or subsidies and advertisements, etc. Past research findings confirm that high extension contact and mass media use will influence adoption behaviour.

2.10. VALUE ORIENTATION AND AGRICULTURAL PROGRESSIVENESS

According to Wilkening (1954) values are abstract concepts inferred from behaviour, and operate to influence a selection of available means and ends of action and have either favourable or unfavourable connotations for the well-being of the individual or group. Many others also have defined values, but in general, values are beliefs about what is desirable and what is not or

Importance of values

Person (1961) regarded value as a normative pattern which defined desirable behaviour for a system in relation to its environment, without differentiation in terms of the functions of units or of their particular situation. The sociologists and social psychologists have proved that the values and norms of human behaviour are fundamental parts of human society. Values refer simply to the accepted or required behaviour of a person in a particular situation (Cuber, 1959).

The social scientists have recognised the significance of social values of the socialisation process and the interrelationship of people. The values and norms of a society play a dominant role in determining human behaviour and social process. The adoption behaviour of an individual, groups, cultures and societies is no exception to it (Leonard, 1958).

Regarding the importance of human factor, particularly value orientation, any study dealing with technological change and diffusion of innovations will be incomplete unless it takes the factors into account. Therefore, in the present study the values of the cultivators have been taken into account and they have been broadly grouped into two categories: a) Progressive and b) Less-progressive (or) traditional.
The words progressive and less-progressive have been used in a comparative sense. The former refers to more innovative, more modern, more economically rational attitude, predisposition of farmers towards men and matters, whereas the latter stands for the reverse conditions. The progressive farmer views innovations more favourably and adopts new ideas more rapidly than the traditional farmers. Further the progressive farmers always welcome innovation whereas traditionalist resist them.

As the following six dimensions occupy important position in value orientation, viz., Conservatism - Liberalism, Authoritarianism - Non-authoritarianism, Fatalism - Scientism, Sacred - Secular, External conformity - Individualism and Localite - Cosmopoliteness -- they were taken for research. An overview of past researches are presented here to understand how the value system of the farmers help agricultural progressiveness.

2.11. CONSERVATISM - LIBERALISM

The term conservatism was closely related to the term traditionalism. Ramsey and others (1959) defined that 'the value orientation towards traditionalism is an adoption of precedence as the criteria in decision making and is the anti-thesis of social change'. The term conservatism appeared to be wider in scope as it was not restricted to decision making alone but produced an attitude which was favourable to the maintenance of status quo. This status quo was the same as what Herskovits
(1948) meant by 'the phenomenon which, in its psychological aspects, is called conservatism'.

In brief, conservatism is a positive attitude of the individual towards precedence and to the maintenance of status quo and hence unfavourable to the adoption of new ideas. Likewise, the liberalism is a positive attitude of the individual to change and to the adoption of new ideas.

Ramsey et al. (1959), Hoffer and Stangland (1958), Chattopadhyaya (1963) and Singh (1967) have found that conservatism was negatively associated with adoption of recommended farm practices.

Mulay and Ray (1973) indicated that majority of the respondents from the high urban group farmers showed their inclination towards progressivism, whereas very few low urban farmers showed progressivism. The differences in conservatism - progressive value orientation of the high and low urban village groups were significant. The findings of the above study were in agreement with studies conducted by Redfield (1962), Anderson (1964), Gist and Fava (1965).

Chamala (1987), stated that there was no significant difference in the physical facilities available for the progressive and non-progressive villages, but there was a significant difference between the farmers on conservatism - liberalism.
De (1981) found that the adoption behaviour of the farmers was positively and significantly related with progressive values.

Sangle (1984) found that the conservatism - liberalism score of respondents and their extent of technology use were negatively correlated in both the irrigated and dry villages and the relationship was significant. The finding was supported by the studies reviewed by Rogers (1962), Chattopadhyaya (1963) and Porwal (1975).

From the above findings it can be inferred that the liberalistic value influences agricultural progressiveness.

2.12. AUTHORITARIANISM - NON-AUTHORITARIANISM

Authoritarianism is defined as a positive attitude towards acceptance of an idealized person of institution for setting tasks, prescribing procedures and/or judging result without permitting others to share in the decision process. Non-authoritarianism is defined as a positive attitude towards accepting decision process as a shared responsibility and tolerance or variations in thinking and behaviour.

Chattopadhyaya and Pareek (1966) found the Authoritarian value was positively associated with adoption behaviour. The above finding was supported by Chattopadhyaya (1963).

Sangle (1984) revealed that the farmers' Authoritarian - Non-authoritarian values were negatively correlated with technology used in both irrigated and dry villages.
Moulik (1975) reported that Authoritarian - Non-authoritarian values were not significantly related with the farmer's level of adoption which indicates that the innovativeness of the farmers is not affected by the socially determined values.

In general, there are divergent views regarding Authoritarian-Non-authoritarian value orientation of the farmers and their adoption behaviour. So it needs further research to know the impact of value orientation in agricultural progressiveness.

2.13. FATALISM - SCIENTISM

Fatalism is defined as a belief, that human situation and acts are predetermined by some supernatural power and can never or little be influenced by individual volition or by act of any one else. On the other hand scientism was defined as a belief that human situations are the result of natural and or social forces which can be understood and changed by volition or by human action.

The above concept of scientism does not place any emphasis on the formal training in science. The dominant guiding spirit in scientific enquiry and thinking, especially the Baconian concept of mastery of man over nature constitutes the pervading trend in this present formulation of the concept of scientism (Chattopadhyaya, 1963).
Fatalism is the degree to which an individual perceives a lack of ability to control his future (Seeman, 1959). Fatalistic individuals believe that the events of their lives are preordained and determined by fate or supernatural forces.

Hunt (1957) views the religious beliefs prominently held throughout the less developed world as essentially fatalistic and characterizes them as blocks to economic development. This view of fatalism as a rationalization for failure is supported by Niehoff and Anderson (1965) who concluded, after a review of numerous case studies dealing with planned change in less developed countries, that fatalism is not an important variable in explaining the adoption or rejection of innovations. Niehoff (1966) further summarizes from his review of research on fatalism in Asia that there is little evidence that fatalistic attitude actually affect behaviour.

Fatalism is a traditional characteristic and it destroys a person's initiativeness. It originates from Weber's (1960) explanation that other-worldly religious values inhibit economic development. This line of thought has been followed by numerous scholars who have assumed and accepted this without testing it (Singh 1967). It is possible, and some evidence has been already cited to substantiate it, that fatalism is more a method of rationalizing past failures than a determinant of behaviour (Niehoff, 1966).

Rogers (1969) found that the fatalism was negatively related to literacy, mass media exposure, cosmopoliteness,
innovativeness, aspirations, achievement motivation and political knowledgeability. However, the correlates of fatalism were generally low.

Chattopadhyaya (1963) found that the fatalism was significantly related to the adoption behaviour. Chattopadhyaya and Pareek (1966) revealed that the fatalism - scientism value of the farmers are related to predictability of adoption behaviour.

Moulik (1975) found that fatalism was significantly and negatively related with the farmers' level of adoption. Further, he stated that a farmer who has more scientism values is more likely to adopt farm innovations.

Chamala (1981) concluded that the significant difference in fatalism - scientism was related to differences in progressiveness and less-progressiveness among villagers.

Sangle (1984) found that the fatalism - scientism values and technology use were negatively and significantly correlated in both the irrigated and dry villages. However, the dry village farmer's fatalistic value was high. So technology use was comparatively low in dry villages than in irrigated villages.

From the findings it can be inferred that the fatalistic value system is not helpful in agricultural innovations.

2.14. SACRED - SECULAR

The sacred may be defined as the individual's faith in religion or things pertaining to or derived from religion which
serves as a basis for individual's actions. The secular may be defined as a lack of faith in religion or things pertaining to or derived from religion.

The Sacred-Secular values are more related to Indian farming Community. How far these values have contributed to agricultural progressiveness or development is studied by a number of researchers and their findings are reported here.

Mohammed and Majeed (1979) revealed that the progressive farmers had secular values and the traditional farmers have sacred values. Further, it was also observed that difference in adoption of agricultural innovation was due to difference in their value pattern.

Fliegel et al. (1968) found that the secular orientation of the leaders is positively and significantly related to village level adoption.

Roy et al. (1968) indicated that farmers' adoption of improved agricultural practices were significantly correlated with secular orientation. Kivlin et al. (1971) also reported similar finding.

Mulay and Ray (1973) observed that the high urban village and low urban village respondents differed significantly in the sacred-secular value orientation. The above finding was confirmed by Redfield (1962).
Loomis and Beegle (1950) related the rural world to sacred and urban world to secular.

Hauser (1957) observed that exposure to the urban environment leads to changes in religious practices and beliefs.

Kumar (1979) revealed that the major influencing factors in adoption of agricultural practices were village leaders' contact with change agents, the secular orientation of village leaders, change agents' use of communication aids and other impersonal techniques in disseminating information.

Based on the above reviews, it is concluded that the secular value is associated with improved agricultural practices.

2.15. LOCALITE - COSMOPOLITENESS

The German Sociologist Tonnies (1887) classified the society into Gemeinschaft and Gesellschaft, later Zimmerman (1938) translated them as localite and cosmopolite. Merton (1964) described these bi-polar groups as follows. The localite largely confines his interests to his own community; he is preoccupied with local problems and almost ignores the national and international scenes; he is parochial in outlook. The cosmopolite also takes some interest in the community he lives in and exerts influence there. But he is also oriented significantly to the outside world and considers him as an integral part of the world. In this study, the terms localite and cosmopolite are applied to persons indicating their orientation towards certain sources of information, internal or external.
Singh (1967) found that the localite - cosmopolite value orientation has negative relationship with adoption behaviour. The above finding is in conformity with the findings of Supe (1969).

Murthy and Singh (1974) revealed that the localite-cosmopolite value orientation is negatively correlated with the farmers' communication behaviour.

There is no significant difference in the physical facilities available for the progressive and non-progressive villages, but there is a significant difference between the farmers' cosmopoliteness - localiteness orientation (Chamala 1981). From the above discussion it can be inferred that the importance of cosmopolite and localite orientation improved agricultural practices. But so far no systematic effort has been made to relate these variables in relation to agricultural progressiveness.

2.16. EXTERNAL CONFORMITY - INDIVIDUALISM

Williams (1951) has defined individualism as the conviction that the best state of affairs is one in which a self-reliant and independent man assumes the responsibility for his own decision. External conformity refers to decision making by an individual only because his decision is in agreement with his friends, neighbours or relatives or other important referents or groups.

Singh (1967) found that the external conformity - individualism value orientation is positively related with
adoption behaviour, which is in conformity with the findings of Chattopadhyaya (1963), Singh and Arya (1966), Murthy (1969), Murthy and Singh (1974).

In general, one who takes decisions in farming matters in consultation with others is having a desirable ability and facilitates the adoption of innovations.

2.17. ECONOMIC MOTIVATION AND AGRICULTURAL PROGRESSIVENESS

Economic motivation is defined as the occupational success in terms of profit maximization and the relative value an individual places on economic ends (Supe, 1969). Farm productivity and progressiveness is related to economic motivation of the farmers. Many studies have stressed the importance of economic motivation for agricultural success.

Rao et al. (1971) found that economic motive was placed in the first rank among the hierarchy of motives towards adoption of high yielding varieties.

Singh (1971) found that economic motivation was significantly related to the viewing behaviour of the farmers.

Lokhande (1973) revealed that the farmers' credit behaviour is significantly related to economic motivation.

Chamala (1981) reported that there was no significant difference in the physical facilities available for the progressive and non-progressive villagers, whereas the farmers'
economic motivation significantly differed among and above two groups.

Moulik (1965) observed that economic motivation was found to be significantly and positively correlated with adoption behaviour. The above finding was supported by Singh (1965), Rao and Moulik (1966), Singh (1967) and Nair (1969).

Supe and Singh (1969) indicated that the economic motivation scores and rationality quotient scores were found to be positively correlated.

Das and Sarkar (1970) concluded that the age, education, family, farm size, caste and social participation significantly correlate with economic motivation.

Balasubramanian (1977) concluded that the age and farm size were not associated with the economic motivation whereas the education and social participation were significantly associated.

Sangle (1984) found that the economic motivation was positively and significantly related with the technology they have used in both irrigated and dry villages.

Rahudharan (1972) stated that farmers of less adopter group are having higher motives like economic security, family need, etc., irrespective of whether they are in progressive or in non-progressive areas.
Prabukumar (1976) found that economic motivation has no significant relationship with the number of stages passed by paddy growers in the innovation - decision process.

Vijayaraghavan's (1976) research has revealed that the economic motivation has no significant relationship with the information output of garden land and dry land farmers.

Subramanian (1976) found that there is no correlation between the economic motivation of the respondents and the extent of adoption of improved poultry practices.

According to Nanjaiyan (1985) the majority of the small farmers (63 percent) had medium level of economic motivation and only 17.54 percent of the farmers had high level of economic motivation. Further, he stated that the low level of economic motivation of farmers might be due to their low literacy level, low economic conditions and their non-involvement in the organizations.

Economic motivation is a very important variable in agricultural studies. Majority of the previous researchers are in concordance with the view that economic motivation influences agricultural development and entrepreneurial ability.

2.18. RISK PREFERENCE AND AGRICULTURAL PROGRESSIVENESS

Modern agriculture is like any other industry. It involves experimentation with novel ideas and right decisions. It requires heavy inputs in terms of ploughing, fertilizer, irrigation, seeds and pesticides. It puts premium upon more use of chemical
fertilizers, more water, practices of soil conservation, use of improved seeds and a host of other changes in traditional agricultural methods. There are several other factors such as deeper ploughing, soil conservation and improvement of soil structure, green manuring and natural fertilizers, better weed control, plant protection, improved crop rotation, animal husbandry, etc. All this means that mechanization and scientific farming requires simultaneous changes in the whole of agricultural practices. Failure to effect any single change will tend to lower the production rather than increase it. This heavy input combined with the uncertainty of its results arouses fear among peasants. As against the modern scientific farming, the traditional farming is considered safe in the sense that it does not involve much cost and there is at least certainty about its results.

Agriculture is subject to a considerable element of uncertainty. The various risks and uncertainties make agriculture an extremely risky enterprise.

Modern scientific farming heralds a situation of uncertainty and more hazards. The peasant's acceptance of innovations involves greater risk. The peasant's natural conservatism is compounded by the fact that in this realm, he is risking his family's subsistence when he innovates (Lewis, 1962). Cultivators are reluctant to accept a new technique, because to do so would compromise their way of life (Myrdal, 1968). Thus, acceptance of innovations and modern scientific farming is beset with an
element of uncertainty and implies some amount of risk. The success of efforts to introduce modern agricultural practices largely depends upon the willingness of the peasant to take risk, his willingness to invest his saving in purchasing fertilizer, ploughing machines, pumping sets, etc. The major hurdles in the adoption of modern agricultural practices turn out to be psychological. It appears to be a question of willingness to take risk or motive to achieve economic prosperity. It is often said that rural people have limited aspirations and that they lack entrepreneurship. However, there are some farmers who take the risk and achieve agricultural prosperity. Research findings on the farmer's risk-taking behaviour in relation to agricultural progressiveness is presented here.

Jaiswal et al. (1971) found that the risk preference was significantly and positively correlated with education and farm size of the farmers.

Chaubey (1974) observed that age tends to influence one's risk-taking preferences. The younger group preferred intermediate level of risk more often than the older groups. The older subjects opted for extreme level of risk and thereby shared a strong risk avoidance tendency. But this was not always found in undeveloped villages. A very strong preference for intermediate risk-taking was observed among the adults of developed villages.

Chaubey (1974) found that there is a curvilinear relationship between education and risk-taking and higher
education being associated with extreme risks and education below high school related to intermediate risk.

Banerjee (1986) observed that the non-viable small farmers are slow to accept a new technology because of higher risk associated with it whereas viable farmers having larger holding have greater scope for experimentation and possess greater capacity to bear risk and uncertainty. The fragmentation of holdings also hinders the adoption of new technology because smaller the holding greater the risk and uncertainty.

Supe (1969) referred that the farmers' risk orientation is an important factor in technology transfer.

Binswagner et al. (1979) found that farmers' risk orientation was mainly associated with depressed prices and/or yield reduction due to drought, pests, diseases and micronutrient deficiencies.

Hodgdon and Singh (1966) and Rao (1969) found that the non-participation of small farmers in technology adoption is more due to low access to infrastructural support than to low risk-taking ability.

Bohlen and Beal (1950), Fliegel (1960) and Hobbs et al. (1964) found positive attitude towards risk associated with farm income. Chaubey (1974) found that economic developments were significantly related to farmers' risk-taking behaviour.

Sethy (1982) found that majority of the farmers are moderate risk takers. Balasubramanian (1980) concluded that the early
adopters of both the progressive and non-progressive settings had greater orientation towards risk and uncertainty than other adopter categories.

Ambastha (1974) and Vijayaraghavan (1976) reported significant and positive relationship between the risk preference and information output. Chamala (1981) observed that there was a significant difference between the progressive and less-progressive farmers in their risk preference. The above finding was also supported by Balasubramanian (1977). Supe and Singh (1969) found that the farmers' risk preference and rationality quotient were found to be significantly related.

Hobbs et al. (1964), Rao and Moulik (1966) and Beal and Sibley, (1967) observed the farmers perceived risk in the use of improved farm practices.


Nandapurkar (1982) found that the risk-taking ability of the respondents has indirect effect on entrepreneurial behaviour.

Sachchidananda's (1972) findings have shown a negative correlation between risk-taking behaviour and adoption. The Indian farmers are largely subsistence cultivators and cannot
afford to take risks. The prospective adopters do not go in for an innovation unless they are sure that the results would be profitable.

Balasubramanian (1979) revealed that a significant negative relationship exists between risk aversion index, capital availability and irrigation status with percentage of area under high yielding varieties, whereas significant positive relationship exists between education, number of dependents in the farm family and liquidity with the percentage of area under high yielding varieties to gross cropped area.

Misra (1964) observed that the new technology was a source of uncertainty and the decision of farmers to adopt it depends upon their resources, environment and psychological bent of mind.

Dhillon and Anderson (1971) observed that the new techniques and inputs were viewed by farmers as risky. As some of the farmers were avoiding risk, risk aversion was an impediment to development (Anderson, 1975).

Risk is inevitable in farming and if a farmer follows a risk aversion tendency it means his chances in agricultural development are meagre, because agriculture is the most risky enterprise. Therefore, the farmers should possess risk-taking behaviour, which is essential for agricultural progress.
2.19. LEADERSHIP ABILITY AND AGRICULTURAL PROGRESSIVENESS

Leadership is concerned with an attempt to enrich or alter the existing stock of values in the possession of a society by gaining acceptance for an innovation freshly created by a leader or, the innovation has been borrowed from another culture by diffusing it in the new area (Schmidt, 1957). The crux of this type of leadership lies in the creativeness which is more prone to change and innovation.

The spread of mass-media, technological and educational progress, extension-education, training and visiting programmes and other community development programmes have been conducive to the emergence of new pattern of leadership in farming community.

Over the years, a number of studies on leadership in India have been undertaken. Some of the recent studies will provide insight into the analysis of leadership.

Dhillon (1955) in his study of South Indian villages, has classified leaders into three categories: the primary, secondary and tertiary in relation to the influence and hierarchical status of leadership in the village panchayat operating in the village itself without and other influence.

Lewis (1954) in his study of a jat village in North India saw the replacement of traditional leadership in terms of its characteristics and the socio-economic factors in leadership formation. He has also shown that the patterns of influence and
communication within extended family groups reach out to several villages.

Orenstein's (1960) formal leadership is of limited importance in the village situation as he finds in informal leaders, more potentiality in comparison to formal leaders.

Dube (1956) analysed the traditional structure of authority in rural areas and found that the ascriptive order is being slowly replaced by the achievement order.

Moulik (1965) found that the level of adoption was significantly correlated with self-rating of adoption leadership. Fliegel et al. (1968) found that intercorrelation among independent variables show that extension agency contact of leaders is significantly related to their credit risk orientation, urban contact and level of living.

Moulik (1975) stated that there was clear distinction in the leadership structures between agriculturally progressive and agriculturally backward villages. In a progressive village a leader tends to have an influence on his followers in several action situations whereas in an agriculturally backward village there is no such leader having influence consistently in several action situations. The above finding is in conformity with Singh (1971).

Rogers and Svenning (1969) found that opinion of the leaders in relatively more modern villages were more innovative than their followers, but in the traditional village the opinion
of the leaders were slightly more innovative than their followers.

Jetley (1977) concluded that the nature of opinion of the leadership in the more developed villages shows some consistent pattern.

While all of the innovators seek advice from village level workers, the majority of the villagers seek the innovators and early adopters, or at least those having higher adoption scores than themselves for advice. Consultation of the more progressive villagers is confined mostly to advice on farm practices. For supply of inputs, the official agent gets nominated most frequently as he can explain the proper procedure for obtaining supplies.

Leadership qualities are most needed for the present situation. Those who are having leadership qualities help adoption and initiation. They also stimulate others to follow their farming practices. The above researches had stressed that the leadership behaviour influences adoption of agricultural innovations.

2.20. INNOVATIVE PRONENESS AND AGRICULTURAL PROGRESSIVENESS

Rogers (1961) defined innovation proneness as the degree to which an individual is relatively earlier to adopt new ideas than the other members of his social system. Moulik (1965) defined innovative proneness as the degree of an individual's interest and desire to seek change in farming technique and to introduce
each change into his own operation as and when found practicable and feasible.

In general, there should be a positive relationship between the degree of strength of feelings about one's own innovation-proneness and his level of adoption of farming innovations. On the other hand, a farmer becomes prone to adopt a new farming practice only when he feels that he will gain economically by adopting the practice. The basic motivation behind a farmer's adoption of a new practice is economic gain. A farmer is expected to think himself innovative prone only if or when he views himself economically motivated.

It would be useful to recount the research findings of the previous researchers in this field. Past studies indicated that the conservatism, scientific orientation and innovation proneness were positively related to adoption of innovations (Chattopadhyaya, 1963; Sinnarkar, 1973).

Moulik (1965) found that irrespective of a farmer's landholding, the level of adoption of nitrogenous fertilizers is found to be positively and significantly correlated with self-rating innovative proneness.

Lokhande (1973) concluded that the credit users of nationalised banks, block agency, co-operative and money lenders differ significantly in their innovative proneness.

Moulik's (1975) research revealed that there is a positive relationship between the degree of strength of feelings about
one's own innovation-proneness and his level of adoption of farming innovations. Further, he stated that between the medium and large farmers there is no significant difference in their attitude towards innovation proneness. Whereas the farmers with medium landholding, i.e. five to ten acres, happen to be more positively oriented towards innovation proneness and economic motivation than the large farmers.

Chamala (1981) observed that the progressive villagers have more rational value systems consisting of scientism, liberalism and cosmopolitanism than the non-progressive villagers. They also showed greater social-participation than the non-progressive village farmers. Other important forces acting behind the observed trend might be the higher economic motivation and the innovation-proneness shown by the farming community of the progressive village. Conservative outlook, localite values, less economic motivation and less risk preference shown by non-progressive village farmers might be responsible for the observed trend of differential use of information sources.

Sangle (1984) found that the innovative proneness is positively and significantly related to technology use of both irrigated and dry village farmers. Ambastha (1986) revealed that the information output indices of farmers have significant positive correlation with innovative proneness.

The above researches have indicated that the change oriented, high aspiration persons can think innovatively and grasp and practice it; such persons have the innovative proneness
character. In agriculture the innovative proneness persons quickly adopt modern agricultural techniques and methods in comparison with the other farming community.

2.21. ADOPTION BEHAVIOUR AND AGRICULTURAL PROGRESSIVENESS

Researches on adoption began in the early twenties and since then a large number of investigations have been undertaken. An important study was reported by Wilkening (1953) who has defined adoption as a process composed of learning, deciding and acting over a period of time. The adoption of specific practice is not the result of a single decision to act but a series of actions and through decision.

Copp (1956) viewed adoption as a general behaviour predisposition on the part of the farm operator rather than as a set of independent behaviours. He also expressed (1958) that the adoption of recommended farm practices has been conceptualized as a latest behavioural predisposition which is manifested in the acceptance of specific recommended practices.

Rogers and Shoemaker (1971) postulated adoption as a decision to continue full use of an innovation and the adoption as a mental process through which an individual processes from first hearing about the innovation to final adoption.

Hoffer and Strangland (1958) concluded that if a farmer is efficient, initiative and also progressive he is likely to adopt improved practices. On the other hand, if he tends to be
conservative and values 'security' as high he would postpone the adoption of a practice or possibly never adopt it.

Grewal (1965) found that extension contact and progressive outlook were found to effect the speed of adoption, but not to the extent of adoption of improved practices.

Rao (1968) observed that the most of the progressive farmers used high yielding varieties of crops and plant protection measures. Ramachandra (1969) also found that progressive farmers were higher adopters of farm practices as compared to non-progressive farmers.

Sinha (1969) revealed that the farmers from the developed areas were generally more progressive in their outlook and favoured more frequently the use of improved seeds and farm implements and at the same time they displayed greater reliance on the advice rendered by the block personnel.

Nair (1969) found that majority of the participating farmers were medium adopters, but the extent of adoption of high yielding varieties of paddy in Intensive Agricultural District Programme (I.A.D.P) and non I.A.D.P. district did not differ.

Singh (1973) reported that key communicators of agriculturally developed villages belonged to higher categories of progressivism than non-communicators.

Balasubramanian (1977) found that the correlation between progressivism and the extent of adoption of improved practices in ragi (a crop) was highly significant.
Jetley (1977) revealed that joint family is highly conducive to innovativeness and provides the necessary ingredients for entrepreneurial activity. Further, he stated that in the more developed villages material possession and social participation are highly correlated with innovativeness. However, in the less developed communities, the level of living as the decisive factor for innovativeness and social participation have a weak and non-significant relationship with innovativeness.

Balasubramanian's (1980) observation on twenty one independent variables with adoption in progressive and less-progressive settings have shown the importance of mass media exposure and perception of cost of innovation. They were also found to be crucial and exerted greater amount of direct and indirect effects. In addition, the variable--perception of profitability, could also be considered crucial since it exhibited greater substantial direct and indirect effects. In a less-progressive setting, the variables i.e. perception of cost of innovation, nature of family, occupation status, perception of labour-need, level of aspiration and farm size, predicted significantly the extent of adoption.

Chamala (1981) found significant difference between the progressive and non-progressive farmers on adoption, leadership and awareness to high yielding varieties.

Mohammed and Majeed (1979) found significant difference in the adoption behaviour of progressive and traditional farmers.
Further, he stated that socio-economic factors played a vital role in the adoption of innovations.

Sangle (1984) concluded that the farmers in system A (irrigated village) had more favourable attitude towards improved methods of agriculture than farmers in system B (Dry village). The difference between the two group was significant.

Fliegel (1956) found that the familism, contacts for information on farm matters, level of living and attitude towards farm practices account for a significant proportion of variation in adoption of new farm practices. Whereas size of operations and authority of farm matters were not significantly related to adoption.

According to Dube (1958) the factors which help in accepting the new innovations are identified as: i) Economic advantage and convenience; ii) Prestige of the individual family, Kinship-group, caste and village; iii) Novelty of the innovations; and iv) Compliance to the wishes of the Government and village leaders. The barriers are identified as: i) Apathy of the people; ii) Suspicion and distrust; iii) Lack of effective and adequate media of communication; and iv) Traditional and cultural factors.

Ramsey et al. (1959) revealed that there is a significant linear and negative relationship between the adoption behaviour and two of the value-orientations: security and traditionalism. Further, he stated that there is a significant linear relationship between the time scale (cognitive adoption) and five value orientations, viz., positive relationship with achievement,
science and material comfort and negative relationship with security and traditionalism.

Emery and Oeser (1958) studied the question as to why some farmers accept improved farming practices while others do not. The set of factors were examined and found to be related to the acceptance of new farm practices. These are channels of communication, background factors and status factors. Thus, this study is mainly concerned with social and psychological aspects of the diffusion of technical change.

Chattopadhyaya (1963) revealed that there is a weak positive association between adoption behaviour and level of aspiration. The change proneness, conservatism and fatalism were found to be significantly related to the adoption behaviour.

Hess and Miller (1954), Lionberger (1957), Fitzsimmons and Holmes (1958), Bakshi (1960), Bose (1961), Reddy (1962), Singh (1963) and Sharma (1966) have also indicated the association between certain elements of the social system and the adoption of new farm practices (Social System: Status, role, goals, facilities and norms).

A certain situation and personal characteristics of the farmers are associated with the adoption of new farm practices (Beal et al., 1957; Copp et al., 1958; Lionberger, 1960; Jaiswal, 1965 and Rahudkar, 1967).

Singh and Reddy (1965) observed that some of the socio-economic characteristics viz., farm size, economic status
and social participation and education were associated with adoption of improved practices and that they functioned in a definite direction leading to the adoption of recommended practices.

Patel (1967) observed that the farmers' characteristics such as larger farm size, higher socio-economic status, higher caste, education and irrigation facilities were related to the extent of adoption and farm planning.

Roy et al. (1968) found that farm size, fragmentation, commercialization, specialization and farm efficiency were highly correlated with adoption.

Loomis (1967) concluded that innovativeness in both modern and traditional village is positively related to literacy, mass media exposure, empathy, social status, farm size, achievement motivation, educational aspirations, occupational aspirations, extension change agent contact and cosmopolitaness.

Supe and Singh (1969) revealed that the five independent variables i.e. adoption, economic motivation, scientific orientation, risk preference and socio-economic status are significantly contributing towards the rational behaviour of the farmers.

Parthasarathy (1969) indicated that participation in IR-Paddy cultivation is significantly associated with the size of holding, value of assets, literacy, membership of panchayat and prior awareness of use of improved practices.
Supe (1969) found that the economic motivation, risk-preference, scientific orientation, adoption and socio-economic status are positively related to adoption practices.

Rajagopalan and Singh (1971) found that communication is directly associated with adoption. Further, they have stated that there is a high degree of association between adoption and a set of economic factors, such as income, education, size of landholding and tenurial status. Among the social factors, caste seems to be significantly associated with adoption.

Kivlin et al. (1971) reported that among several variables, farm size emerged as a major factor affecting the adoption. Correlation between economic variables such as fragmentation, commercialization, specialization and farm efficiency were significant in the expected direction. Education, communication variables, political knowledge and income aspiration were also found significantly related with adoption. The adoption of new agricultural technology has been found to be influenced by the personal and socio-economic factors like, age, education, income, size of land holding, etc. (Sachchidananda, 1972; Singh and Sahay, 1972).

Chaubey (1972) reported that farm size, family income, irrigation potential, literacy level, social participation, socio-economic status, exposure intensity and political knowledge factors were related with adoption of high yielding wheat technology whereas, age and family type is not related.
Mulay and Ray (1973) found that there is a significant difference between the high and low urban groups in the adoption of improved seeds, manures and fertilizers, improved implements and plant protection measures and in each case the high urban group respondents are high adopters.

Moulik (1975) found that the adoption of farm innovations is significantly and positively related to the personality factors like attitude towards the use of innovations, knowledge about the innovations, self-rating of innovative proneness and self-rating of closeness with extension agents, while the self-rating of economic motivation is significantly related in a negative direction.

Mohamed and Majeed (1979) concluded that socio-economic factors influence adoption of innovations.

De (1981) stated that out of seven independent variables, i.e. Socio-economic status, education, knowledge, source of information utilization, innovation orientation, progressive value and entrepreneurship jointly accounted for 86.58 percent of the variation in the adoption behaviour of the farmers.

Mahajan (1981) found that the adoption of agricultural technology is positively and significantly associated with variables such as respondents' education, family educational status, caste, type of house, social participation, market orientation, level of aspiration, risk orientation, knowledge about technology, infrastructural experience, family income, size of farm, personal-localite sources, personal-cosmopolite
sources and mass media sources. Whereas family size and family type have no significant relationship with adoption of agricultural technology.

Aslam (1981) found that the adoption of five practices, viz. improved implements, use of chemical fertilizers, insecticides and pesticides, improved seeds and improved livestock is more and is increasingly at a higher rate in the progressive villages than that of the non-progressive villages.

The previous research studies have shown that adoption behaviour is influenced by the combination of both socio-economic and psychological variables.

2.22. FARM MANAGEMENT BEHAVIOUR AND AGRICULTURAL PROGRESSIVENESS

Indian farmers usually undertake three types of work—labour, supervision and management. The time resource of the farmer is allocated to do these different tasks on the basis of his desire. Heady and Jensen (1954) pointed out that ".... True management as a planning and decision-making activity, does not involve physical exertion .... and ... the greatest returns (economic) in farming are to be had from 'brain' rather than 'brawn' activity".

In this study, farm management behaviour includes decision making, independence and mental ability of the farmers.

The farmer makes decisions and operates his farm in a rural setting which comprises social systems such as family,
neighbourhood, community, farm organization, etc. However, different individuals belong to various social systems.

Nandapurkar (1982) defined decision making as the degree to which an individual justifies his selection of most efficient means among the available alternatives on the basis of scientific criteria for achieving maximum economic profits.

A farmer's decision to accept or reject an innovation depends not only on personal characteristics but also on the effectiveness of various agencies engaged in this process or nearby social system.

Wilkening (1956) postulated that various information sources are used to obtain different types of information. Mass media are used primarily as a source of "first knowledge" about agricultural innovations. Agricultural agencies are used to obtain the detailed instructions for putting the practice into effect as well as help in decision-making. Other farmers (neighbours, relatives, etc.) also help in decision-making.

The family has been taken as the basic unit of social interaction and the head of the family as the individual who is assumed to be the crucial decision maker about the acceptance of change in the farm activities with the help of family members.

There is not much research on the roles of father and son in the decision-making process regarding new farm practices. Wilkening (1953) and Herzog et al. (1968) found no correlation
between an index of father-centred decision-making or patriarchism and adoption of new farm practices.

Wilkening (1958) has shown that a farmer's wife has always had an impact on decisions, which can have considerable influence on their life, either because she participates in the farm work or decides to invest money in the farm. Customs regarding financial management also affect the relative influence of husband and wife.

Rogers and Beal (1958) observed that family members often serve as referents or consultants in decision making to adopt new farm and home practices.

Strauss (1960) reported that the wife's supportiveness was an important factor influencing adoption of the farm innovations.

Rogers and Havens (1961) stated that gained information (knowledge) plays an important role in adoption and decision making process.

Small holder farming is a family activity which means that i) production and consumption decisions are closely interrelated and ii) it may be difficult to identify who actually makes the decisions (Galeski, 1968). In some cases decisions may be made jointly by family members as a group; in other cases there may be division of responsibility, for instance where subsistence crops are produced by the women, while cash crops are tended by the men (Farrington, 1975).
Junghare and Rahudkar (1962) in their study on influence of family members on decision making by farm operations found that the farmers who took decision themselves had adopted more practices than those whose decision was influenced by their family.

Singh (1967) found no significant relationship between farmers' scores on the mental activity and their adoption of recommended farm practices.

Hobbs et al. (1964) found no significant relationship between mental activity scores and the net farm income of the farmers.

Roy et al. (1968) found that there is a significant relationship between planning orientation and adoption.

Sachchidananda (1972) revealed that the correlation between planning orientation and adoption is found to be significant.

Rajagopalan and Singh (1971) stated that the planning practices have been adopted by 30 percent of respondents. This might represent a gross under-estimate of the extent of the adoption of this practice, when compared to the official figures concerning the same.

Supe and Singh (1969) found a significant relationship between farmers' independence and adoption of recommended practices. However, the above finding is not supported by Hobbs et al. (1964) and Singh (1967).
Hobbs et al. (1964) found that the score of independent scale is significantly related to the farmers' net farm income.

Nanjaiyan (1985) revealed that majority of the small farmers (70.50 percent) have medium level of independence in taking decisions on farming, only about 14 percent respondents have high level of independence for decision making -- this may be due to their small farm size and the risk factor and subsequent failure in farming due to their independent decisions.

Farm management is not merely a supervision and handling day to day operations of a farm, but it is a decision making function of evaluating and choosing between alternative strategies. Further, successful farm management requires the ability to make decisions which should be economically profitable.

The Indian agriculture becomes more complex, more risky with fluctuating market situation. But a progressive farmer can overcome all these problems and become more productive, more profitable through efficient farm management ability.

2.23. POLITICAL PARTICIPATION AND AGRICULTURAL PROGRESSIVENESS

In recent times, the village community is becoming increasingly politicized on account of many social, economic and political factors. The new democratic structure based on adult franchise and emergence of many political parties, in particular the emergence of regional parties and political reformers have provided the basic ground for increasing the political awareness and political participation of the village people. The periodic
elections at panchayat, co-operative society, state-assembly and parliament level have generated a new political climate in Indian context. The economic development programme in contemporary India is closely associated with the new political structure and also party programme. This is the new political elite which has to initiate, implement and distribute the economic benefits. In the agricultural sector, this has become more pronounced as new agricultural resources, irrigation facilities, credit facilities and other agricultural inputs are being distributed by the Government functionaries in close and active collaboration with the new political elite. The fall-out of all these political and economic changes have increased awareness and participation of the village people in the political life of the country.

Salim (1986) found that the farmers have very few inhibitions regarding their political discussions with other persons. A considerable proportion of the farmers are exchanging their views on political matters with other persons.

Rogers (1969) indicated that literacy is positively related to political knowledge. However the above finding is not supported by Deutschmann (1963).

Salim (1986) concluded that the farmer's political discussion with his wife and other persons have positive significant relationship with caste, landholding and socio-economic status.
Kivlin et al. (1971) observed that there is a significant relationship between farmers' political knowledge and income aspiration.

Roy et al. (1968) reported that political knowledge has positive and significant relationship with the adoption of agricultural innovation, which is supported by Chaubey (1972).

Sangle (1984) concluded that the relation between political knowledge and technology use is not significant in irrigated villages, whereas it is positive and significant in dry villages.

How far the influence of political participation helps the agricultural innovations has not been thoroughly researched so far, and the researches reported in the preceding pages had indicated a positive association between political participation and agricultural progressiveness.
OVERVIEW OF THE LITERATURE

On analysing the pertinent literature, it has been identified that the following variables contributes more to the development of Agricultural progressiveness and it was decided to study these variables as independent variables. They are Social participation, Mechanization, Communication, Value-orientation (Conservatism-Liberalism, Authoritarianism-Non-authoritarianism, Fatalism-Scientism, Sacred-Secular, Localite-Cosmopoliteness, External conformity-Individualism), Economic motivation, Risk preference, Leadership ability, Innovative proveness, Adoption behaviour, Farm management and political participation. Adequate amount of literature on these variables were reviewed and it was found that there were considerable amount of inconsistency on the part of the variables in their role as contributors. All the variables were positively related to the Agricultural progressiveness, but some studies report a negative correlation also. For example, Age, Caste, Family size, Farm size, Social participation, Authoritarianism - Non - authoritarianism, Risk preference, Farm management and Political participation. So to obtain concrete information regarding the agricultural progressiveness of different districts of Tamil Nadu, the present study was conducted.

The subject's demographic variables were also studied namely Age, Education, Community, Type of family, Size of the family, Land holding and Income level. Samples were drawn randomly from
three districts, which were classified as developed, moderately developed and developing districts and the samples as progressive and less-progressive. Taking the lead from the review of related literature the following information were intended to be attained through suitable analyses. Samples (farmers) were compared on all the independent variables and also the effect of geographical factors and progressiveness of the farmers on the dimensions of independent variables. Finally level of prediction effect of progressiveness of the district was also intended to be known.