MANAGERIAL ABILITY OF MANGO GROWERS TOWARDS SCIENTIFIC CULTIVATION IN MANGO ORCHARDS IN PANCHMAHAL DISTRICT

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(Agriculture)
IN
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MANAGERIAL ABILITY OF MANGO GROWERS TOWARDS
SCIENTIFIC CULTIVATION IN MANGO ORCHARDS

Name of Student: Baria Pradip Arjunsinh
Major Advisor: Dr. N. V. Soni

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ABSTRACT

Mango (*Mangifera indica* L.) one of the ancient fruits of India, undoubtedly deserves to be ‘national fruit’ of India. In area, production, nutritive value and popularity of apple, no other fruit can compete with it. Agriculture being an enterprise is not an exception to this. The mango orchard growers as the manager of the enterprise are expected to bring about maximum profit with available resources. Mango growers perform many functions in carrying out the better production such as: preparing a plan of work, giving clear instructions, integrating the work, taking proper decision at right time, implementing the decision etc. in carrying out the management activity in mango orchard. All the above functions involve in one or the other way, many management components viz. planning, organizing, directing, controlling, human relation, leading, coordinating and decision making. Today farming enterprise is becoming more complex and complicated and therefore, management is a key to face these
problems. To make mango orchard more productive, proper management of scientific mango orchard practices should be adopted by mango growers.

Therefore, the present study was designed to study “MANAGERIAL ABILITY OF MANGO GROWERS ABOUT SCIENTIFIC CULTIVATION OF MANGO ORCHARD” and find out the effect of selected variables on managerial ability with the following objectives:

**OBJECTIVES OF THE STUDY**

The specific objectives of study are as under:

1. To study the selected profile of the respondents.
2. To study the managerial ability of the mango growers about scientific cultivation of mango orchards.
3. To study the relationship between profile of mango orchard growers and their managerial ability.
4. To study the constraints faced by mango growers in adoption of scientific mango cultivation practices.
5. To seek the suggestions to overcome the existing constraints in adoption of scientific mango cultivation practices.

**METHODOLOGY**

The present study was undertaken at Panchmahal district of Gujarat state. The study was conducted on proportionate randomly selected on 120 mango
growers. Data were collected with help of Gujarati version, pretested structured interview schedule through personal contact to each respondent.

The dependent and Independent variables were measured with the help of suitable scale and procedures adopted by other research workers were used with due modification. The statistical tools used for analysis were mean, standard deviation and coefficient of correlation.

**MAJOR FINDINGS**

1. More than 61.67 per cent of the mango growers were found in the middle age group.

2. About 43.33 per cent of the mango growers had education level up to primary level of education.

3. More than 60.83 per cent of mango growers were found in large size of family.

4. About 46.67 per cent of the mango growers had membership in one organization.

5. About 37.50 per cent of the mango growers were in medium group of land holding.

6. About 46.67 per cent of the mango growers were found with medium annual income.

7. Majority (66.67 per cent) of the mango growers had medium mango yield index.
8. Majority (80.00 per cent) of the mango growers had medium level of experience in mango cultivation.

9. More than 60.00 per cent of the mango growers had medium level of scientific orientation.

10. Nearly 45.00 per cent respondents had high level of achievement motivation.

11. More than 52.50 per cent of the mango growers had medium level of risk orientation.

12. More than 65.00 per cent of the mango growers had medium extension participation.

13. More than 60.00 per cent of mango growers had medium exposure to mass media.

14. About 42.50 per cent of mango growers had low managerial ability towards scientific cultivation in mango orchards.

15. The independent variables like, education, social participation, size of land holding, annual income, mango yield index, experience as a mango grower, scientific orientation, achievement motivation, risk orientation, extension participation and mass media exposure had positive and highly significant correlation with managerial ability towards scientific cultivation in mango orchards. The variable like age and size of family shows non-significant relationship with managerial ability towards scientific cultivation in mango orchards.
16. Major constraints faced by mango growers are irregular irrigation supply, lack of awareness about recommendations, lack of modern spraying equipment, high price of fertilizers, natural hazards, lack of grafts, lack of improved agricultural implement, lack of labour, lack of effective pesticides, lack of electricity supply, high price of pesticides and lack of technical suggestions.

17. Major suggestions given by mango growers that irrigation supply should be available, technical suggestions should be available, labour should be available timely, pesticides should be easily available, electricity supply should be regularly available, price of pesticides should be low, training should be arranged regarding mango orchards, government should provide loans or subsidy for purchasing farming implements and modern farming implements should be available.
"Gratitude is the most exquisite form of memory"

Acknowledgement is written at last, placed at first and read the least, but still it is the only opportunity to thank one and all who have directly or indirectly helped me to accomplish this job because research work and its documentation can not be a single person’s job, it needs assistance from all quarters of scientific community to keep oneself updated.

No appropriate word could be traced in the presently available lexicon to avouch the excellent guidance given by my Major Advisor Dr. N. V. Soni, Associate Extension Educationist, Publication Department, Anand Agricultural University Anand. While embarking on this journey we realized the magnitude of various detailed activities starting with manuscripts. The thesis would have taken this shape with out the sincere, untiring and dedicated efforts put forth by him who was a constant source of inspiration for his useful suggestions, invaluable guidance, constructive counsel and unreserved help that severed as beckon light through out the period of course study as well as research work.

I registered my sincere Thanks to my Advisory committee members, Dr. N. R. Ray, Assistant Professor, Dept of Horticulture, Dr. P. M. Bhatt, Associate Extension Educationist, DOEE and Dr. N. P. Patel, Professor, Dept of Agril Statistics, who have taken great care of mine in all ups and downs in my research work.

I am also thankful to Principal, B. A. College of Agriculture, Anand for providing me necessary facilities during the course of my study.

With full honors and ecstasy of delight, I express my heartfelt and special Thanks to Dr. N. B. Chauhan, Professor and Head Department of Extension Education, B.A.C.A., AAU, Anand, Dr. P. M. Bhatt, Associate Extension Educationist, DOEE for their constructive suggestions.

I don’t have words to say thanks for my seniors Dhiraj Badhe was always there to help possibly at every stage of the research work in every possible way.

To me research is not one man’s endeavors. At each stage of work a big group of my friends including Anup, Atul, Chandrakant, Jinesh, Amol, Nilesh, Pravin, Piyush, Vrajesh, Umesh, Snehal, Ashish, Bhavin, Pratik, Bhavesh, Purohit, Nitin, Harsh, Fenil
and Sarang. I express my heartfelt and special thanks to Anup, Atul and Dhiraj for helping me during survey. All friends are so intimate that it seem awkward to say them “Thanks” rather I shall always be willing to help them whenever opportunity arises.

I give special Thanks to my father Shri A.H.Baria and mother Smt. Radhaben Baria Brother Vipul, for their blessings and affection, encouragement and unceasing moral support. Love and adorance that had always been energized me to mount the climax of this exploration.

To all of you whom I have named please accept my deepest Thanks and to whom I have not named please know that even though you are unnamed in this work you are not unknown to me and you are appreciated more Thanks.

Lastly I am thankful to the “GOD SAIRABA” and “GOODESS” and all whosoever have helped in making this mission for the study a success.

(Baria Pradeep Arjunsinh)

Place: Anand
Date: /08/2010
DECLARATION

This is to certify that whole of the research work reported in the thesis in partial fulfillment of the requirements for the award of the degree of Master of Science in Agriculture in the subject of Extension Education is the result of investigation done by undersigned under the direct guidance and supervision of Dr. N. V. Soni, Associate Extension Educationist, Publication Department, Anand Agricultural University, Anand and no part of research work has been submitted for any other degree so far.

Place: Anand (Baria Pradip Arjunsinh)
Date: / 08 / 2010

Counter signed by

Dr. N. V. SONI
(MAJOR ADVISOR)
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I. INTRODUCTION

All the enterprises are basically interested in increasing the productivity. Agriculture being an enterprise is not an exception to this. The farmers as the manager of the enterprise are expected to bring about maximum profit with available resources. Irrespective of the economic, social, cultural, physical and technological environment, the farmers manage a production system to get a return from it, consciously or unconsciously.

Every country feels today an inclination and indispensability for the economic recovery and socio-economic development of its masses. Indian agricultural enterprise sector is vast and has continued to be the backbone of our economy, where about 65.00 per cent of the population depends upon this enterprise supports 70.00 per cent of the country’s population, which contributes 30.00 to 35.00 per cent of GDP (Gross Domestic Production) and generates about 20.00 per cent of export earnings (Singhal, 2003). It provides employment for approximately 62.00 per cent of the work force (NHB, 2008). It also provides fruits to about 960 million population and raw material to several industries. Fifty years of Indian agriculture is a history of begging bowl image (food deficit) to green revolution and then to self-sufficiency and now exporting fruits. The various revolutions such as Green, White, Blue, Yellow, Brown and Red are the most striking success stories of the post independence era.
The tenth plan envisages four per cent annual growth rate in the agriculture sector. The achievement of this growth rate would be possible, if the annual growth rate of horticulture is maintained at six to eight per cent (Anonymous. 2008). This is feasible and achievable. Being prominent crops after food grains and oil seeds, horticulture will be treated as a lead sector in agriculture and rural development.

The massive transformation has been possible owing to concerted efforts in implementing an agricultural strategy that consists of technological break-through and their application in agriculture. There has been a great role of agricultural scientists, extension workers as well as hard and dedicated work by Indian farmers and supportive policies of the government. India stood second in the international ranking in production of various fruit crops and mango ranked first among all fruit crops. Out of total cultivated area, fruits occupy 57 to 75 lakh hacters and 63503,000 metric tonnes production. (NHB database, 2008)

Mango undoubtedly deserves to be national fruit of India. In area, production, nutritive value and popularity of apple, no other fruit can compete with it. It occupies the same position in India as is occupied by the apple in temperate climates and grape in sub tropical. Among all the fruit crops, mango is being cultivated commercially in a number of countries of the world, but no where does it achieve the same premier position as in the subcontinent of India, where it is actually the king of all fruits. It has great adaptability and thrives in a wide range of climate and soil condition. It has relatively hardy nature, low cost of
cultivation and maintenance. It is the choicest of Indian table fruits having the premiere place in the country. It accounts for 38.00 per cent of the area and 23.00 per cent of the output of all fruits in the country. India is world’s largest producer of mango accounting for almost 50.00 per cent of the world’s output of 10 metric tonnes (Singhal, 2003). India exports fresh and processed mangoes to about 80 countries in the world, among them mango pulp exporting accounts about 76735 metric tonnes worth of Rs. 24134.13 lakhs. India is presently making export promotion efforts to increase its exports in UK, Frankfurt, Dubai, Kuala Lumpur, Hong Kong and Kuwait. (NHB database, 2008)

Gujarat is one of the mango producing states in India. Mango has an important place among all the fruit crops growing in the state. The leading mango producing states are Andhra Pradesh, Maharashtra, Uttar Pradesh, Karnataka and Gujarat. (plain). The yield of mango in U.P and Karnataka is 12.2 and 10.1 metric tonnes/ha, respectively. While in Gujarat state, yield of mango is only 8.5 metric tonnes/ha which is quite low as compared to other states of the country. The area under mango in Panchamahal district was 3552 ha. and the yield was 592 metric tonnes/ha(NHB database, 2008) Management, for the purpose of the present study, has been defined as the process by which the farmer is able to enhance return from the farm on a sustained basis for the attainment of family goals. Effective management is crucial for obtaining high return from a production system on a sustained basis. It is essential that the farmers and extension workers are made aware of the need for developing the managerial ability of the farmers.
Table 1: State wise area, production and yield of mango in India (2008-09).

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>State</th>
<th>Area (‘000 Ha.)</th>
<th>Production (‘000 M.T.)</th>
<th>Yield (M.T. / Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Andhra Pradesh</td>
<td>483.5</td>
<td>3865.2</td>
<td>8.0</td>
</tr>
<tr>
<td>2.</td>
<td>Bihar</td>
<td>142.2</td>
<td>870.4</td>
<td>6.1</td>
</tr>
<tr>
<td>3.</td>
<td>Gujarat</td>
<td>109.6</td>
<td>930.1</td>
<td>8.5</td>
</tr>
<tr>
<td>4.</td>
<td>Karnataka</td>
<td>132.0</td>
<td>1337.7</td>
<td>10.1</td>
</tr>
<tr>
<td>5.</td>
<td>Kerala</td>
<td>76.6</td>
<td>445.4</td>
<td>5.8</td>
</tr>
<tr>
<td>6.</td>
<td>Maharashtra</td>
<td>455.8</td>
<td>710.9</td>
<td>1.6</td>
</tr>
<tr>
<td>7.</td>
<td>Orissa</td>
<td>148.2</td>
<td>251.8</td>
<td>1.7</td>
</tr>
<tr>
<td>8.</td>
<td>Tamil Nadu</td>
<td>136.6</td>
<td>753.9</td>
<td>5.5</td>
</tr>
<tr>
<td>9.</td>
<td>U.P.(plain)</td>
<td>265</td>
<td>3256.6</td>
<td>12.2</td>
</tr>
<tr>
<td>10.</td>
<td>West Bengal</td>
<td>80.9</td>
<td>623.3</td>
<td>7.7</td>
</tr>
<tr>
<td>11.</td>
<td>Other</td>
<td>174.1</td>
<td>747.0</td>
<td>4.3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2205.6</td>
<td>13792.1</td>
<td>6.3</td>
</tr>
</tbody>
</table>

Source: NHB database, 2008

Management, for the purpose of the present study, has been defined as the process by which the farmer is able to enhance return from the farm on a sustained basis for the attainment of family goals. Effective management is crucial for obtaining high return from a production system on a sustained basis. It is essential that the farmers and extension workers are made aware of the need for developing the managerial ability of the farmers.

The probable reasons for low productivity of mango in this area are many, but the adverse effect of climate as well as less scientific management of mango orchard is major one. As a result, the quality of mango is not up to the standard. WTO (World Trade Organization) opened the vistas for the marketing at
the global, if the quality is compromised then there is limited scope to survive in the market. Today farming enterprise is becoming more complex and complicated and therefore, management is a key to face these problems. In broader sense, management means effective use of man, money, equipment, materials and methods (Dhama). Mango growers as the manager of the mango cultivation enterprise are expected to bring about maximum output with available resources. How the farmers fulfill this expectation is the test of their managerial ability.

In broader sense, management means effective use of man, money, equipment, materials and methods (Belshaw, 1974). Mango growers as the manager of the mango cultivation enterprise are expected to bring about maximum output with available resources. How the farmers fulfill this expectation is the test of their managerial ability.

Table 2: District wise area production of mango in Gujarat state (2008-09)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of District</th>
<th>Area (ha)</th>
<th>Production (M.T.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ahmedabad</td>
<td>300</td>
<td>2400</td>
</tr>
<tr>
<td>2.</td>
<td>Amreli</td>
<td>5574</td>
<td>67005</td>
</tr>
<tr>
<td>3.</td>
<td>Anand</td>
<td>940</td>
<td>1692</td>
</tr>
<tr>
<td>4.</td>
<td>Banskantha</td>
<td>200</td>
<td>1286</td>
</tr>
<tr>
<td>5.</td>
<td>Baroda</td>
<td>2195</td>
<td>21610</td>
</tr>
<tr>
<td>6.</td>
<td>Bharuch</td>
<td>1848</td>
<td>2682</td>
</tr>
<tr>
<td>7.</td>
<td>Bhavnagar</td>
<td>3167</td>
<td>15835</td>
</tr>
<tr>
<td>8.</td>
<td>Dahod</td>
<td>122</td>
<td>248</td>
</tr>
<tr>
<td>9.</td>
<td>Dang</td>
<td>295</td>
<td>70</td>
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### Introduction

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<td>Gandhinagar</td>
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</tr>
<tr>
<td>11.</td>
<td>Jamnagar</td>
<td>145</td>
</tr>
<tr>
<td>12.</td>
<td>Junagadh</td>
<td>13448</td>
</tr>
<tr>
<td>13.</td>
<td>Kheda</td>
<td>217</td>
</tr>
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<td>14.</td>
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<td>16.</td>
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<td>17.</td>
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<tr>
<td>25.</td>
<td>Valsad</td>
<td>15642</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>65274</strong></td>
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</table>

Source: NHB database, 2008

Fruit crops are not producing the greater yield per unit of area, but income from orchard is much higher than field crops. It is generally stated that standard of living of the people of a country can be judged by its per capita production and consumption of fruits. (Anon. 1967).

#### 1.1 STATEMENT OF THE PROBLEM:

It is generally observed that the mango orchard growers are not well educated and are possessing medium knowledge. Similarly, they have experience of mango growing but do not have a scientific management of mango orchard.
Thus, neither they have higher knowledge nor they have an experience of management of mango orchard, even though they carry out good production. India being a largest producer of mango fruit occupies a very prestigious position in the world. Therefore, good management of mango orchard is the most essential for the development of Indian horticulture. The cultivation of mango enterprise mainly depends on the managerial role played by the mango growers.

Keeping this in view, it is considered highly necessary to carry out the study entitled "MANAGERIAL ABILITY OF MANGO GROWERS ABOUT SCIENTIFIC CULTIVATION OF MANGO ORCHARDS IN PANCHAMAHAL DISTRICT” and it is also considered worthwhile to make an attempt to find out the effect of different variables on managerial ability of mango growers about scientific cultivation of mango orchards.

1.2 OBJECTIVES OF THE STUDY:

1. To study the profile of mango orchard growers.

2. To study the managerial ability of the mango growers about scientific cultivation of mango orchards.

3. To study the relationship between profile of mango orchard growers and their managerial ability.

4. To study the constraints faced by mango growers in adoption of scientific mango cultivation practices.

5. To seek the suggestions to overcome the existing constraints in adoption of scientific mango cultivation practices.
1.3 SCOPE AND IMPORTANCE OF THE STUDY:

When a farmer manages mango orchard, he acts as manager, shouldering the multidimensional functions of decision making, planning, organizing, directing, supervising etc. He is responsible for carried out various operations from family member and labour for effective attainment of the maximum production goals. This involves satisfaction of the requirements of a wide set of people.

He can influence the course of action and make a difference to the work and lives of other in a significant way. Such work may require considerable initiative, hard work, skill etc. and can create stress, anxiety and doubt.

Many factors affecting the managerial ability of mango grower in cultivation of mango orchard may be organizational and social, creating an environment where they have to work. On the other hand, some factors are entirely personal due to their individual psychological make-up. Hence, it was considered worthwhile to ascertain the factors associated with the managerial ability of the mango growers.

The direct and indirect effects and extent of variation caused by the independent variables on managerial ability of the mango growers about scientific cultivation of mango orchard, in the field, mango growers would be of great use. The constraints hindering the management function and the suggestions to overcome the same will also be useful in designing future strategy for effective management of mango orchard.
The results of the present study will definitely be helpful to formulate the strategies for raising mango production. Moreover, the information regarding knowledge about scientific cultivation of mango orchard will provide the insight of the present technological “know how” to the farmers. It is also expected that the information generated from the study will be of great significance and it may be helpful to the planners, administrators, research scientists and extension workers for reducing the yield gap by removing the constraints and motivating the farmers for managing important variables responsible for management of mango orchard.

This study has both theoretical and practical utility, the findings of this study will add to the knowledge about the managerial role in farming and it is useful in measuring the managerial ability of the fruit growers. The managerial ability will be considered in relation to the factors like innovativeness, achievement motivation and risk taking ability. Therefore, these factors of scientific management of mango orchard will be helpful to the farmers who are concerned with fruit growing enterprise.

1.4 LIMITATION OF THE STUDY:

Because of limited time and other resources available with investigator, the study was undertaken with following limitations:

1. The study was been limited to the mango orchard growers of Panchmahal district.

2. Only some of the selected characteristics of the mango growers were studied.
3. The study was limited to measure only the managerial ability of mango growers about scientific cultivation of mango orchards.

4. The results drawn from this study was based on the expressed opinions of only 120 mango growers.
II. REVIEW OF LITERATURE

A comprehensive review of literature is an essential part of any scientific investigation. The review of literature leads the researcher to conclude his findings with reference to past studies. It is also necessary in developing conceptual framework and selection of appropriate design for the study. As the literature having direct bearing on different aspects of the present study is limited hence, the references having little or indirect bearings are also reviewed.

The literature reviewed so far clearly indicate that very few research studies have been conducted on managerial ability of the mango growers about scientific cultivation of mango orchard. A brief account of such literature reviewed related to this study, has been presented under the following heads:

1. To study the profile of mango orchard growers.
2. To study the managerial ability of the mango growers about scientific cultivation of mango orchard.
3. To study the relationship between managerial ability and profile of mango orchard growers.
4. To study the constraints faced by mango growers in adoption of scientific mango cultivation practices.
5. To seek the suggestions to overcome the existing constraints for adoption of scientific mango cultivation practices.
2.1 CHARACTERISTICS OF MANGO ORCHARD GROWERS

2.1.1 Age

Patel (1990) observed that more than one-half (58.00 per cent) of the mango growers were middle age, whereas, 22.00 and 20.00 per cent of the mango growers belonged to old and young age, respectively.

Gorfad (1993) concluded that more than one-half (56.00 per cent) of the mango growers were from middle age group, whereas 21.00 and 23.00 per cent of the mango growers were from old and young age, respectively.

Dangar (1996) reported that 58.00 per cent of the chiku growers were middle aged, whereas 20 and 22 per cent of the respondents belonged to young and old age groups, respectively. It means that more than one-half of the chiku growers were middle aged.

Chothani (1999) inferred that majority (58.00 per cent) of the mango growers were from middle age group (31 to 41 years).

Jadav (2005) reported that 41.00 per cent of the respondents were in the middle - age group, while 35.00 per cent were in the old-age group and 24.00 per cent respondents were from the young age group.

2.1.2 Education

Sinha et al. (1991) concluded that higher proportion of the tribal dry land fruit growers (44.29 per cent) were illiterate and very few (11.43 per cent) were educated up to high school and above that level.
Gorfad (1993) observed that 52.00 per cent of the mango growers were educated up to secondary level; whereas 17.00 per cent of the mango growers were educated above secondary level and 31.00 per cent of them were illiterate and primary level.

Chothani (1999) revealed that 38.00 per cent of the mango orchard growers were educated upto primary level, whereas 30.00 per cent of them were educated upto secondary school level, 17.00 per cent were illiterate and 15.00 per cent were educated upto higher secondary and college level.

Jadav (2005) reported that 39.00 per cent of the mango orchard growers were educated up to primary level, whereas 29.50 per cent of them were educated up to secondary school level, 16.50 per cent were illiterate and 15.00 per cent were educated up to higher secondary and college level

2.1.3 Size of family

Patel (2005) concluded that slight more than half (51.25 per cent and 52.50 per cent) of marginal and small farmers managing banana cultivation, while three-fourth (60.00 per cent) of medium farmers managing banana cultivation had big family respectively. Overall, it was viewed that 54.58 per cent farmers managing banana cultivation had big size of family.
2.1.4 **Social participation**

Patel (1990) revealed that 40.00 per cent of the mango growers had medium social participation followed by low social participation (38.00 per cent), while only 22.00 per cent of the mango growers had high social participation.

Gorfad (1993) expressed that a great majority (70.00 per cent) of the mango growers had medium social participation.

Dangar (1996) revealed that majority (62.00 per cent) of the chiku growers belonged to medium social participation.

Chothani (1999) reported that majority (75.00 per cent) of the mango orchard growers had low social participation followed by medium (22.00 per cent) and high (3.00 per cent) social participation.

Jadav (2005) concluded that 56.50 per cent of respondents had medium social participation and more than half (55.50 per cent) of the respondents possessed extrovert personality.

2.1.5 **Size of land holding**

Patel (1990) indicated that 46.00 per cent of mango growers were having large size of orchard holding, whereas 38.00 per cent and 16.00 per cent of the mango growers possessed medium and small orchard holding respectively.

Thakur *et al.* (1991) observed that majority of the mango growers have planted mangoes on 0.51 to 1.0 hectare area of their land.
Gorfad (1993) revealed that majority (71.00 per cent) of the mango growers having large size of farm holding, whereas 11.00 per cent and 18.00 per cent of the respondents possessed small and medium size of farm holding, respectively.

Chothani (1999) reported that 43.00 per cent of the respondents were having medium size of land holding followed by large (37.00 per cent) and small (20.00 per cent) size of land holding.

Jadav (2005) reported that 43.00 per cent of respondents were having 2 to 4 ha of land holding and 39.50 per cent having more than 4 ha of land holding. While only 17.50 per cent of mango growers were having up to 2 ha of land.

### 2.1.6 Annual Income

Chothani (1999) revealed that more than one half (53.00 per cent) of the mango orchard growers fall under higher annual income group, while 24.00 per cent and 13.00 per cent fall under medium and lower annual income group respectively.

Jadav (2005) reported that 41.00 per cent of mango orchard growers were from the medium annual income group, while 33.50 and 25.50 per cent of mango orchard growers fall under high and low annual income group, respectively.
2.1.7 Mango yield index

Gorfad (1993) stated that 76.00 per cent of the mango growers had medium mango yield index, whereas equal number (12.00 per cent) of them had low and high mango yield index, respectively.

Chothani (1999) summarized that majority (63.00 per cent) of the mango growers had medium mango yield index.

Jadav (2005) reported that 59.00 per cent of the mango growers had medium mango yield index, whereas an equal number (20.50 per cent) of respondents had low and high mango yield index, respectively.

2.1.8 Experience as mango growers

Jadav (2005) reported that slight more than one-half (56.00 per cent) of the mango orchard growers had medium experience as mango growers, whereas 27.00 per cent and 17.00 per cent of them had low and high experience as mango grower, respectively.

Patel (2005) concluded that majority of marginal (78.75 per cent), small (82.50 per cent) and medium (80.00 per cent) farmers managing banana cultivation had medium to low experience in banana cultivation. In general, 80.42 per cent of the farmers managing banana cultivation had medium to low experience in banana cultivation.
2.1.9 Scientific orientation

Patel (2005) observed that 42.31 per cent of the respondents were found with medium level of scientific orientation, followed by 30.77 per cent with high and 26.92 per cent with low level of scientific orientation respectively.

Patel (2006) observed that majority 79.17 per cent of the respondents had medium level of scientific orientation, followed by 10.83 per cent and 10.00 per cent who had low and high level of scientific orientation, respectively.

2.1.10 Achievement motivation

Vyas (1995) concluded that majority (86.00 per cent) of the respondents were found to have medium to high achievement motivation.

Jadav (2005) reported that slight more than two-third (68.00 per cent) respondents had medium level of achievement motivation, followed by high (17.50 per cent) and low (14.50 per cent) level of achievement motivation.

2.1.11 Risk orientation

Chavda (1981) revealed that nearly equal (38.67 and 39.33 per cent) of mango growers had medium and high-risk preference, respectively, whereas 22.00 per cent of them were from low risk preference group.

Jadav (2005) indicated that slight more than two third (69.50 per cent) of the respondents were from medium risk orientation group, whereas 16.00 per
cent and 14.50 per cent of them had low and high level of risk orientation, respectively.

2.1.12 Extension participation

Chothani (1999) revealed that majority (72.00 per cent) of the mango orchard growers had medium extension participation, followed by low (15.00 per cent) and high (13.00 per cent) participation in various extension activities.

Jadav (2005) revealed that nearly three-fourth (72.50 per cent) of the mango growers had medium extension participation, whereas 20.00 per cent and 7.50 per cent of them had low and high extension participation, respectively.

2.1.13 Mass media exposure

Bhople and Ingle (1990) revealed that more than three – fourth (76.66 per cent) of the rural community had medium level of mass media exposure whereas only about one-tenth of the respondents were found to be using mass media either up to high (10.00 per cent) or low (13.33 per cent) extent for getting of farm information.

Patel (2005) reported that a great majority (87.50 per cent) of small and more than three-fourth (78.75, and 72.50 per cent) of marginal and medium farmers managing banana cultivation had medium to high level of exposure to mass media. In general, 79.58 per cent of the farmers managing banana cultivation possessed medium to high exposure to mass media.
Jadav (2005) revealed that 60.50 per cent of the mango orchard growers had medium level of mass media exposure, whereas 24.00 and 15.50 per cent of them had low and high level of mass media exposure, respectively.

2.2 MANAGERIAL ABILITY OF THE MANGO GROWERS ABOUT SCIENTIFIC CULTIVATION OF MANGO ORCHARD

England et al. (1971) observed that successful managers are more pragmatic and less idealistic than less successful managers.

Monappa and Saiyaddain (1976) defined an effective manager as one who is properly developed in terms of basic intellectual abilities and the predispositions necessary for carrying out the task smoothly.

Rannorey (1979) found that farmers with higher management orientation adopted more number of practices and higher adoption led to higher economic performance.

Narayana and Ramchandra (1986) suggested a model for modern technology promotion programme at local level. It caters management services to the needs of seven operational activities for farmers. i.e. help in proving technical advice, help in getting production inputs, help in getting marketing services, assistance in getting access to credit etc.

Chari and Nandapurkar (1987) developed and standardized an objective scale to measure the managerial ability of farmers and suggested that
planning, organizing, human relationship; communication, co-ordination and control where the main components for the development of scale.

Bhatia et al. (1990) stated that the successful integration of agriculture, industries and service / supportive sector in the integrated rural development programme depends on the proper planning, organizing, controlling and directing the various activities. The help / cooperation of target groups and implementing agencies are also highly needed / required. The coordination of above the sectors and the various agencies is a very difficult and challenging task. Only the management knowledge and practice may help in this task.

Sartorius van bach et al. (1993) revealed that both problem consciousness and managerial ability were closely associated with financial success over the short term and economic survival over the long term.

Bhole and Palaspager (1996) concluded that farm supervisor’s characteristics (labour force, live stock number, education status, length of service, experience) are six components of managerial ability.

Ajobo et al. (1998) reported that principle component was used to examine certain socioeconomic characteristics of 72 coca farmers in an old coca growing area near Ibadan in SW Nigeria. Sixteen principal categories were identified and these accounted for about 85% of the total variance in the data. The first component accounted for about one-fifth of the total variation while the first five components explained about half of the total variance. Three-fifth of the 45 variables specified were associated (20 positively and 7 otherwise) with
respondent managerial ability, while the remaining 18 were not. With an index of 0.80, all the variables taken together were not too different from one another and they reasonably accounted for the entire identified component.

Everybody wants to be the ‘Best’ and ‘Have Best’. But the sources in terms of man, money, machine and material are limited. Thus, arouse the need for management that would result in efficient and effective utilization of various resources to fulfill the objectives (Anon. 1998)

Nuthall (2001) concluded that psychology of decision making from farm management perspective, outlines what psychology efforts for changing a person’ attributes, and consider the structures of a research programme aimed at developing methods for improving individual managerial ability.

Alvorez and Arias (2003) suggested that managerial ability has important implication for farm growth.

Jadav (2005) About two-third (60.00 per cent) of the mango orchard growers were from the medium managerial ability category, while 21.50 per cent of mango orchard growers were from low and 18.50 per cent of mango orchard growers were from high managerial ability category about scientific cultivation of mango orchard.
2.3 RELATIONSHIP BETWEEN MANAGERIAL ABILITY OF MANGO GROWERS AND SELECTED VARIABLES

Appleby (1980) inferred that the achievement motivation and leadership styles do not account for differences in managerial effectiveness.

Vijayasree (1981) observed that managers were highly achievement-oriented persons.

Badachikar (1985) reported that economic motivation, innovativeness, competition orientation and achievement motivation of farmers were positively and significantly correlated with their management orientation.

Rao (1985) concluded significant and positive correlation between management of farm and the farmers’ characteristics such as their education, farm size, training, innovativeness, self-confidence, achievement motivation and risk orientation.

Sreekumar (1985) showed strong relationship between self-reliance and personal guidance with management orientation of farmers.

Bora (1986) suggested that independent variables like farm experience, economic motivation, risk orientation, orientation towards competition and level of aspiration were significantly correlated with the dependent variable returns to management.
Chari and Nandapurkar (1987) concluded that managerial ability was positively and significantly related with innovativeness, achievement motivation and risk taking ability.

Sumathi (1987) stated significant relationship between management orientation of farmers and their education, cosmopolitaness, mass media participation, extension agency contact, extension participation, innovative proneness, risk orientation, competition orientation, self confidence, self reliance and level of aspiration.

Nagaraja (1989) revealed that size of land holding, experience in sericulture enterprise, education, risk orientation, competition orientation, economic motivation, level of aspiration, innovative proneness, scientific orientation, achievement motivation, participation in training programme, personal guidance, contact with extension agency and exposure to mass media were positively and significantly related with management efficiency of sericulture farmers.

Colin (1992) suggested that large farms tends to use more capital intensive methods of products, while smaller farms were more labour intensive and managerial ability seems to better on larger farms.

Patel and Patel (2000) revealed that the managerial ability has no concern with entrenched characteristics either like age or like size of land holding.
and economic conditions. Contrarily, it is highly correlated with literacy level, social participation and extension participation. This clearly shows that managerial ability was not associated with ingrained factors; but it will be more if one keeps more linkage with people and extension.

Patel (2001) reported that quality, discipline possessed, management training received, image and attitudes towards extension were of positive and significant correlated with extension management ability.

Jadav (2005) revealed that adoption index, education, annual income, experience as mango growers, farm mechanization index, mango yield index, training received, attitude towards modern agriculture, mass media exposure and risk orientation were found to be positive and significantly correlated with managerial ability. While, age was negatively and non-significantly correlated with managerial ability.

2.4 CONSTRAINTS FACED IN ADOPTION OF IMPROVED MANGO PRODUCTION TECHNOLOGY BY THE MANGO ORCHARD GROWERS.

Bhople and Palaspagar (1996) stated the majority of the aonla growers expressed that they faced the difficulties like costliness of packing material (80.00 per cent) unavailability of processing unit (76.67 per cent) and high transportation charges for transport of fruit from orchard to selling market (54.00 per cent) in the marketing of aonla.
Herge et al. (1996) revealed that unavailability of cold storage facility (98.33 per cent), unavailability of fruit processing plant (95.83 per cent) and unavailability of support price (95.00 per cent) were major constraints of orange growers.

Jadav (2005) reported that majority of the mango growers expressed irregular and insufficient electric power supply (85.00 %), lack of modern spraying equipment (79.17%), lack of awareness about recommendations (75.00 %), high price of fertilizer (72.50 %), high price and ineffectiveness of fungicides (70.00%), Lack of improved agricultural implements (66.67 %), irregular rainfall (63.33%) and high price of insecticides and pesticides (61.67%).

Pise (2006) reported that fluctuation in market price (80.00 per cent), high cost of input (76.00 per cent), irregular supply of electricity (72.66 per cent), lack of market facility (64.66 per cent) and lack of finance (62.33 per cent) were the major constraints faced by the banana grower in adoption of banana cultivation technology.
2.5 SUGGESTIONS TO OVERCOME THE CONSTRAINTS IN ADOPTION OF IMPROVED MANGO CULTIVATION TECHNOLOGY.

Jadav (2005) reported that to overcome the constraints in adoption of recommended improved mango production technology were: regular electric power supply should be made available (84.16 %), crop insurance scheme should be introduced in mango crop (81.66 %), effective control measures of pests and diseases should be evolved (75.00 %), price of pesticides and fertilizers should be low (72.50 %), cooperative society for mango should be constituted (70.83 %), training should be given to the fruit growers in relation to the best orchard management (68.33 %), remunerative minimum prices should be fixed by the Government (64.16 %) and agricultural inputs should be subsidized (61.66 %).

Makwan (2005) observed that the major constraint faced by respondents were lack of risk bearing capacity, low price of banana, lack or reliable updated information on marketing and lack of storage facilities for the personal-social, economical, communication and physical technical marketing constraints respectively.
III. THEORETICAL ORIENTATION

In this chapter an attempt has been made to evolve systematically a theoretical framework related to the objectives of the study. This would serve as to provide a sound basis and direction to the study. It consist of certain important theoretical consideration related to 'phenomenatic' approach to the adoption process, out of which sub level concepts and variables related to the study would be developed through logical derivation. The assumptions underlying the study are also be described in this chapter which would finally provides the rational basis for postulation among various concepts and variables in terms of hypotheses. The theoretical Orientation has been tried to put in the logical order as follows:

3.1 THEORETICAL FRAMEWORK OF THE STUDY

3.2 THE PARADIGM

3.3 DEFINITION OF SOME COMMON TERMS USED.

3.4 DERIVED HYPOTHESES

3.1 THEORETICAL FRAMEWORK OF THE STUDY

Management is the process essential to accomplish enterprise goal and objectives. In general, we may say management as the process of working with and through individuals and groups and other resources such as equipment, capital and technology. Managing is always concerted with productivity, which implies the effectiveness and efficiency of individuals. Agriculture is considered as an important enterprise in India, so it is worthwhile to study the related factors
responsible for the productivity of the commodities involved in agriculture and its allied field. Orchard growing enterprise also requires the skill and knowledge pertaining to the latest technological knowhow in the context of management aspects. There are several factors affecting to the productivity of orchard crops. Management is one of the important factors for fruit production for better achievement in the enterprise.

Terry and Franklin (1984) stated that management is a distinct process consisting of activities of planning, organizing, actinguating and controlling, performed to determine and accomplish stated objectives with the use of human beings and other resources.

Management is the process by which the farmer is able to enhance return from the farm on a sustained basis for the attainment of family goals (Bora and Ray, 1986)

Congruity theory (Brown, 1965) also helps in understanding the phenomenon of management efficiency. This theory suggests that the motivation for self directed change comes from the dissonance between one’s current self-image and ones ideal self-image. Better management efficient fruit producers think about goals in a way that allow them to experience this dissonance and they may strive to reduce it. In addition, the identity diffusion of better management efficient fruit producers produces good clarity about the self and at the same time, which would increase, felt dissonance.
The phenomenon of management efficiency has been viewed and explained by different social scientists in different ways. Managerial ability in present study has been defined as ‘the degree or ability to which an individual acquires and adopts effective factors in an enterprise to reach higher levels of performance’.

3.2 THE PARADIGM

In the light of the above theoretical frame and the hypotheses derived there upon, a conceptual model delineating the relationship between independent variables and dependent variable has been proposed. The variables namely, age, education, Size of family, social participation, size of land holding, annual income, mango yield index, experience as a mango growers, Scientific orientation, achievement motivation, risk orientation extension participation and mass media exposure and were taken as independent variables, the managerial ability was considered as dependent variable. Based on the above variables, the conceptual model is shown in Fig. 1.
3.3 DEFINITIONS OF SOME COMMON TERMS USED

1. **Age:**
   
   It refers to actual age of the respondents in completed year’s i.e. Chronological age of the respondents.

2. **Education:**
   
   It refers to the formal education attained by the selected respondents individually.

3. **Size of family:**
   
   It refers to posses number of members in family.

4. **Social participation:**
   
   It refers to the degree of involvement of the respondents in formal organization either as a member or office bearer.

5. **Size of land holding:**
   
   It is the number of hectares of land individual possesses and cultivates.

6. **Annual income:**
   
   It indicates the total annual income expressed in rupees earned by respondents from both farming and allied fields put together.

7. **Mango yield index**
   
   Mango yield index has been defined as average fruit yield of mango growers compared with average fruit yield of 120 mango growers in terms of percentage.
8. **Experience as mango growers**

   It is a number of years of association with the cultivation of mango one of the crop completed by the mango growers on the date of interview.

9. **Scientific orientation:**

   It is a degree to which respondents are oriented to the use of scientific method in relation to mango.

10. **Achievement motivation**

    It has been defined as the value associated with mango a grower which drives him to excel in his activities and thereby attains a sense of personal accomplishment.

11. **Risk orientation**

    It is the degree to which mango growers are oriented towards the risk.

12. **Extension participation**

    It refers to the degree of involvement of farmers in extension educational activities.

13. **Mass media exposure:**

    It is defined as the nature and frequency of respondent involvement in different mass media such as Radio, Television, Newspaper, Exhibition, and Demonstration.
14. Managerial ability

The managerial ability has been defined as ‘the degree or ability to which an individual acquires and adopts effective factors in an enterprise to reach higher level of performance.

15. Constraints:

This refers to the items of difficulties faced by the farmers in adoption of scientific mango cultivation practices.

16. Suggestion:

These refer to opinions or the ways and means as suggested by respondent farmers to overcome constraints faced by mango growers in adoption of scientific mango cultivation practices.

3.4 DERIVED HYPOTHESES

H₁: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their age.

H₂: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their education.

H₃: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their size of family.

H₄: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their social participation.

H₅: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their size of land holding.
H$_6$: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their annual income.

H$_7$: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their mango yield index.

H$_8$: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their expérience as a mango growers.

H$_9$: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their scientific orientation.

H$_{10}$: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their achievement motivation.

H$_{11}$: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their risk orientation.

H$_{12}$: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their extension participation.

H$_{13}$: There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their mass media exposure.
IV. RESEARCH METHODOLOGY

This chapter deals with the method of research design, tools and techniques of scientific investigation employed in the light of objectives of the study. It describes and clarifies methods for measuring the dependent and independent variables. It includes sampling procedure for data collection and statistical techniques for analysis of data. The methodology was adopted for conducting the study is presented as under:

4.1 Identification of the problem
4.2 Area of the study
4.3 Research design
4.4 Sampling procedure
4.5 Development of interview schedule
4.6 Pre-testing of interview scheduled
4.7 Collection of data
4.8 Selection and measurement of variables
4.9 Statistical framework used for analysis of data

4.1. IDENTIFICATION OF THE PROBLEM

Mango is one of the most important fruit crops of Panchmahal district of Gujarat state. Mango cultivation area and production particularly in Panchmahal district is 592 ha and 3552 metric tones respectively. Any enterprise, which is working for the betterment of community at large. This function provides
an opportunity to the farmers of a given enterprise to exert as much as they can to show their worth. Such an activity also calls for good level of ability of different levels of managers involved in the process of management of mango orchard. Cultivation of fruit is a specialized field where efficient management will help a lot to yield results, which are anticipated. Therefore, management is a pivotal component in a scientific cultivation of mango.

The mango growers have also to perform a role of manager to get maximum production from minimum available resources. Thus, the managerial ability of the mango growers was directly affecting the mango production.

Few studies have been conducted on managerial ability of farmers in cultivation of various crops, but the study on managerial ability of mango growers is lacking. The idea of the research problem was discussed with the members of the advisory committee as well with some leading scientists and it was considered that the study of this nature would be fruitful and will provide new direction in the field of cultivation of fruit. It was, therefore, decided to undertake a study on managerial ability of mango grower in Panchmahal district of Gujarat state.

4.2. AREA OF THE STUDY

For any social research involving farmers as a unit of study, a two way direct communication between researcher and respondent is a must to build up good rapport to ensure free and frank dialogue and to get satisfactory responses from them. With this basic consideration in view, Panchmahal district of Gujarat State (Fig. 2), was purposively selected for the study of following reason:
1. Panchmahal district had the largest mango growing area of Gujarat state.

2. Proportionately more number of mango orchards and had ideal conditions for the successful cultivation.

3. Among all the fruit crops, mango is the main fruit crop in the area under study.

5. The Panchmahal is a native of investigator. It is familiar with agro-climatic and agricultural situation of the area under study.

6. There are scopes to motivate mango growers to adopt new technology developed by the scientists.

4.3. RESEARCH DESIGN

This study was concerned with identifying the characteristics of mango growers that influence their adoption of recommended technology. Ex-post-facto research design was applied for this study. Kerlinger (1976) stated that ex-post facto research design is worthy to apply when the independent variable has already acted upon.

4.4. SAMPLING TECHNIQUE

4.4.1 Selection of talukas

Mango grown in almost all the part of Panchmahal district, out of which Halol, Lunavada, Santrampur and Ghogamba talukas were purposively selected for the study as they have the maximum area under mango crop.
4.4.2 Selection of villages

A list of mango growing villages was obtained from the office of Assistant Director of Horticulture, Panchmahal. Out of these villages, twelve villages consisting suitable area under mango cultivation were selected from each Talukas.

4.4.3 Selection of respondents

A list of mango growers was obtained from concerned village level workers. Out of these 120 mango growers were selected by proportionate random sampling for this study purpose. The whole sample was considered as respondents hereafter, it was interviewed for collection of data.

The list of selected villages from selected talukas in Panchmahal district was depicted in Table 3. and shown in Fig. 3

4.5. DEVELOPMENT OF AN INTERVIEW SCHEDULE

The tool for this study purpose, personal interview schedule was prepared. The schedule was developed keeping in view the objectives of the study. In formulating questions and statements for schedule the investigator referred the review of related literature, popular articles, research reports, and consulted with advisory committee and research scientists of fruit research station, Anand to seek and invite their opinion and suggestions to make interview schedule more scientific and meaning and accordingly it developed.
Table 3: List of selected villages from selected talukas in Panchmahal district

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of talukas</th>
<th>Name of villages</th>
<th>Total no of mango growers</th>
<th>Number of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ghogamba</td>
<td>1. Chelawada</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Ghogamba</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Rechiya</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>Halol</td>
<td>1. Baska</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Bedhiya</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Veroj</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>3.</td>
<td>Lunavada</td>
<td>1. Dhamaniya</td>
<td>13</td>
<td>09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Kaliyakuva</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Vardhari</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>4.</td>
<td>Santrampur</td>
<td>1. Rail</td>
<td>13</td>
<td>09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Sanbar</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Umber</td>
<td>13</td>
<td>09</td>
</tr>
<tr>
<td>Total</td>
<td>4 talukas and 12 villages</td>
<td>176</td>
<td>120</td>
<td></td>
</tr>
</tbody>
</table>

There by 70 per cent farmers of each village were selected randomly in such a manner that there would be proportional to total size of farmers in respective village.

4.6. PRE-TESTING OF INTERVIEW SCHEDULE

The purpose of pre testing of interview schedule was to know whether the questions included in the schedule were understandable to the respondents or not. Pre-testing was done with fifteen mango growers who were
not included in final sample. Before conducting interview the mango growers were explained about the purpose of study. On the basis of information provided and experience gained by investigator, ambiguity of words and language was correlated and necessary modifications were made in final format of interview schedule.

4.7. COLLECTION OF DATA

Data were collected in the month of April-May 2010 the respondents were interviewed personally either at their home or at community place or at their fields. Before conducting the interview the aim and objectives were explained to the mango growers in order to get whole hearted response and correct information from them. Every possible care was taken to maintain congenial atmosphere to get unbiased response from respondents. The questions from interview schedule were asked one by one and responses were recorded in the schedule on the spot.

4.8. SELECTION AND MEASUREMENT OF VARIABLES

The variables under study were selected on the basis of extensive review of literature on the subject in consultation with experts and only those variables which were found most relevant to present investigation were finally selected for the study.
I Dependent variables

1. Managerial ability

II Independent variables

I. Personal characteristics
   1. Age
   2. Education

II. Social characteristics
   1. Size of family
   2. Social participation

III. Economical characteristics
   1. Size of land holding
   2. Annual income
   3. Mango yield index

IV. Psychological characteristics
   1. Experience as a mango grower
   2. Scientific orientation
   3. Achievement motivation
   4. Risk orientation

V. Communicational characteristics
   1. Extension participation
   2. Mass media exposure
Measurements of variables

To describe the respondents according to their personal, socio-economic, communicational and psychological characteristics they were grouped into various categories on the basis of available data as under:

**Table 4: Variables along with technique used for their measurement**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Variables</th>
<th>Measurement Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Independent variables</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Age</td>
<td>Structured schedule was developed.</td>
</tr>
<tr>
<td>2.</td>
<td>Education</td>
<td>Structured schedule was developed.</td>
</tr>
<tr>
<td>3.</td>
<td>Size of family</td>
<td>Structured schedule was developed.</td>
</tr>
<tr>
<td>4.</td>
<td>Social participation</td>
<td>SES scale developed by Pareek and Trivedi (1963) was used with some modifications.</td>
</tr>
<tr>
<td>5.</td>
<td>Size of land holding</td>
<td>Structured schedule was developed.</td>
</tr>
<tr>
<td>6.</td>
<td>Annual income</td>
<td>Structured schedule was developed.</td>
</tr>
<tr>
<td>7.</td>
<td>Mango yield index</td>
<td>Structured schedule was developed.</td>
</tr>
<tr>
<td>8.</td>
<td>Experience as a mango grower</td>
<td>Structured schedule was developed.</td>
</tr>
<tr>
<td>9.</td>
<td>Scientific orientation</td>
<td>Scale developed by Patel (2008) was used with some modifications.</td>
</tr>
<tr>
<td>10.</td>
<td>Achievement motivation</td>
<td>Scale developed by Rani (1985) was used with some modifications.</td>
</tr>
<tr>
<td>11.</td>
<td>Risk orientation</td>
<td>Scale developed by Patel (2008) was used with some modifications.</td>
</tr>
<tr>
<td>12.</td>
<td>Extension participation</td>
<td>Structured schedule was developed.</td>
</tr>
<tr>
<td>13.</td>
<td>Mass media exposure</td>
<td>Structured schedule was developed.</td>
</tr>
<tr>
<td>B.</td>
<td>Dependent variable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Managerial ability of mango growers</td>
<td>Scale developed by Jadav (2005) was used.</td>
</tr>
</tbody>
</table>
(A) Independent variables

4.8.1 Age

It refers to chronological age of respondents at the time of investigation that was recorded by asking them. The data regarding age of the respondents were collected and divided into three groups as under:

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Young age group (up to 35 years)</td>
</tr>
<tr>
<td>2</td>
<td>Middle age group (between 36 to 50 years)</td>
</tr>
<tr>
<td>3</td>
<td>Old age group (above 50 years)</td>
</tr>
</tbody>
</table>

4.8.2 Education

It refers to the number of years of formal education completed by the respondent farmers. It was measured with the help of Socio-Economic Status Structure schedule will be developed. The scoring system followed was given in Appendix. They are classified in five groups, according to their level of education and measured with score assigned to actual possessed education as under:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Educational level</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Illiterate</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Primary (1\textsuperscript{st} to 7\textsuperscript{th} standard)</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Secondary (8\textsuperscript{th} to 10\textsuperscript{th} standard)</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Higher secondary (11\textsuperscript{th} to 12\textsuperscript{th} standard)</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>College (above 12\textsuperscript{th} standard)</td>
<td>4</td>
</tr>
</tbody>
</table>
4.8.3. **Size of family**

Family size was measured as the number of individuals of both sexes living together in one household. The respondents were classified into two categories based on number of members; as follow:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Small size (up to 5 members)</td>
</tr>
<tr>
<td>2</td>
<td>Large size (more than 5 members)</td>
</tr>
</tbody>
</table>

4.8.4 **Social participation**

Information regarding membership of mango growers in formal organization was collected and quantified on the basis of scoring system followed by Pareek and Trivedi (1963) with some modification as under:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Social participation</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No membership</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Membership in one organization</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Member in more than one organization</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Holding position in organization</td>
<td>3</td>
</tr>
</tbody>
</table>

4.8.5 **Size of land holding**

The actual land holding possessed by the respondents in the hectares was considered as such for measuring this variable and on the basis of their land holding, respondents were categorized as below:
### Research methodology

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
<th>land possessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marginal</td>
<td>Up to 1.00 ha</td>
</tr>
<tr>
<td>2</td>
<td>Small</td>
<td>1.01 to 2.00 ha</td>
</tr>
<tr>
<td>3</td>
<td>Medium</td>
<td>2.01 to 3.00 ha</td>
</tr>
<tr>
<td>4</td>
<td>Large</td>
<td>More than 3 ha</td>
</tr>
</tbody>
</table>

#### 4.8.6 Annual income

The data collected from the respondents about their annual income categorized into three groups:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
<th>Income in rupees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low annual income</td>
<td>Up to Rs.50,000/-</td>
</tr>
<tr>
<td>2</td>
<td>Medium annual income</td>
<td>Rs.50,001 to 1,00,000/-</td>
</tr>
<tr>
<td>3</td>
<td>High annual income</td>
<td>Above Rs. 1 lakh</td>
</tr>
</tbody>
</table>

#### 4.8.7 Mango yield index

The average fruit yield of mango growers compared with average fruit yield of 100 mango growers (q/ha) in terms of percentage.

\[
\text{Mango yield index} = \frac{\text{Average yield of mango orchard of individual mango growers}}{\text{Average yield of mango orchard of 100 mango growers}} \times 100
\]
The mango growers were classified into three categories.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Category</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low mango yield index</td>
<td>&lt; X – S.D.</td>
</tr>
<tr>
<td>2</td>
<td>Medium mango yield index</td>
<td>In between X ±S.D.</td>
</tr>
<tr>
<td>3</td>
<td>High mango yield index</td>
<td>&gt;X + S.D.</td>
</tr>
</tbody>
</table>

4.8.8 Experience in mango cultivation

Experiences in mango cultivation were measured in terms of mango growing experience of individual farmer in years. The respondents were classified into three categories as per their experience in mango cultivation in the years.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low experience (3 to 5 years)</td>
</tr>
<tr>
<td>2</td>
<td>Medium experience (6 to 10 years)</td>
</tr>
<tr>
<td>3</td>
<td>High experience (above 10 years)</td>
</tr>
</tbody>
</table>

4.8.9 Scientific orientation

It was measured with the help of scale developed by Patel (2008) with due modifications. The responses from the respondents were obtained against each item in terms of their agreement or disagreement with statement. There were four statements in the scale. Out of which, statement number 1, 2, and 3 were positive and statement number 4 was negative (Appendix). The positive and negative statements were scored as follows:
Research methodology

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Negative</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The respondents were classified into three categories on the basis of mean and standard deviation.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low scientific orientation</td>
<td>(&lt; X - S.D.)</td>
</tr>
<tr>
<td>2</td>
<td>Medium scientific orientation</td>
<td>In between (X \pm S.D.)</td>
</tr>
<tr>
<td>3</td>
<td>High scientific orientation</td>
<td>(&gt;X + S.D.)</td>
</tr>
</tbody>
</table>

### 4.8.10. Achievement motivation

It has been operationalised as the value associated with mango growers, which drives him to excel in his activities and thereby attains a sense of personal accomplishment. It was measured by using the scale developed by Rani (1985) with slight modifications, the scale consisted of eight items with a three point continuum as Agree (3 score), Undecided (2 score) and Disagree (1 score). The reliability of the scale was confirmed using split-half method and the ‘r’ value was seen to be significant, indicating the dependability of the scale. The mango growers were divided into three categories viz.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low achievement motivation</td>
<td>Less than (X - S.D.)</td>
</tr>
<tr>
<td>2</td>
<td>Medium achievement motivation</td>
<td>Between (X \pm S.D.)</td>
</tr>
<tr>
<td>3</td>
<td>High achievement motivation</td>
<td>Above (X + S.D.)</td>
</tr>
</tbody>
</table>
Risk orientation

Mango growers willingness to take risk was measured with the help of scale developed by Patel (2008) with due modifications. The scale consisted of five statements. Out of which, statement number 2, 3, 4, 5, 6 were positive and rest 1 was negative (Appendix). The responses from the respondents were obtained against each item in terms of their degree of agreement or disagreement. The positive and negative statements were scored as follow.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Negative</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The respondents were classified into three categories on the basis of mean and standard deviation

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low risk orientation</td>
<td>Less than X – S.D.</td>
</tr>
<tr>
<td>2</td>
<td>Medium risk orientation</td>
<td>Between X ± S.D.</td>
</tr>
<tr>
<td>3</td>
<td>High risk orientation</td>
<td>Above X + S.D.</td>
</tr>
</tbody>
</table>

Extension participation

It was measured with the help of Structure schedule developed. The Structure consist of eight items having different scale values administered to the respondents and obtained information on the participation of mango growers in different extension activities during the period of previous one year. The extension...
participation score of an individual of mango growers was the sum total of the scale value of the items in which mango growers has participated.

\[
\text{Actual total score value} = \frac{\text{Extension participation Index}}{\text{Possible total score value}} \times 100
\]

According to the extension participation index of mango growers, the mean and standard deviation worked out and respondent was grouped into three categories.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low extension participation</td>
<td>&lt; X – S.D.</td>
</tr>
<tr>
<td>2</td>
<td>Medium extension participation</td>
<td>In between X +S.D.</td>
</tr>
<tr>
<td>3</td>
<td>High extension participation</td>
<td>&gt;X + S.D.</td>
</tr>
</tbody>
</table>

4.8.13 **Mass media exposure**

This referred to the frequency of reading newspaper, farm magazines and other literature, leaflets, pamphlets, folder etc. relating to agriculture as well as use of radio and television. These variables were quantified by assigning score as follows:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Frequency of using mass media by participants</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regularly</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Frequently</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Occasionally</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Never</td>
<td>1</td>
</tr>
</tbody>
</table>

On the basis of mean and standard deviation, the respondents were categories in to following three groups.
### Research methodology

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low mass media exposure</td>
<td>Less than (X – \text{S.D.})</td>
</tr>
<tr>
<td>2</td>
<td>Medium mass media exposure</td>
<td>Between (X \pm \text{S.D.})</td>
</tr>
<tr>
<td>3</td>
<td>High mass media exposure</td>
<td>Above (X + \text{S.D.})</td>
</tr>
</tbody>
</table>

(B) **Dependent variable**

4.8.14 **Managerial ability**

For measuring the managerial ability of mango growers about scientific cultivation of mango orchard, the scale developed for the purpose was applied. The score assign to these equations according to its important. The formula used for calculating the Managerial Ability Index (MAI) was as under.

\[
\text{MAI} = \frac{\sum \text{Score obtained for indicator} \times \text{Scale value of indicator}}{\sum \text{Maximum score for indicator} \times \text{Scale value of indicator}} \times 100
\]

Managerial ability index from each mango growers were calculated. The final managerial ability index of mango growers was determined by averaging the index from respective mango growers. Then, the mango growers were classified into three categories based on Mean and Standard Deviation viz;
4.8.15 Measurement of constraints faced by the respondents

For measuring constraints in adoption of recommended production technology of mango crop the respondents were asked to give the information about the constraints countered by them was ascertained. The frequencies obtained were from highest to lowest.

4.8.16 Suggestions to overcome the constraints experienced by the respondents

Considering the constraints faced by the respondents and to overcome the same in adoption of recommended production technology of mango successfully, they were asked to give their valuable suggestions. The suggestions offered were ranked on the basis of number and percentage of respondents who reported respective suggestions.

4.9. STATISTICAL FRAME WORK FOR ANALYSIS OF DATA

Adopting the methodology explained above, the study was conducted; data were gathered, processed and analyzed. Some of the data were subjected to analyze in terms of percentage and frequencies whenever necessary, whereas at some place, mean score and standard deviation were calculated. The Pearson's Co-efficient of Correlation was used to measure relationship between independent and dependent variables. All the responses in the interview schedule were transferred to the master sheet to describe personal, social, communicational, economic and
psychological characteristics and frequencies were marked and percentages were calculated. The outcome of the present investigation has been presented in the succeeding chapters.

4.9.1 **Arithmetic mean and standard deviation.**

This estimate was used for classification of the respondents into different categories.

4.9.2 **Mean.**

The mean was calculated by using formula

\[
\bar{X} = \frac{\sum X_i}{n}
\]

\(\bar{X} = \text{Mean}\)

\(n = \text{Number of respondents}\)

\(X_i = \text{Value of the } i^{\text{th}} \text{ respondents}\)

4.9.3 **Standard Deviation**

The standard deviation was obtained by the square root of the average of the square deviation from mean by the following formula:

\[
\text{S.D.} = \sqrt{\frac{\sum (X_i - \bar{X})^2}{n - 1}}
\]

Where as,

\(\text{S.D.} = \text{Standard deviation}\)
Research methodology

Σ = Sum

\( X_i \) = Individual score

\( \bar{X} \) = Mean of the sample

n = Total number of respondents

4.9.4 Co-efficient of correlation (r)

Co-efficient of correlation shows the relationship between the variables. The correlation coefficient gives two kinds of information (i) degree of relationship and (ii) direction of the relationship (positive or negative) between the variables. This relationship was obtained using following formula which is given by Karl Pearson. (1978)

\[
\text{r} = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \Sigma y^2}}
\]

Where as,

\( x = (X - \bar{X}) \), \( y = (Y - \bar{Y}) \)

r = correlation coefficient

X = Independent variable

Y = Dependent variable

\( \Sigma xy = \sum^n (X - \bar{X})(Y - \bar{Y}) \)

\( \Sigma x^2 = \sum^n (X - \bar{X})^2 \)

\( \Sigma y^2 = \sum^n (Y - \bar{Y})^2 \)
VI. RESULTS AND DISCUSSION

This chapter presents the objective wise findings of the study. Keeping in view of the objectives of the study, information was collected from the respondents, classified, tabulated, analyzed and presented in a systematic way as per following heads:

1. Selected profile of mango growers of Panchmahal district of Gujarat state.
2. Managerial ability of the mango growers about scientific cultivation of mango orchards.
3. Relationship between profile of mango orchard growers and their managerial ability.
4. Constraints faced by mango growers in adoption of scientific mango cultivation practices.
5. Suggestions to overcome the existing constraints in adoption of scientific mango cultivation practices.

6.1 SELECTED CHARACTERISTICS OF THE MANGO GROWERS

To identify the profile of the mango growers was one of the objectives of the present study. On the basis of review of literature, some of the important characteristics of the mango growers like age, education, Size of family, social participation, size of land holding, annual income, mango yield index, experience as a mango growers, Scientific orientation, achievement
Results and Discussion

Motivation, risk orientation extension participation and mass media exposure etc. were selected and studied. The findings have been tabulated, analyzed and presented in different groups like personal, social, economical, psychological and communicational characteristics of the mango growers.

6.1.1 Age

In the process of adoption of new ideas and practices, age of the farmers play an important role and diffusion and adoption of agricultural innovation are no exception to it. Younger age farmers are more receptive to new ideas and practices. At the later stage, the farmers find it difficult to change from old age practices and they resist adopting an innovation. With this hypothecation, it was thought appropriate to study the age of the respondents. Data with respect to age are presented in Table 5 and diagrammatically depicted in Fig. 4.

Table 5: Distribution of mango growers according to their age

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Age group</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Young (Up to 35 years)</td>
<td>20</td>
<td>16.66</td>
</tr>
<tr>
<td>2.</td>
<td>Middle (between 36 to 50 years)</td>
<td>74</td>
<td>61.67</td>
</tr>
<tr>
<td>3.</td>
<td>Old (Above 50 years)</td>
<td>26</td>
<td>21.67</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

The numerical figures in Table 5 shows that more than 61.67 per cent of the mango growers were found in the middle age group, followed by 21.67 per cent in old age group and rest 16.66 per cent of mango growers in young age group. It is inferred that majority of the mango growers belonged to middle age
group. The probable reason might be that the parental occupation must have taken by middle age, as old age once were unable to do agricultural practices and young once were not capable of taking responsibility.

This finding is supported by Chothani (1999), Jadav (2005)

6.1.2 Education

Generally, it is considered that formal education of the respondents plays an important role in adoption of new agricultural technologies. Considering these aspects the formal education of mango growers was studied. The data in this respect are presented in Table 6 and diagrammatically depicted in Fig. 5.

Table 6: Distribution of mango growers according to their level of education  \[ n = 120 \]

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Level of education</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Illiterate</td>
<td>08</td>
<td>6.67</td>
</tr>
<tr>
<td>2.</td>
<td>Primary (1\textsuperscript{st} to 7\textsuperscript{th} std.)</td>
<td>52</td>
<td>43.33</td>
</tr>
<tr>
<td>3.</td>
<td>Secondary (8\textsuperscript{th} to 10\textsuperscript{th} standard)</td>
<td>48</td>
<td>40.00</td>
</tr>
<tr>
<td>4.</td>
<td>Higher secondary (11\textsuperscript{th} to 12\textsuperscript{th} standard)</td>
<td>09</td>
<td>7.50</td>
</tr>
<tr>
<td>5.</td>
<td>College (above 12\textsuperscript{th} standard)</td>
<td>03</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>120</td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

The data in the Table 6 shows that about 43.33 per cent of the mango growers had education level up to primary level of education, followed by 40.00 per cent, 7.50 per cent and 2.50 per cent of them had secondary, higher secondary, college level of education respectively. It can be concluded that majority of the mango growers (83.33 per cent) had education up to primary to secondary. The probable reason for literacy among the mango growers were due to more
education facilities available in rural area and realization about the significance of education for the overall development of the life. Due to scope to establish better economic condition, they might have decide to go for formal education rather than earning money right from childhood.

This finding is supported by Chothani (1999), Jadav (2005)

### 6.1.3 Size of family

The family as a single entity influences thoughts and actions of the individual members in farming enterprises on a large scale. Generally, the large family finds it more difficult to arrive at a decision regarding the adoption of an innovation in comparison with small size family. Hence, the family size of the mango growers was studied. The data in this regard are presented in Table 7 and diagrammatically depicted in Fig. 6.

**Table 7: Distribution of mango growers according to their size of family**  

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Family size</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Small (up to 5 members)</td>
<td>47</td>
<td>39.17</td>
</tr>
<tr>
<td>2.</td>
<td>Large (more than 5 members)</td>
<td>73</td>
<td>60.83</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

The data presented in Table 7 shows that more than 60.83 per cent of mango growers were found in large size of family and rest 39.17 per cent of mango growers had small size of family. Thus it can be concluded that 60.83 per cent of the mango growers had large family size.
The probable reason may be farmers did not adopt family planning and living in joint family.

This finding has been supported by Patel (2005).

6.1.4 Social participation

Social participation denotes the extent to which an individual is actively involved in the affairs of the community. Those who have wider social participation are probably more community-oriented, knowledgeable and resourceful which may help in diffusion of innovations and may adopt innovations earlier. Keeping this in view, social participation of the mango growers was studied and data are presented in Table 8 and diagrammatically depicted in Fig. 7.

Table 8: Distribution of mango growers according to their social participation

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Social participation</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>No membership</td>
<td>29</td>
<td>24.16</td>
</tr>
<tr>
<td>2.</td>
<td>Membership in one organization</td>
<td>56</td>
<td>46.67</td>
</tr>
<tr>
<td>3.</td>
<td>Membership in more than one organization</td>
<td>26</td>
<td>21.67</td>
</tr>
<tr>
<td>4.</td>
<td>Holding position</td>
<td>9</td>
<td>7.50</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

It is clear from the Table 8 that about 46.67 per cent of the mango growers had membership in one organization followed by 24.16 per cent had no membership in any organization, 21.67 per cent had membership in more than one organization. Very few i.e. 7.50 per cent of mango growers were in holding
position. It is clear from the data that a majority (68.34 per cent) of mango growers were having membership in one or more than one organizations.

This finding is in concurrence with the findings reported by Jadav (2005).

6.1.5 Size of land holding

Size of land holding is one of the most important indicators to measure one’s socio-economic status. Many farm equipments and machinery such as tractor, sprayer, duster and harvester can be used economically only in continuous and large strip of fields. Adoption of an innovation as a matter of risk-taker is not possible by small farmers and many innovations require a substantial amount of capital which is beyond the resources of small farmers. So, the farmers of large size of holding tend to adopt improved agricultural practices more than the farmers of small size holding. Keeping this in view, size of land holding of the mango growers was studied and data are presented in Table 9 and diagrammatically depicted in Fig. 8.

Table 9: Distribution of the mango growers according to their size of land holding

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Categories</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Marginal farmers (Up to 1.00 ha)</td>
<td>10</td>
<td>8.33</td>
</tr>
<tr>
<td>2.</td>
<td>Small farmers (1.01 to 2.0 ha)</td>
<td>42</td>
<td>35.00</td>
</tr>
<tr>
<td>3.</td>
<td>Medium farmers (2.01 to 3.00)</td>
<td>45</td>
<td>37.50</td>
</tr>
<tr>
<td>4.</td>
<td>Large farmers (Above 3.0 ha)</td>
<td>23</td>
<td>19.17</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>
The data presented in Table 9 reported that about 37.50 per cent of the mango growers were in medium farmer group followed by 35.00, 19.17 and 8.33 per cent of them who had small, large marginal and size of land holding respectively. Thus it can be concluded that 72.50 per cent of the mango growers were small to medium size of land holding.

This result is in conformity with the findings of Jadav (2005).

6.1.6 Annual income

Higher income leads to high investment in farming and thus reduce technological gap. Multipurpose programme planning can only be possible when the finance is available on hand. It also helps on optimum and timely procurement of inputs for the adoption of technology. Keeping this in view, annual income of the respondents was studied and data are presented in Table 10 and diagrammatically depicted in Fig.9.

Table 10: Distribution of the mango growers according to their annual income

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Annual income</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Low (Up to Rs. 50000/-)</td>
<td>22</td>
<td>18.33</td>
</tr>
<tr>
<td>2.</td>
<td>Medium (Rs. 50,001 to 1,00,000/-)</td>
<td>56</td>
<td>46.67</td>
</tr>
<tr>
<td>3.</td>
<td>High (above Rs. 1,00,000/-)</td>
<td>42</td>
<td>35.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 10 shows that about 46.67 per cent of the mango growers were found with medium annual income, followed by 35.00 and 18.33 per cent with
Results and Discussion

high and low annual income respectively. Thus it can be concluded that a majority (81.67 per cent) of mango growers were medium to high level of annual income.

The probable reason might be that majority of mango growers had more than two occupations and engaged in other services also so they have medium to high level of annual income.

This finding is conformity with the findings of Jadav (2005).

6.1.7 Mango yield index

Mango yield index is defined as average fruit yield of mango growers compared with average fruit yield of 120 mango growers in terms of percentage. The data regarding mango yield index of the mango growers are presented in Table 11 and diagrammatically depicted in Fig. 10.

Table 11: Distribution of the mango growers according to their mango yield index

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Mango yield index</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Low</td>
<td>21</td>
<td>17.50</td>
</tr>
<tr>
<td>2.</td>
<td>Medium</td>
<td>80</td>
<td>66.67</td>
</tr>
<tr>
<td>3.</td>
<td>High</td>
<td>19</td>
<td>15.83</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100</td>
</tr>
</tbody>
</table>

The data presented in Table 11 clearly indicates that majority 66.67 per cent of the mango growers had medium mango yield index, followed by 17.50 per cent and 15.83 per cent of respondents had low and high mango yield index.

It can be concluded that majority 87.50 per cent of the mango growers had medium to high mango yield index.
The adoption of planting distance practice which helped mango growers to increase and maintain number of mango tree per acre, might be the reason for high mango yield index.

Similar findings were reported by Gorfad (1993) and Chothani (1999).

6.1.8 Experience as a mango grower

Knowledge, participation and decision making of mango growers might be influenced by the experience of the mango growers in mango cultivation. An experience helps in developing maturity and ability to face and adjust varied situations. The data regarding the experience of the mango growers were collected and are presented in Table 12 and diagrammatically depicted in Fig. 11.

Table 12: Distribution of mango growers according to their experience in mango cultivation n = 120

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Experience in mango cultivation</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Low (3 to 5 years)</td>
<td>24</td>
<td>20.00</td>
</tr>
<tr>
<td>2.</td>
<td>Medium (6 to 10 years)</td>
<td>96</td>
<td>80.00</td>
</tr>
<tr>
<td>3.</td>
<td>High (above 10 years)</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 12 shows that majority 80.00 per cent of the mango growers had medium level of experience in mango cultivation, while 20.00 per cent of them had low level of experience in mango cultivation respectively. It can be concluded that majority (80.00 per cent) of mango growers were found with medium level of experience in mango cultivation.
This finding if further strengthened by the result reported by Jadav (2005).

6.1.9 Scientific orientation

This is characterized by a belief in science and scientific approaches to solve the problems of farming. It is true that scientifically oriented farmers always inclined to use scientific methods in farming and have a favourable perception towards innovations. This leads the farmers to adopt improved farm practices. The data regarding scientific orientation of the mango growers are presented in Table 13 and diagrammatically depicted in Fig. 12.

**Table 13: Distribution of mango growers according to their scientific orientation**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Level of scientific orientation</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Low (below 12.37 score)</td>
<td>23</td>
<td>19.17</td>
</tr>
<tr>
<td>2.</td>
<td>Medium (between 12.37 to 18.88 score)</td>
<td>72</td>
<td>60.00</td>
</tr>
<tr>
<td>3.</td>
<td>High (above 18.88 score)</td>
<td>25</td>
<td>20.83</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Mean= 15.63  S.D. = 3.25

The result in Table 13 indicated that more than 60.00 per cent of the mango growers had medium level of scientific orientation. About 20.83 per cent of mango growers had high scientific orientation and rest 19.17 per cent had low scientific orientation. So it can be concluded that majority of mango growers had medium to high scientific orientation.

This might be due to good social participation, extension contact, mass media exposure and good literacy level.
This finding is in conformity with the findings as reported by Patel (2005), Patel (2006).

**6.1.10 Achievement motivation**

It is defined as the desire to excel in ones endeavour regardless of social position. The different categories of the mango growers in context with achievement motivation are stated in Table 14 and diagrammatically depicted in Fig. 13.

**Table 14: Distribution of mango growers according to their achievement motivation n = 120**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Level of Cosmopoliteness</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Low (less than 11.03score)</td>
<td>51</td>
<td>42.50</td>
</tr>
<tr>
<td>2.</td>
<td>Medium (between 11.03to 12.52score)</td>
<td>15</td>
<td>12.50</td>
</tr>
<tr>
<td>3.</td>
<td>High (greater than 12.52 score)</td>
<td>54</td>
<td>45.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Mean= 11.78  
S.D. = 0.75

Table 14 reveals that nearly 45.00 per cent respondents had high level of achievement motivation followed by low (42.50 per cent) and medium level (12.50 per cent) of achievement motivation.

From the above data, it can be concluded that majority respondents were having medium achievement motivation.

The ignorance of cultivators regarding the competition of mango crop, recognition, awards, prizes etc. for outstanding work for mango crop cultivation might be the probable reason for same.
The findings of Vyas (1995) were in conformity with this finding.

6.1.11 Risk orientation

Farming in general is characterized by many uncontrollable variables such as rainfall, pest and diseases, unpredictable price behaviors. Studies in the developed countries have shown that individuals vary in their willingness to take risk. Therefore, it was felt appropriate to study the risk-orientation of the farmers. Data in this regard are presented in Table 1 and diagrammatically depicted in Fig. 14.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Level of risk orientation</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Low (below 9.88 score)</td>
<td>29</td>
<td>24.17</td>
</tr>
<tr>
<td>2.</td>
<td>Medium (between 9.88 to 16.38 score)</td>
<td>63</td>
<td>52.50</td>
</tr>
<tr>
<td>3.</td>
<td>High (above 16.38 score)</td>
<td>28</td>
<td>23.33</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Mean = 13.13
S.D. = 3.25

It is evident from the data reported in Table 15 that more than 52.50 per cent of the mango growers had medium level of risk orientation, followed by low and high risk orientation with 24.17 per cent and 23.33 per cent, respectively. Thus it appears that majority of the mango growers had medium risk orientation due to their limited alternate sources of income in case of crop and take some assume calculation regarding yield, market facility, price etc.

This finding supported by Jadav (2005).
6.1.12 Extension participation

It is the extent of participation of the mango growers with extension agents to seek information on improved and modern scientific aspects of mango cultivation. To understand influence of this variable on the knowledge, attitude and managerial ability of the mango growers, information was collected. The mango growers were classified in three groups on the basis of their participation with extension agencies as shown in Table 16, and diagrammatically depicted in Fig. 15.

Table 16: Distribution of mango growers according to their participation with extension agency

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Level of participation with extension agency</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low extension participation (Below 2.23 score)</td>
<td>19</td>
<td>15.83</td>
</tr>
<tr>
<td>2</td>
<td>Medium extension participation (Between 2.23 to 6.97 score)</td>
<td>78</td>
<td>65.00</td>
</tr>
<tr>
<td>3</td>
<td>High extension participation (Above 6.97 score)</td>
<td>23</td>
<td>19.17</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Mean = 4.60  S. D. = 2.37

The data regarding extension participation are presented in Table 28 revealed that more than 65.00 per cent of the mango growers had medium extension participation, whereas 19.17 per cent and 15.83 per cent of them had high and low extension participation, respectively.

It can be inferred that majority of the mango orchard growers had medium level of extension participation.
The probable reason for this finding might be that the frequent contacts of mango orchard growers with extension functionaries encouraged them to participate more in extension activities.

This finding was in conformity with the findings of Chothani (1999).

6.1.13 Mass media exposure

The communication exposure helps people to gain general awareness as well as provides scientific and technical information and plays an important role to develop their performance in the occupations or economic activity in which they get involved which ultimately improves their socio-techno-economic standards. The information regarding mass media exposure was collected as the nature and frequency of respondent’s involvement in different mass media such as newspaper, radio, television and magazine. The respondents were classified into three categories as shown in Table 17 and diagrammatically depicted in Fig.16.

**Table 17: Distribution of mango growers according to their mass media exposure**  

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Level of mass media exposure</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low (less than 10.69 score)</td>
<td>24</td>
<td>20.00</td>
</tr>
<tr>
<td>2</td>
<td>Medium (between 12.54 to 19.00 score)</td>
<td>72</td>
<td>60.00</td>
</tr>
<tr>
<td>3</td>
<td>High (greater than 19.00 score)</td>
<td>24</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Mean = 14.84  
S. D. = 4.16

The data given in Table 17 indicated that more than 60.00 per cent of mango growers had medium exposure to mass media which was followed by 20.00 per cent had high and low exposure to mass media respectively.
The probable reason for this might be better economic condition and higher education level of mango growers leads them to use mass media.

This finding is in line with findings of Patel (2005) and Jadav (2005).

### 6.2 MANAGERIAL ABILITY OF THE MANGO GROWERS ABOUT SCIENTIFIC CULTIVATION OF MANGO ORCHARDS.

In order to measure the managerial ability of mango growers about scientific cultivation of mango orchard, the scale that constructed was applied to each mango grower. The complete response was received from each mango grower and the managerial ability index calculated. The final managerial ability index was determined by averaging the index from the respective mango growers.

The classification of respondents based on their managerial ability index is presented in Table 18 and diagrammatically in Fig 17.

**Table 18: Distribution of mango growers according to their managerial ability**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Level of managerial ability</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low (less than 50.21 score)</td>
<td>51</td>
<td>42.50</td>
</tr>
<tr>
<td>2</td>
<td>Medium (between 50.21 to 58.52 score)</td>
<td>25</td>
<td>20.83</td>
</tr>
<tr>
<td>3</td>
<td>High (greater than 58.52 score)</td>
<td>44</td>
<td>36.67</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Mean = 54.37

S. D. = 4.16

It can be seen from the Table 18 and fig 14 that about 42.50 per cent of mango growers were observed in the low managerial ability category,
while 36.67 per cent and 20.83 per cent of respondents fall under the category of high and medium managerial ability, respectively. Thus, the managerial ability of the respondents was predominantly medium.

It can be concluded from the above finding that the managerial ability of mango growers about scientific cultivation of mango orchard was low.

This may be due to the less education level, less training received on management aspects and having low level of farm inputs with majority of the mango growers.

The finding was in the conformity with the finding of that Patel and Patel (2000).

6.3 RELATIONSHIP BETWEEN PROFILE OF MANGO ORCHARD GROWERS AND THEIR MANAGERIAL ABILITY

The adoption or acceptance of recommended agricultural technology is a unit act but a complex process involving sequence and thought of action. The action of individual farmers is governed by personal, social, economical, psychological and communicational factors involved in situation. Some farmers adopt new agricultural technology more quickly than others because of the difference in personal characteristics.

Similarly, if there is difference in economic factors, process of action is changed, there by changing the pattern of adoption. Thus in nutshell it may be
stated that the adoption of recommended agricultural technology differs when there are difference in personal, social, economical, psychological and communicational characteristics of respondents. Hence considering the important of these characteristics and review of past research studies, an attempt has been made in this investigation to ascertain the relationship if any, between personal, social, economical psychological and communicational characteristics of the respondents and adoption of scientific cultivation of mango orchards. This was determined and tested with help of Karl Pearson’s coefficient correlation test and results obtained is presented in Table 19 with Fig. 18 and the empirical model is depicted in Fig.19.

**Table 19: Relationship between the profile of mango orchard growers and their managerial ability**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Independent Variables</th>
<th>Correlation-Coefficient (‘r’ value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>0.0589 (NS)</td>
</tr>
<tr>
<td>2</td>
<td>Education</td>
<td>0.3487**</td>
</tr>
<tr>
<td>3</td>
<td>Size of family</td>
<td>0.0418 (NS)</td>
</tr>
<tr>
<td>4</td>
<td>Social participation</td>
<td>0.2375**</td>
</tr>
<tr>
<td>5</td>
<td>Size of Land holding</td>
<td>0.4543**</td>
</tr>
<tr>
<td>6</td>
<td>Annual income</td>
<td>0.7830**</td>
</tr>
<tr>
<td>7</td>
<td>Mango yield index</td>
<td>0.2590</td>
</tr>
<tr>
<td>8</td>
<td>Experience as a mango grower</td>
<td>0.3404**</td>
</tr>
<tr>
<td>9</td>
<td>Scientific orientation</td>
<td>0.2912**</td>
</tr>
<tr>
<td>10</td>
<td>Achievement motivation</td>
<td>0.5309**</td>
</tr>
</tbody>
</table>
### Results and Discussion

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Risk orientation</td>
<td>0.7120**</td>
</tr>
<tr>
<td>12</td>
<td>Extension participation</td>
<td>0.2742**</td>
</tr>
<tr>
<td>13</td>
<td>Mass media exposure</td>
<td>0.2857**</td>
</tr>
</tbody>
</table>

NS = non significant at 0.05 level  
* = significant at 0.05 level  
** = significant at 0.01 level

#### 6.3.1 Age and managerial ability

It is apparent from the data presented in the Table 19 and graphically depicted in Fig. 15. that age had positive and non-significant correlation (r = 0.0589NS) with the managerial ability of mango growers towards scientific cultivation in mango orchards. Thus, the null hypothesis (H.) that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their age.” was accepted.

Positive correlation was found in case of age it might be due to that the old aged farmers were traditional they did not want change and not taking any risk.

This findings is in the line with result of Jadav (2005).

#### 6.3.2 Education and managerial ability

The data presented in Table: 19 and graphically depicted in Fig.15 reflect that managerial ability of the mango growers regarding scientific cultivation of mango orchards had positive and highly significant (r= 0.3487**) correlation with their level of education.
Thus the null hypothesis (H₂) that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their education.” was rejected.

It might be due to education play an important role in influencing the adoption of new technology by mango growers.

This finding has been supported by findings of Jadav (2005).

6.3.3 **Size of family and managerial ability**

As reveal from data presented in Table 19 and graphically depicted in Fig.15 that there was positive and non-significant association \( r = 0.0418 \) NS between size of family and managerial ability of mango growers.

This shows that size of family is not an important variable which influence level of mango growers regarding scientific cultivation of mango orchards. Thus, the null hypothesis (H₃) that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their size of family.” is accepted.

This might be due to that in large size family, decision for adoption of new technology was taken jointly and it tooks some time, and adoption level found low in the case of size of family but it was up to the mark.

This finding supported to findings of Patel (2005).
6.3.4 Social participation and managerial ability

The data presented in Table 19 and graphically depicted in Fig.15 clearly indicate that social participation by the mango growers had positive and highly significant correlation ($r = 0.2375^{**}$) with their level of managerial ability.

Thus, the null hypothesis (H<sub>4</sub>) that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their social participation.” is rejected.

This indicates that social participation influence the adoption of recommended production technology of mango as it provide an opportunity to an individual to interact in a organizational way which resulted in acquisition of knowledge and are likely to receive clues from other people that would serve, as further, reinforce supporting the concept of an innovation which motivate them for adoption.

This finding is supported by the findings of Patel and Patel (2000).

6.3.5 Size of land holding and managerial ability

The data presented in Table 19 and graphically depicted in Fig.15 clearly indicate that size of land holding of the mango growers had positive and highly significant association ($r = 0.4543^{**}$) with their level of managerial ability.

Thus, the null hypothesis (H<sub>5</sub>) that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their size of land holding.” is rejected.
Thus the study established the fact that size of land holding had influence on adoption level of mango cultivation. Majority of the mango growers are small and medium farmers with good education, experience and extension contact might be the proper reason for significant association with adoption.

The finding derives support from the findings of Patel and Patel (2005).

**6.3.6 Annual income and managerial ability**

It is apparent from the data presented in the Table 19 and graphically depicted in Fig.15. that annual income of the mango growers had positive and highly significant correlation ($r = 0.7830^{**}$) with their level of managerial ability. Thus the null hypothesis ($H_6$) entitle “There is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their annual income.” is rejected.

The probable reason might be sufficient income for purchasing equipment, manure, fertilizer, insecticides, weedicides etc. which leads them to adopt new mango technology.

This finding supported by the findings of Jadav (2005).

**6.3.7 Mango yield index and managerial ability**

It is apparent from the data presented in the Table 19 and graphically depicted in Fig.15. that mango yield index of the mango growers had positive and significant correlation ($r = 0.2590$) with their level of managerial ability. Thus, the null hypothesis ($H_7$) that “there is no relationship between mango growers
managerial ability about scientific cultivation of mango orchard and their mango yield index.” was rejected.

The probable reason could be that the farmers had higher mango yield index will have more annual income / ha., which led to more exposure to mass media and suitable purchasing of suitable farm inputs resulted in improving managerial ability of mango orchard.

This result similar of finding reported by Jadav (2005).

6.3.8 Experience as a mango grower and managerial ability

As reveal from data presented in Table 19 and graphically depicted in Fig.15. that there was positive and highly significant relationship ($r = 0.3404^{**}$) between experience in mango cultivation and level of managerial ability. Thus the null hypothesis ($H_8$) that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their expérience as a mango growers.” was rejected.

It can be inferred that there is no influence of experience on adoption of recommended production technology pertaining to mango cultivation. The probable reason could be that the medium to high experience leads the farmers to avoid risk of new technology and age is directly related with experience and dominancy of other situational and environmental factors complied the experience with recessive in decision making process.

This finding supported by the findings of Jadav (2005).
6.3.9 Scientific orientation and managerial ability

It is apparent from the data presented in Table 19 and graphically depicted in Fig. 15, that scientific orientation of the mango growers had positive and highly significant correlation \((r = 0.2912**)\) with their managerial ability which indicate that scientific orientation had positive influence on adoption of mango production technology. Thus, the null hypothesis \((H_9)\) that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their scientific orientation.” is rejected.

The probable reason might be that scientific orientation opened the mental horizon which acted as a catalyst in changing behavior of the mango growers, which would have resulted into its significant influence on adoption of recommended production technology of mango.

This finding is in conformity with the findings of Nagaraja (1989).

6.3.10 Achievement motivation and managerial ability

It is apparent from the data presented in Table 19 and graphically depicted in Fig. 15, that scientific orientation of the mango growers had positive and highly significant correlation \((r = 0.5309**)\) with their level of managerial ability.

Thus, the null hypothesis \((H_{10})\) that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their achievement motivation”. is rejected.

This finding is in conformity with the findings of Nagaraja (1989).
Results and Discussion

6.3.11 Risk orientation and managerial ability

The data presented in Table 19 and graphically depicted in Fig.15 clearly indicate that risk orientation of the mango growers had positive and highly significant correlation ($r = 0.7120^{**}$) with their level of managerial ability. This result provides sufficient ground to reject the null hypothesis ($H_{11}$) entitle “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their risk orientation.”

From the above findings, it can be inferred that the farmers with higher levels of risk orientation would be much ahead of other in exploiting the potentiality of technology availed which enforced them to take decision to adopt an innovation resulted in its influence on adoption level of mango growers.

This finding is in line with the findings of Jadav (2005).

6.3.12 Extension participation and managerial ability

The data presented in Table 19 and graphically depicted in Fig.15 clearly indicate that extension participation of the mango growers had positive and highly significant correlation ($r = 0.2742^{**}$) with their level managerial ability. This result provides sufficient ground to reject the null hypothesis ($H_{12}$) entitle that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their extension participation” is rejected.
The probable reason for positive and highly significant association between extension participation and adoption level may be due to interaction between extension personnel with mango growers pertaining to recommended scientific cultivation of mango orchards which can have cleared their doubts about recommended technology and thus helped increase its adoption.

This finding is in conformity with the findings of Nagaraja (1989).

6.3.13 Mass media exposure and managerial ability

The data presented in Table 19 and graphically depicted in Fig.15 clearly indicate that mass media exposure of the mango growers had positive and highly significant correlation (r = 0.2857**) with level of managerial ability. This result provides sufficient ground to reject the null hypothesis (H13) entitle that “there is no relationship between mango growers managerial ability about scientific cultivation of mango orchard and their mass media exposure.”

The reason for the above may be that greater contact with larger society via mass media exposure seemed to be association with higher adoption of recommended technology of mango.

This finding is in conformity with the findings of Nagaraja (1989).
6.4 CONSTRAINTS FACED BY MANGO GROWERS IN SCIENTIFIC CULTIVATION OF MANGO ORCHARDS.

Table 20: Constraints faced by mango growers in scientific cultivation of mango orchards.

<table>
<thead>
<tr>
<th>SR. No.</th>
<th>Constraints</th>
<th>Number</th>
<th>Per cent</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Irregular irrigation supply</td>
<td>72</td>
<td>60.00</td>
<td>I</td>
</tr>
<tr>
<td>2.</td>
<td>Lack of awareness about recommendations.</td>
<td>70</td>
<td>58.34</td>
<td>II</td>
</tr>
<tr>
<td>3.</td>
<td>Lack of modern spraying equipment</td>
<td>65</td>
<td>54.16</td>
<td>III</td>
</tr>
<tr>
<td>4.</td>
<td>High price of fertilizers</td>
<td>62</td>
<td>51.66</td>
<td>IV</td>
</tr>
<tr>
<td>5.</td>
<td>Natural hazards</td>
<td>61</td>
<td>50.84</td>
<td>V</td>
</tr>
<tr>
<td>6.</td>
<td>Lack of grafts.</td>
<td>58</td>
<td>48.34</td>
<td>VI</td>
</tr>
<tr>
<td>7.</td>
<td>Lack of improved agricultural implement.</td>
<td>56</td>
<td>46.66</td>
<td>VII</td>
</tr>
<tr>
<td>8.</td>
<td>Lack of labours.</td>
<td>54</td>
<td>45.00</td>
<td>VIII</td>
</tr>
<tr>
<td>9.</td>
<td>Lack of pesticides.</td>
<td>50</td>
<td>41.66</td>
<td>IX</td>
</tr>
<tr>
<td>10.</td>
<td>Lack of electricity supply.</td>
<td>48</td>
<td>40.00</td>
<td>X</td>
</tr>
<tr>
<td>11.</td>
<td>High price of pesticides.</td>
<td>35</td>
<td>29.16</td>
<td>XI</td>
</tr>
<tr>
<td>12.</td>
<td>Lack of technical suggestions</td>
<td>21</td>
<td>17.50</td>
<td>XII</td>
</tr>
</tbody>
</table>

n = 120

Constraints in adoption of new technology never end. However they can be minimized. The respondents were requested to express the constraints faced by them in scientific cultivation of mango orchard. Frequency and percentage for each constraint were calculated and on that basis of that, the constraints were ranked and presented in Table 20.
As seen from the table major constraints faced by mango growers are irregular irrigation supply (60.00 per cent), lack of awareness about recommendations (58.34 per cent), lack of modern spraying equipment (54.16 per cent), high price of fertilizers (51.66 per cent), natural hazards (50.84 per cent), lack of grafts (48.34 per cent), lack of improved agricultural implement (46.66 per cent), lack of labours (45.00 per cent), lack of effective pesticides (41.66 per cent), lack of electricity supply (40.00 per cent), high price of pesticides (29.16 per cent) and lack of technical suggestions (17.50 per cent).

6.5 SUGGESTIONS MADE BY MANGO GROWERS TO OVERCOME THE CONSTRAINTS FACED BY THEM

An attempt was also made to ascertain suggestions from mango growers to overcome various constraints faced by them in scientific cultivation of mango orchards. The respondents were requested to offer their valuable suggestion against difficulties faced by them in the scientific cultivation of mango orchard. The data were collected and summarized in Table 21.
Valuable suggestions given by mango growers are presented in Table 23. It can be concluded from the Table 23 that the mango growers suggested irrigation supply should be available (52.50 per cent), technical suggestions should be available (50.83 per cent), labour should be available timely (48.33 per cent), pesticides should be easily available (46.67 per cent), electricity supply should be regularly available (43.33 per cent), price of pesticides should be low (39.17 per cent), training must be arranged regarding mango orchards (38.33 per cent),
government should provide loans or subsidy for purchasing farming implements (27.50 per cent) and modern farming implements should be available (16.67 per cent).

It can be concluded that major suggestions given by mango growers are: Irrigation supply should be available, Technical suggestions should be given, Labour should be available timely, Pesticides should be easily available and electricity supply should be regularly available.
V. SUMMARY AND CONCLUSION

This chapter includes in a nutshell classification of summary, conclusion, problems and suggestions of the study for further research.

5.1. SUMMARY

All the enterprises are basically interested in increasing the productivity. Agriculture being an enterprise is not an exception to this. The farmers as the manager of the enterprise are expected to bring about maximum profit with available resources. Irrespective of the economic, social, cultural, physical and technological environment, the farmers manage a production system to get a return from it, consciously or unconsciously.

Every country feels today an inclination and indispensability for the economic recovery and socio-economic development of its masses. Indian agricultural enterprise sector is vast and has continued to be the backbone of our economy, where about 65.00 per cent of the population depends upon this enterprise supports 70.00 per cent of the country’s population, which contributes 30.00 to 35.00 per cent of GDP (Gross Domestic Production) and generates about 20.00 per cent of export earnings (Singhal, 2003). It provides employment for approximately 62.00 per cent of the work force (NHB, 2008). It also provides fruits to about 960 million population and raw material to several industries. Fifty years of Indian agriculture is a history of begging bowl image (food deficit) to green revolution and then to self-sufficiency and now exporting fruits. The various
revolutions such as Green, White, Blue, Yellow, Brown and Red are the most striking success stories of the post independence era.

Gujarat is one of the mango producing states in India. Mango has an important place among all the fruit crops growing in the state. The leading mango producing states are Andhra Pradesh, Maharashtra, Uttar Pradesh, Karnataka and Gujarat. (plain). The yield of mango in U.P and Karnataka is 12.2 and 10.1 metric tonnes/ha, respectively. While in Gujarat state, yield of mango is only 8.5 metric tonnes/ha which is quite low as compared to other states of the country. The area under mango in Panchamahal district was 3552 ha. and the yield was 592 metric tonnes/ha(NHB database, 2008) Management, for the purpose of the present study, has been defined as the process by which the farmer is able to enhance return from the farm on a sustained basis for the attainment of family goals. Effective management is crucial for obtaining high return from a production system on a sustained basis. It is essential that the farmers and extension workers are made aware of the need for developing the managerial ability of the farmers.

Considering the above a study entitled “MANAGERIAL ABILITY OF MANGO GROWERS TOWARDS SCIENTIFIC CULTIVATION IN MANGO ORCHARDS” was under taken with following objectives.

5.1 OBJECTIVES OF THE STUDY

1. To study the selected profile of the respondents.

2. To study the managerial ability of the mango growers about scientific cultivation of mango orchards.
3. To study the relationship between profile of mango orchard growers and their managerial ability.

4. To study the constraints faced by mango growers in adoption of scientific mango cultivation practices.

5. To seek the suggestions to overcome the existing constraints in adoption of scientific mango cultivation practices.

5.2 REVIEW OF LITERATURE

A brief account of literature reviewed were presented under five heads viz., selected profile of mango growers, managerial ability of the mango growers about scientific cultivation of mango orchards, relationship between selected characteristics of mango growers and managerial ability of the mango growers about scientific cultivation of mango orchards, constraints faced by mango growers in scientific cultivation of mango orchards and suggestions made by the mango growers to overcome constraints faced by them.

5.3 METHODOLOGY

Panchamahal district, where the researcher study was chosen for the study. Halol, Lunavada, Santrampur and Ghogamba talukas were purposively selected for the study as they have the maximum area under mango crop. Twelve mango growing villages were randomly selected from those four talukas. For this study 120 mango growers were selected by proportionate random sampling. Total 120 mango growers were considered as a sample and as respondents. To know the various characteristics of mango growers a scale developed by Pareek and Trivedi
(1963) was used with some modifications. A measurement of managerial ability was done by using scale developed by Jadav (2005) with slight modification. The data were collected with the help of well-structured, pre-tested, Gujarati version interview scheduled through personal contact and data were compiled, tabulated and analyzed to get proper answers for objectives of the study. A simple ranking technique was applied to measure the constraints faced by mango growers. The statistical tools used were percentage, mean score, standard deviation and coefficient of correlation value.

5.4 MAJOR FINDINGS AND CONCLUSIONS

The important findings of the study are summarized as below:

5.4.1 Profile of mango growers

1. More than 61.67 per cent of the mango growers were found in the middle age group, followed by 21.67 per cent in old age group and rest 16.66 per cent of mango growers in young age group.

2. About 43.33 per cent of the mango growers had education level up to primary level of education, followed by 40.00 per cent, 7.50 per cent and 2.50 per cent of them had secondary, higher secondary, college level of education respectively.

3. More than 60.83 per cent of mango growers were found in large size of family and rest 39.17 per cent of mango growers had small size of family.
4. About 46.67 per cent of the mango growers had membership in one organization followed by 24.16 per cent had no membership in any organization, 21.67 per cent had membership in more than one organization. Very few i.e. 7.50 per cent of mango growers were in holding position.

5. About 37.50 per cent of the mango growers were in medium farmer group followed by 35.00, 19.17 and 8.33 per cent of them who had small, large marginal and size of land holding respectively.

6. About 46.67 per cent of the mango growers were found with medium annual income, followed by 35.00 and 18.33 per cent with high and low annual income respectively.

7. Majority (66.67 per cent) of the mango growers had medium mango yield index, followed by 17.50 per cent and 15.83 per cent of respondents had low and high mango yield index.

8. Majority (80.00) per cent of the mango growers had medium level of experience in mango cultivation, while 20.00 per cent of them had low level of experience in mango cultivation respectively.

9. More than 60.00 per cent of the mango growers had medium level of scientific orientation. About 20.83 per cent of mango growers had high scientific orientation and rest 19.17 per cent had low scientific orientation.
10. Nearly 45.00 per cent respondents had high level of achievement motivation followed by low 42.50 per cent and medium level 12.50 per cent of achievement motivation.

11. More than 52.50 per cent of the mango growers had medium level of risk orientation, followed by low and high risk orientation with 24.17 per cent and 23.33 per cent, respectively.

12. More than 65.00 per cent of the mango growers had medium extension participation, whereas 19.17 per cent and 15.83 per cent of them had high and low extension participation, respectively.

13. More than 60.00 per cent of mango growers had medium exposure to mass media which was followed by 20.00 per cent had high and low exposure to mass media respectively

5.4.2 Managerial ability of the mango growers about scientific cultivation of mango orchards.

About 42.50 per cent of mango growers were observed in the low managerial ability category, while 36.67 per cent and 20.83 per cent of respondents fall under the category of high and medium managerial ability, respectively.

5.4.3 Relationship between profile of mango orchard growers and their managerial ability

The independent variables like, education, social participation, size of land holding, annual income, mango yield index, experience as a mango grower,
scientific orientation, achievement motivation, risk orientation, extension participation and mass media exposure had positive and highly significant correlation with managerial ability towards scientific cultivation in mango orchards. The variable like age and size of family shows non-significant relationship with managerial ability towards scientific cultivation in mango orchards.

5.4.4 Constraints faced by mango growers in scientific cultivation of mango orchards.

Major constraints faced by mango growers are irregular irrigation supply, lack of awareness about recommendations, lack of modern spraying equipment, high price of fertilizers, natural hazards, lack of grafts, lack of improved agricultural implement, lack oflabours, lack of effective pesticides, lack of electricity supply, high price of pesticides and lack of technical suggestions.

5.4.5 Suggestion given by the mango growers to overcome constraints faced by them

Major suggestions given by mango growers that irrigation supply should be available, technical suggestions should be available, labour should be available timely, pesticides should be easily available, electricity supply should be regularly available, price of pesticides should be low, training should be arranged regarding mango orchards, government should provide loans or subsidy for purchasing farming implements and modern farming implements should be available.
5.5 CONCLUSIONS:

Majority of the mango growers were in the middle age group having more than five family member and small to medium size of land holding.

Majority of the mango growers were primary and secondary level of education and found with medium to high annual income. Majority of the mango growers had high level of achievement motivation. Majority of the mango growers had medium level of mango yield index, scientific orientation, experience as a mango grower, risk orientation, extension participation and mass media exposure.

Out of thirteen independent variables, eleven variables were positive and highly significantly correlated with managerial ability of mango growers towards scientific cultivation in mango orchards viz., education, social participation, size of land holding, annual income, mango yield index, experience as a mango grower, scientific orientation, achievement motivation, risk orientation, extension participation and mass media exposure. Rest of independents variable were positively and non-significantly correlated with the managerial ability of mango growers towards scientific cultivation in mango orchard viz. age and size of family.

Irregular irrigation supply, lack of awareness about recommendations, lack of modern spraying equipment, high price of fertilizers, natural hazards, lack of grafts, lack of improved agricultural implement, lack of labours, lack of effective pesticides, lack of electricity supply, high price of pesticides and lack of technical suggestions were the major constraints faced by mango growers.
Irrigation supply should be available, technical suggestions should be available, labour must be available timely, pesticides should be easily available, electricity supply should be regularly available, price of pesticides should be low, training must be arranged regarding mango orchards, government should provide loans or subsidy for purchasing farming implements and modern farming implements should be available were the major suggestions as pointed out by the mango growers to overcome constraints faced by them in scientific cultivation of mango orchards.

5.6 IMPLICATIONS:

Based on the findings of the study one can safely recommend following implications:

The study facilitate in knowing the characteristic of the mango growers and it would help to serve as guideline for policy makers, planners and extension workers to implement such type of study.

The findings of this study reveal that majority of the mango growers were of middle age and primary level of education that have vital role in managerial ability of mango growers towards scientific cultivation in mango orchards. Hence, such type of mango growers should be approached in accelerating the managerial ability of mango growers towards scientific cultivation in mango orchards.

The farmer's background factors that influence the managerial ability must be reckoned within any programme of rural development. The finding
indicated that education and annual income were the prominent variable influencing the managerial ability of mango growers towards scientific cultivation in mango orchards. Therefore extension workers should concentrate to increase the level of education and annual income for promotion of managerial ability of mango growers towards scientific cultivation in mango orchards.

Subject Matter Specialists, Agricultural Extension Officers should visit the village and guide them to solve the problem of the mango growers in accordance with resources availed with mango growers and to sustained their credibility.

5.7 SUGGESTIONS FOR FUTURE RESEARCH

It is true that findings of single study are not adequate to make any generalizations. Therefore, it is necessary to replicate this study in other parts of talukas, districts and state, where such conditions are prevailing. The suggestions are:

1. Case studies of most successful and failure mango growers should specially be undertaken.

2. The research area should be extended further and sufficiently large number of mango growers should be studied to draw valid and general conclusions.

3. Some farmer's back ground factors other than those influencing the managerial ability of mango growers towards scientific cultivation in mango orchards should be identified and should be included in the study to be conducted in future.


NHB -database, 2008


APPENDIX

Managerial Ability of Mango Growers about Scientific Cultivation of Mango Orchard in Panchmahal district

Interview Schedule No. : ___________________  Date: ______________
Name of Respondent: ____________________________________________
Name of Village: __________________  Taluka: ___________________

PART – I

CHARACTERISTICS OF MANGO GROWER
Note: Please put (✓) marks where it is applicable.

1.  Age: ________________Years

2.  Education Qualification:
   (i.)  Illiterate         (   )
   (ii.) Primary          (   )
   (iii.) Secondary       (   )
   (iv.) Higher Secondary (   )
   (v.)  Graduate and above (   )

3.  Size of family : __________

4.  Social Participation:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Organization</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Member</td>
</tr>
<tr>
<td>a.</td>
<td>Gram Panchayat</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Taluka Panchayat</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Jilla Panchayat</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>Service Co-operative Society</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>Milk Co-op. Society</td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>Other organization</td>
<td></td>
</tr>
</tbody>
</table>
5. **Size of land holding:**
   - Total Land _______________ ha
   - i.) Irrigated Land _____________ ha
   - ii.) Unirrigated Land _______ ha

6. **Total annual Income:** Rs. __________________

7. **Mango yield index**
   
a) What is the yield of mango on your farm during normal year…………..q/ha

b) What was the maximum yield of mango on your farm……………………q/ha

8. **Experience as a Mango grower** (years): __________

9. **Scientific Orientation:**

   Please state the degree of your agreement by putting tick mark (√) against each of them on five scale:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>UD</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Scientific methods of in mango cultivation always confuse me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Quality fruit production is possible through use of science.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Profitable mango production is possible through Scientific technique</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Application of scientific methods in mango cultivation is wastage of time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>I like to prefer Scientific techniques of mango cultivation production.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   SA = Strongly Agree,  A = Agree,  UD = Un Decided,  D=Disagree,  SD = Strongly Disagree
10. Achievement motivation:
Please indicate your response for following statements related to your achievement motivation by putting a tick against each statement.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>One should work like a slave until he is satisfied with result</td>
</tr>
<tr>
<td>2</td>
<td>One should have determination and driving ambition to achieve certain things in his life even if these qualities make one unpopular</td>
</tr>
<tr>
<td>3</td>
<td>Work should come first, even if one can’t get rest in order to achieve one’s goal</td>
</tr>
<tr>
<td>4</td>
<td>Even when one’s own interest is in danger he should concentrate on his job and forget his obligations to other</td>
</tr>
<tr>
<td>5</td>
<td>One should set difficult goals for oneself and try to reach them</td>
</tr>
</tbody>
</table>

A= Agree, UD= Undecided, DA= Disagree

11 Risk Orientation:
Please state the degree of your agreement by putting tick mark (√) against each of them.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am confident on my ability to take challenges for any type of risk in agriculture.</td>
</tr>
<tr>
<td>2</td>
<td>I don’t like to take any risk to adopt new methods in mango cultivation</td>
</tr>
<tr>
<td>3</td>
<td>I am ready to bear risk for higher yield in mango cultivation</td>
</tr>
<tr>
<td>4</td>
<td>I like to take challenge in adopting costly methods in mango cultivation</td>
</tr>
<tr>
<td>5</td>
<td>I like but for follow only those methods which are successfully accepted by other.</td>
</tr>
</tbody>
</table>
SA = Strongly Agree, A = Agree, UD = Un Decided, D = Disagree, SD = Strongly Disagree

12. **Extension participation:**
Have you participated in any of the following extension activities during the last year? Yes / no

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Activities</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conducted demonstration on my farm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Had discussion with extension workers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Participated in field day on farmers field</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Participated in extension meeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>See demonstration plot of my neighbour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Participated in Krishimela / Farmers day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Visit to agricultural exhibition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Had read extension publication</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. **Mass Media exposure:**
Please indicate the frequency of your use of following mass media.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Media</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Always</td>
</tr>
<tr>
<td>1.</td>
<td>Radio</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Television</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>News Paper</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Farm Magazine</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Exhibition</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Krishimela</td>
<td></td>
</tr>
</tbody>
</table>
PART – II

MANAGERIAL ABILITY OF MANGO GROWERS

1. Knowledge of scientific practices

1) When organic manure is mixed with soil and filled in the pit?
   i). Before monsoon ( )
   ii). Winter ( )
   iii). After monsoon ( )

2) How much planting distance is kept for medium spreading mango variety in less fertile soil?
   i) 10m X 10 m ( )
   ii) 12m X 12 m ( )
   iii) 15m X 15 m ( )

3) What is the recommendation for keeping graft union above the ground level?
   i) 15cm to 20cm ( )
   ii) 21cm to 25cm ( )
   iii) 26 cm to 30 cm ( )

4) How many intercultural operations are recommended in mango orchard in one year?
   i) 3 ( )
   ii) 4 ( )
   iii) 5 ( )

5) When newly planted graft plants should be irrigated in Winter and summer?
   i) Winter 7 to 10, 10 to 13, 13 to 17 ( )
   ii) Summer 4 to 7, 7 to 9, 9 to 12 ( )

6) Green manuring improves physical condition and soil fertility of mango orchard.
   i) Yes ( )
   ii) No ( )

7) During which stage the fruit dropping causes maximum reduction in mango production?
   i) Sorghum sized fruits ( )
   ii) Pepper sized fruits ( )
   iii) Areca nut sized fruits ( )

8) Which type of graft of mango is recommended for the Gujarat
state?
  i) Inarching
  ii) Nutan grafting
9) What should be the size of pit for mango planting?
  i) 60 X 60 X 60
  ii) 50 X 50 X 50
  iii) 70 X 70 X 70
10) Which pest caused fruit dropping?
  i) Fruit fly
  ii) Mealy bug
  iii) Mango hopper

2. Planning in mango orchard

(a) What are the objectives in planning for management of mango orchard?
  i) To get more income per year
  ii) To maximize overall production of orchard
  iii) To minimize the total cost

b) Which types of forecast are made in relation to mango orchard?
  i) About rainfall
  ii) About the natural calamity
  iii) About outbreak of disease and pest

c) On which basis you decide the future plan for mango orchard?
  i) Based on commodities prices /market
  ii) Based on number of bearing mango tree
  iii) Based on resources available

d) Which points do you consider while planning for management of mango orchard?
  i) Recommendation of mango production technology (GAU)
  ii) Past experience
  iii) Availability of capital
  iv) Availability of resources

e) What are the main strategies while planning for the management of mango orchard?
  i) Adopting /including new recommended mango practices
  ii) To adopt new variety
  iii) Value addition
  iv) Marketing
  v) As usual
f) Do you planning about the amount of seed, fertilizer and plant 
protection chemicals needed for cultivation of mango orchard?
   i) Always ( )
   ii) Rarely ( )
   iii) Never ( )

g) To whom you consult while planning?
   i) Agricultural expert ( )
   ii) Gram Sevak ( )
   iii) Progressive mango orchard growers ( )
   iv) Family member ( )
   v) Not any one ( )

h) Do you think that planning in mango orchard increase the 
yield?
   i) Always ( )
   ii) Rarely ( )
   iii) Never ( )

3. Organizing the activities

a) How do you carry out the activities in mango orchard?
   i) Based on the imp of work ( )
   ii) Based on information given by different people ( )
   iii) Based on past experience ( )

b) Do you always group the various farming operations to achieve 
the goal?
   i) Always ( )
   ii) Rarely ( )
   iii) Never ( )

4. Supervision in mango orchard

a) How do you supervise the activities in your orchard?
   i) With personal interest ( )
   ii) Indirect supervision ( )
   iii) No interest at all ( )

b) What are the new innovations to incorporate in you mango 
orchard?
   i) Recommendation regarding the new cultural practices ( )
   ii) Use of growth regulators ( )
   iii) Recommendation of new pesticides ( )
   iv) Recommendation about intercropping ( )

c) Do you supervise your orchard with right intensity?
   i) Always ( )
   ii) Rarely ( )
   iii) Never ( )
Appendix

d) To whom do you consult while taking the decision?
   i) Consult other in the family
   ii) Consult the progressive mango orchard grower
   iv) Discussion with labour

e) Do you assess the information regarding orchard?
   i) Always
   ii) Rarely
   iii) Never

g) Do you think that year wise is necessary in management of mango orchard?
   i) Always
   ii) Rarely
   iii) Never

h) Do you always supervise the irrigation of your mango orchard?
   i) Always
   ii) Rarely
   iii) Never

i) Do you keep watch for nutrient deficiency in your mango orchard?
   i) Always
   ii) Rarely
   iii) Never

j) Do you keep watch on insect/pest and disease attack on your mango orchard?
   i) Always
   ii) Rarely
   iii) Never

k) Do you supervise spraying operations in your mango orchard?
   i) Always
   ii) Rarely
   iii) Never

5. Budgeting

a) What provision have you made for budget?
   i) By own sources
   ii) Relative and friends
   iii) Loan from bank/co-operative society
   iv) Money Lander
   v) Not decided anything
b) While planning the budget, which of the following items you give priority?
   i) Priority to inputs i.e. chemical ferti., pesticides, insecticides, fungicides
   ii) Priority to irrigation
   iii) Priority to post harvest management

c) Which criteria will you choose for budget?
   i) Minimize the budget
   ii) As per the past budget
   iii) Budget is more than previous year

6. Coordination the activities

a) Do you give equal weightage to the all activities?
   i) Always
   ii) Rarely
   iii) Never

b) Which activities do you perform well in advance?
   i) Application manure and fertilizer
   ii) Cleaning the orchard
   iii) Irrigation

c) Are you able to get all diversified interest for effective management of mango orchard?
   i) Always
   ii) Rarely
   iii) Never

d) Do you set a calendar for various operations?
   i) Always
   ii) Sometimes
   iii) Never

7. Communication

a) Do you give clear cut instructions to the labour regarding the care of mango tree: i.e. timely irrigation, digging of pits etc
   i) Always
   ii) Sometimes
   iii) never

b) Do you consult to other the problems which are faced by you in management of mango orchard?
   i) Always
   ii) Sometimes
   iii) never

c) Do you hear the suggestion from other i.e. family member labour, and other orchard growers?
   i) Always
   ii) Sometimes
8. Controlling

a) What type of labour do you prefer?
   i) Skilled
   ii) Semi skilled
   iii) Unskilled

b) Do you maintain various records pertaining to mango orchard operations?
   1) If yes, what types of records?
   2) If No

C) How do you pay the wages to labour working under you
   i) As per the govt. Approved rates
   ii) As per the rate commonly followed in village
   iii) Minimum

d) Do you have equipment/implement on hire?
   i) Always
   ii) Rarely
   iii) Never

9. Decision making

a) Do you always take decision at proper time?
   i) Always
   ii) Rarely
   iii) Never

b) Do you always apply technical competency in making decision?
   i) Always
   ii) Rarely
   iii) Never

c) To whom will you discuss, while taking important decision?
   i) Family member
   ii) Other orchard growers
   iii) Labour

d) Do you always implement the decision?
   i) Always
   ii) Rarely
   iii) Never

e) Do you take decision always free from bias?
   i) Always
   ii) Rarely
   iii) Never

10. Human relationship

a) Do you prefer contacting people personally?
   i) Always
b) Do you recognize and appreciate the work done by people working under you?
   i) Always ( )
   ii) Rarely ( )
   iii) Never ( )

c) Do you try to know the habit of the people working under you?
   ii) Always ( )
   (ii) Rarely ( )
   iii) Never ( )

d) Do you listen the suggestions given by people working under you?
   i) Always ( )
   ii) Rarely ( )
   iii) Never ( )

e) During the act of listening, do you avoid undesirable arguments?
   i) Always ( )
   ii) Rarely ( )
   iii) Never ( )

f) Do you cooperate the person working under you?
   i) Always ( )
   ii) Rarely ( )
   iii) Never ( )
PART – III

CONSTRAINTS FACED BY MANGO GROWERS IN SCIENTIFIC CULTIVATION OF MANGO ORCHARD PRACTICES.

1.
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3.
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9.

SUGGESTIONS GIVEN BY MANGO GROWERS TO OVERCOME THE CONSTRAINTS FACED BY THEM.

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7.
8.
9.
Fig. 19: Empirical model showing influence of independent variables on dependent variable
Fig: 2 Map of Gujarat state showing Panchamahal District selected for the study
I. Ghogamba Taluka: (1) Chelawada (2) Rechiya (3) Ghogamba
II. Halol Taluka: (4) Bedhiya (5) Veroj (6) Baska
III. Lunavada Taluka: (7) Vardhari (8) Kaliyakuva (9) Dhamaniya
IV. Santrampur Taluka: (10) Sanbar (11) Rail (12) Umber

Fig: 3 Map of Panchamahal District showing selected talukas and Villages for the study.