“IMPACT OF KRISHI VIGYAN KENDRA, DEVATAJ ON THE FARMERS OF ANAND DISTRICT”

BY

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ANAND-388 110 (GUJARAT, INDIA)

2008

(Reg. No: 04- 0300 - 2006)

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A

THESIS

SUBMITTED TO THE

ANAND AGRICULTURAL UNIVERSITY

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE AWARD OF THE DEGREE

OF

Master of Science

(AGRICULTURE)

IN

EXTENSION EDUCATION

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ABSTRACT

Agriculture is the most pivotal sector of Indian economy in the current phase of development. Therefore, the transformation of traditional agriculture to modern agriculture is a challenge to fulfill the requirements of ever increasing population. Moreover, the role of scientific agriculture in the economic development of India can never be under estimated as it contributes about 38.00 per cent to the Gross Domestic Product (GDP) and 60.00 per cent to total export. Over three-fourth (77.00 per cent) of India's populations live in the rural area and directly or indirectly depend on agriculture for their livelihood. Krishi Vigyan Kendra (KVK) is the important instrument of transfer of technology at grass-root level.

There is need for the transfer of improved agricultural technology from research station to the farmer’s field. Appropriate training to the farmers is very crucial to increase agricultural production with a view to get benefit.

Realizing this importance, a number of productions oriented research and extension schemes have been launched from time to time raise agricultural production in each of the five-year plans. The Indian council of agricultural research, New Delhi started Krishi Vigyan Kendras in all the states. In Gujarat state first KVK was started on 22nd February 1976 at Deesa. At present 25 KVKs are working in Gujarat state, out of which thirteen KVKs are working under the administrative control of Agricultural Universities, eleven KVKs are working under Non-Government Organizations (NGOs) and one is under ICAR.

Anand is an important district of Middle Gujarat. About 70.00 per cent of the total working population of the district is engaged in agriculture and allied occupation. KVK at Devataj was established to bring out improvement in their production and economy of the district. KVK directly deals with the farming community for rural development. KVK acts as link between Agricultural University Research Institutes and farmers for transfer of technologies. The main purpose of KVK is to provide new knowledge and develop skill for adoption of latest agricultural technology and to build-up desirable attitude among farmer, farmwomen and rural youths. The basic principle of KVK activities is “Learning by doing“and “Teaching by doing”. In order to achieve this objective, the KVK at Devataj carry out a number of training programmes and various activities on crop production and allied field. KVK continues to play a vital role in carrying out the latest agricultural technologies from laboratories to farmer’s field.

Since, change in knowledge and attitude precedes adoption of an innovation, it is therefore, always important to find the most effective and economical techniques of changing farmers' knowledge and attitude towards agricultural innovation in general and KVK activities in particular. With this view in mind, the present study on **"Impact of Krishi Vigyan Kendra, Devataj on the Farmers of Anand District"** was undertaken with the following specific objectives:

1. To study the personal, social, agro-economic, psychological and communicational characteristics of the beneficiary farmers and non beneficiary farmers
2. To know attitude of the beneficiary farmers and non-beneficiary farmers towards KVK activities
3. To find out possession of knowledge by beneficiary farmers and non-beneficiary farmers about recommended agricultural technologies
4. To find out extent of adoption of various selected recommended agricultural technologies by beneficiary farmers and non- beneficiary farmers about agricultural technologies
5. To measure the impact of KVK on selected characteristics of the beneficiary and non-beneficiary farmers
6. To ascertain relationship between independent variables of beneficiary farmers and extent of adoption level

7. To identify the constraints perceived by respondents in adoption of recommended technologies
8. To seek suggestions offered by the respondents to overcome such constraints.

METHODOLOGY

The methodological procedure consisted locale of study, procedure for selection of respondents, research design, selection of operationalization and empirical measurement of independent and dependent variables, method of data collection and statistical tools used.

The present investigation was undertaken in Anand district of Gujarat state. Anand district consists of total eight talukas, out of which two talukas were selected on the basis of maximum activities carried out by KVK during the preceding two years in 2005-06 and 2006-07. For selection of villages, five villages were selected from the above selected talukas on the basis of maximum activities carried out by KVK. These selected villages were considered as adopted villages in the present study. To select a control group of respondents, five villages were taken from other talukas were KVK are not under taking any of the activities, such villages were termed as non adopted villages in the present investigation. Thus, in all 20 villages (10 adopted and 10 non-adopted) were included in the study sample. For the selection of respondents, a comprehensive list of the beneficiary farmers from each adopted villages was prepared with the help of KVK personnel and four to fifteen respondents were selected

proportionate randomly from each selected village and were considered as beneficiary respondents. Thus, the total numbers of beneficiary respondents were eighty. Likewise, eighty non-beneficiary respondents were also selected proportionate randomly from selected non-adopted villages where any activity was not undertaken by KVK. Thus, the total sample was comprised of one hundred sixty i.e. (eighty beneficiary and eighty non-beneficiary) respondents.

The independent and dependent variables were measured with the help of response to appropriate questions. Suitable and appropriate scales were used for the measurement of such variables in light of the derived objective. The collected data were compiled, tabulated and analyzed to get proper answer for the specific objectives of the study with the help of various statistical tools to test the hypotheses under study.

The statistical tools such as percentage, mean, standard deviation, co-efficient of correlation, and two sample t-test were used. The important findings of the study are summarized as under:

MAJOR FINDINGS

The important findings of the study are summarized as below:

(1) Nearly three-fifth and two-third of the beneficiary and non-beneficiary farmers belonged to middle age group.

(2) Slightly more than two-third of the beneficiary and two-fifth of the non-beneficiary farmers were educated up to secondary to higher secondary (8^{th} to 12^{th} Std.) level.

(3) Majority of the beneficiary and non-beneficiary farmers belonged to higher castes.

(4) Slightly more than three-fourth and four-fifth of the beneficiary and non-beneficiary farmers had joint family.

(5) More than half of the beneficiary and non-beneficiary farmers had medium size of family.

(6) A great majority of the beneficiary farmers belonged to medium to high socio-economic status level whereas non-beneficiary farmers belonged to low to medium SES level (Socio-economic status).

(7) More than half of the beneficiary and nearly three-fourth of the non-beneficiary farmers had farming and animal husbandry as their main occupation.

(8) Exactly three-fourth of the beneficiary and three-fifth of the non-beneficiary farmers were found to be small to medium size of land holding.

(9) Exactly three-fifth of the beneficiary farmers and nearly three-fifth of the non-beneficiary farmers had annual income between Rs. 50,001 to Rs. 1,00,000.

(10) A great majority of the beneficiary and non-beneficiary farmers had medium to high level and low to medium level of risk preference.

(11) More than four-fifth of the beneficiary farmers had medium to high level whereas more than four-fifth of the non-beneficiary farmers had low to medium level of achievement motivation.

(12) A great majority of the beneficiary farmers were found to have medium to high level of scientific orientation while more than four-fifth of the non-beneficiary farmers where found to have low to medium level of scientific orientation.

(13) Majority of the beneficiary farmers had medium to high level whereas majority of the non-beneficiary farmers had low to medium level of innovativeness.

(14) Nearly more than two-third and more than three-fifth of the beneficiary and non-beneficiary farmers had medium level of cosmopolite-localite.

(15) A great majority of the beneficiary farmers had medium to high level of extension contact while majority of the non-beneficiary farmers had low to medium level of extension contact.

(16) A great majority of the beneficiary farmers had moderately favourable to highly favourable attitude, whereas majority of the non-beneficiary farmers had less favourable to moderately favourable attitude towards KVK activities.

(17) A great majority of the beneficiary farmers had medium to high level of knowledge whereas majority of the non-beneficiary farmers had low to medium knowledge about recommended agricultural technology transmitted by KVK.

(18) Majority of the beneficiary farmers had medium to high level of adoption while nearly four-fifth of the non-beneficiary farmers where found with low to medium level of adoption of various selected technologies transmitted by KVK.

(19) Significant impact towards KVK activities was observed on many characteristics of the beneficiary and non-beneficiary farmers. These characteristics were education, caste, socio-economic status; annual income, risk preference, achievement motivation, scientific orientation, innovativeness, cosmopolite localite, extension contact, knowledge about recommended agricultural technologies, attitude towards KVK activities and extent of adoption of recommended agricultural technologies transmitted by KVK.

(20) The independent variables studied *viz.,* education, caste, socio-economics status, occupation, size of land holding, annual income, risk preference, achievement motivation, scientific orientation, innovativeness, knowledge, attitude, cosmopolite localite and extension contact had positive and significant correlation with extent of adoption of respondents in relation to agricultural technologies transmitted by KVK whereas age of the respondents had negative and significant correlation and type of family had negative non-significant with extent of adoption of recommended agricultural technologies. Rest of the traits *viz.,* size of family exerted no relationship with the adoption behaviour of respondents about agricultural technologies transmitted by KVK.

(21) Majority of the beneficiary farmers perceived major constraints likes Unavailability of improved seeds, High cost insecticides and pesticides and Cheap and timely medicines are not available were also considered important constraints perceived by beneficiary farmers in adoption of recommended agricultural technologies transmitted by KVK.

(22) The study revealed that timely availability of improved seeds and fertilizers in the area and cheap and timely availability of insecticides and pesticides and veterinary medicines were also considered important suggestions perceived by beneficiary farmers.

ACKNOWLEDGEMENT

This unprecedented occasion provides me an opportunity to express my deepest sense of reverence gratitude, indebtedness and heartfelt respect to my esteemed Major Advisor Dr. B. B. Patel, Associate Extension Educationist, Extension Education Institute, Anand Agricultural University, Anand for his most valuable and inspiring guidance, keen interest, enormous help, constructive criticism and constant encouragement throughout the course of my study and in the preparation of this manuscript.

I express sincere thanks from the depth of heart to the esteemed Minor Advisor Dr. R. G Jadav, Department of Horticulture, B. A. College of Agriculture, Anand Agricultural University, Anand and members of my advisory committee, Dr. A. S. Saiyed, Associate Extension Educationist, EEI, AAU, Anand, Dr. N. P. Patel, Professor, Department of Agricultural Statistics, BACA, AAU, Anand for their valuable suggestions and guidance during the course of my study.

Acknowledgement …

I am highly obliged to Director (Training), Govt. of India, Ministry of Agricultural and Co-operation, New Delhi and Director of Agricultural, Govt. of C.G. for deputing me to do higher study. I am highly thankful to the staff members of Department of Agriculture, Raipur (C.G.).

I cordially express my thanks to Dr. A. M. Sheikh, Principal, B. A. College of Agriculture, AAU, Anand.

I am also highly obliged to staff members of Extension Education Institute, AAU, Anand and Department of Extension Education, BACA, AAU, Anand, Dr. H. B. Patel (Programme Coordinator), Shri M.C. Patel, Shri N.B. Patel and all staff of Krishi Vigyan Kendra, Devataj (Sojitra) for providing necessary information and facilities during the course of these studies for their encouragement, valuable guidance and help.

I convey my thanks to Dr. A. A. Patel, Pricipal (EEI), Dr. M.S. Trivedi, Associate Extension Educationist, Dr. G. M. Patel, Assistant Extension Educationist, Dr. K. M. Patel, Assistant Extension Educationist, Dr. J. K. Patel, and Shri. Sunil R. Patel, Agricultural Officers, EEI faculty, Anand for his kind support and help during the course and shaping of my problem. I ever thankful to Dr. J. S. Patel,

Associate Professor and all the staff members of Department of Agricultural Statistics for providing me all kinds of help and guidance for statistical analysis.

I am greatly indebted and express my gratitude and thanks to my friends Alexander Kujur, Dr. Sunil D. Parmar, Gunvant, Jayash, Harshal, Ketul, Mukesh, Gayatry, Manisha, Repunjay, Govind, Sanjeev and all other who had helped me directly or indirectly during the course of the study.

I indeed thankful to Dr. Sunil D. Parmar and Shri Kiran Parmar deserved the special thanks for elegant and meticulous typing of the manuscript and is gratefully acknowledged.

I express my deepest appreciation and gratitude to my beloved father Shri Shivnandan Sai and mother Smt. Manmati Sai, uncle Shri Prahalad Sai, Shri Ramprasad Sai, Shri Shivprasad Sai brother Shri Baleshwar Sai, Pankaj Sai, Ravi sai and all my family for their love encouragement and prayers who sustained my spirit and endeavour at every critical juncture of my educational career.

I am deeply indebted to my father-in-law Shri S. S. Painkara (R. H. E. O.), mother-in-law Smt.

Mankuvanr painkara and family friends Shri S. R. Verma,, JDA, Agriculture Department, Raipur (CG), Shri R. Khan, ADA, Agriculture Department, Raipur(CG), Shri R. K. Kashayap, SDO, Agriculture Department, Bilaigarh (Raipur, CG), Shri B. D. Upadhayay, SDO, Agriculture Department, Raipur, (CG), Shri J. P. Chandrakar, ASCO, Agriculture Department, Baloadabazar(CG), Shri T. N. Som, SADO, Agriculture Department, Kasdol (Raipur, CG), Shri D. K. Dube, SADO, Agriculture Department, Kasdol (Raipur, CG), Shri P. K. Dhritlahre, RAEO, Shri P. L. Pande, RAEO, Agriculture Department, Kasdol (Raipur, CG), Shri S. R. Verma, Clerk , Agriculture farm Arjuni (Raipur, CG) for whose blessing could inspired me to achieve my ambition of higher study.

Last but not the least, my heart throb Smt. Sarla Sai deserve very high appreciation for her patience generous help and active co-operation in a number of ways, which is not possible to express in words, so thanks a lot Sarla for your unfailing loyalty and love. My loving thanks are also due to my Daughter Harshshita who had to spend the prime part of the cradle life without fatherly affections and guidance.

Place : Anand

Date : July, 2008

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C E R T I F I C A T E

This is to certify that the thesis entitled **"IMPACT OF KRISHI VIGYAN KENDRA, DEVATAJ ON THE FARMERS OF ANAND DISTRICT"** submitted by **Shri DHANESHWAR SAI** in partial fulfilment of the requirements for the award of the degree of MASTER OF SCIENCE in the subject of **EXTENSION EDUCATION** of the Anand Agricultural University is a record of bonafide research work carried out by him under my guidance and supervision and the thesis has not previously formed the basis for the award of any degree, diploma or other similar title.

Place : Anand **(B. B. PATEL)**
Date : / / 2008 **MAJOR ADVISOR**

C E R T I F I C A T E

This is to declare that the whole of research work reported here in the thesis for partial fulfilment of the requirements for the degree of **MASTER OF SCIENCE** in the subject of **EXTENSION EDUCATION** by the undersigned is a result of investigation done by me under direct guidance and supervision of **Dr. B. B. Patel, Extension Educationist, Extension Education Institute, Anand Agricultural University, Anand** and no part of work had been submitted for any other degree so far.

Place : Anand (DHANESHWAR SAI)

Date : / / 2008

(B. B. Patel)

MAJOR ADVISOR

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Chapter – I
INTRODUCTION

Agriculture is the most pivotal sector of Indian economy in the current phase of development. Therefore, the transformation of traditional agriculture to modern agriculture is a challenge to fulfill the requirements of ever increasing population. Moreover, the role of scientific agriculture in the economic development of India can never be under estimated as it contributes about 38.00 per cent to the Gross Domestic Product (GDP) and 60.00 per cent to total export. Over three-fourth (77.00 per cent) of India's population live in the rural area and directly or indirectly depend on agriculture for their livelihood.

The low productivity of agriculture has generally been attributed to traditional methods of farming in adequacy of resources and lack of required technical know-how. It has also been recognized that if, progress has to be achieved in agriculture production, the farmers have to adopt improved methods of farming.

Knowledge is one of the important components of behaviour, which plays a major role in overt and covert behaviour of an individual. In fact, knowledge influences the intellectual phase of human behaviour both with favourable and unfavourable responses and advanced knowledge is essential for adoption of improved technology.

The most of the programmes of agriculture and rural development have been concerned with only a few aspects of agricultural situation. Some States Agricultural Universities (SAUs) have already taken the initiative for the 'Integrated Area Development in Agriculture' for transferring agricultural technology from research stations to the farmers' field.

Appropriate training to the farmers, extension personnel, agriculture officers and trainers was very crucial to increase agricultural production. This aspect has drawn the attention of various educational institutions to varying degrees. Inspite of all efforts, the farmers training programmes did not come at desired level.

Realizing this importance, a number of productions oriented research and extension schemes have been launched from time to time to raise the agricultural production in each of the five-year plans. There is a need for the transfer of improved agricultural technology from research station to the farmer's field. To provide vocational education in agriculture and allied fields at the pre and post-matriculate to cater to the training needs of a large number of boys and girls coming from rural area and further suggested that such institutions be named as "Agricultural Polytechnics". The recommendation was thoroughly discussed during 1966-72 associating the Ministry of Education, Ministry of Agriculture, Planning Commission, Indian Council of Agricultural Research and other allied institutions, finally the ICAR mooted the idea of establishing Krishi

Vigyan Kendra (Farm Science Centre) as innovative institution for imparting vocational training to the farmers and field level extension functionaries.

The ICAR, therefore, constituted a committee in 1973 headed by Dr. Mohan Singh Mehta of Sevamandir, Udaipur (Rajasthan) for working out a detailed plan for implementing the scheme. The committee submitted its report in 1974. After the submission of this report the first KVK was established in 1974 at Pondicherry under the administrative control of the Tamil Nadu Agricultural University, Coimbatore. The KVK are being established in each district of the states in order to serve the poorest of the poor. Rajasthan is pioneer state in which first KVK was started at Fatehpur (Shekhawati) in Sikar district in the year 1976. Now, a network of 550 KVKs has been established till the March, 2007 in the country.

At present a total of twenty-five KVKs are working in Gujarat state, out of which thirteen KVKs are working under the administrative control of Agricultural Universities, eleven KVKs are working under Non-Government Organizations (NGOs) and one is under ICAR.

Krishi Vigyan Kendra at Devataj in the district of Anand was established on 20th November, 1985 under the administrative control of agricultural university.

Anand is an important district of Middle Gujarat. About 70.00 per cent of the total working population of the district is engaged in

agriculture and allied occupation. The main aim of establishing the KVK was to bring out improvement in their production and economy in the district. In order to achieve this objective the KVK, Devataj carry out a number of training programmes and various activities on crop production and allied fields.

Krishi Vigyan Kendra, Devataj continues to play a vital role :

(a) Organise short and long- term vocational training courses in agriculture & allied vocations for the farmers and rural youths and girl with emphasis on “learning by doing” for higher production on farms and generating self-employment.

(b) Organise frontline demonstrations on as per guideline of ICAR various crops to generate production data and feedback information.

(c) Organise training programmes to update the extension personnel with emerging advances in agricultural research on regular basis.

(d) Conducting “On-Farm Testing” for identifying technologies in terms of location specific sustainable land use systems.

(e) Preparation and distribution of printed literature for package of practices of different crops to the farmers. The three fundamental principles, *viz.*, (i) Agricultural production as the prime goal, (ii) Work-experience as the main method of imparting training and (iii) Priority to weaker sections of the society, are the backbone of the KVK programme. The main idea is to influence the productivity, to achieve social justice for the most needy people and

deserving weaker labourers, drought and flood affected farmers and so on.

1.1 STATEMENT OF PROBLEM

In late Seventees, the green revolution was started. There was an urgent need of transferring agricultural technology from research to farmers' field, to provide vocation education in agriculture and allied field and to train the rural youths and extension functionaries in transferring agricultural technology. Indian Council of Agricultural Research (ICAR) has muted the idea of establishing the Krishi Vigyan Kendra (KVK) as an innovative institution for imparting vocational training to the farmers at field level extension functionaries.

Government of India (GOI) determined to establish one Krishi Vigyan Kendra in each district during 10th five-year plan. At present 550 Krishi Vigyan Kendras are working in the country and 23 Krishi Vigyan Kendras are working in our state. Krishi Vigyan Kendra at Devataj in Anand district was established on 20th November, 1985 with the main aim of bringing improvement in production and economy in the district.

Krishi Vigyan Kendra, Devataj gave major thrust on : (1) To enhance the productivity of castor, paddy, sesamum mustard, gram and summer bajra recommended by using the scientific technologies, (2) To train the farmers/farm women for management of milking animals, (3) To motivate farmers to grow arid and semi-arid horticultural fruit crops like aonla, lemon, sapota, mango etc. (4) Efficient use of available

irrigation water, (5) To motivate the farmers for adoption of dry land technology and to increase the productivity of dry land crops, (6) To motivate the farmers for adoption of organic farming and integrated pest management (IPM) and (7) To create skill oriented income-generating activities.

Krishi Vigyan Kendra, Devataj continues to play a vital role in carrying out the latest agricultural technology from the laboratories to the land and also carrying back the practical field problems to the laboratories for their solution. The training camps organized by KVK at the district, block and village levels for imparting latest technology to the farmers are very effective. Such training camps are organized during *kharif* and *rabi* seasons every year. In addition, specific training camps are organized for production aspects. In these camps, the subject matter specialists (SMSs) of various disciplines impart skill-oriented training to the farmers through learning by doing methods.

The new technologies developed by the research scientists are demonstrated on the farmer's field by the subject matter specialists of KVK, field days are also organized by KVK at selected places to expose the farmers to demonstrated improved technology.

Besides these activities, KVK also conducts on-farm research (OFR) and front line demonstrations (FLDs) especially on oil seeds pulse crops and vegetable crops in the area. Looking into these facts, it was felt

necessary to undertake impact assessment study of Krishi Vigyan Kendra, Devataj in Anand district of Gujarat state. Impact involves acceptance of scientific technologies against traditional faith and adoption of new innovations and methods with challenges to compete with old ones. It is the stage of individual change in terms of knowledge, attitude, adoption and psychology from a traditional system of life to a more technologically advanced and rapidly changing style of life.

1.2 OBJECTIVES OF THE STUDY

The study was precisely designed to know the **"Impact of Krishi Vigyan Kendra, Devataj on the Farmers of Anand District"**. Consequently, the specific objectives of the study formulated were as followed:

1. To study the personal, social, agro-economic, psychological and communicational characteristics of the beneficiary farmers and non beneficiary farmers
2. To know attitude of the beneficiary farmers and non-beneficiary farmers towards KVK activities
3. To find out possession of knowledge by beneficiary farmers and non- beneficiary farmers about recommended agricultural technologies
4. To find out extent of adoption of various selected recommended agricultural technologies by beneficiary farmers and non- beneficiary farmers about agricultural technologies

5. To measure the impact of KVK on selected characteristics of the beneficiary and non-beneficiary farmers
6. To ascertain relationship between independent variables of beneficiary farmers and extent of adoption level
7. To identify the constraints perceived by respondents in adoption of recommended technologies
8. To seek suggestions offered by the respondents to overcome such constraints.

1.3 SCOPE AND IMPORTANCE OF STUDY

The present investigation is designed to study the impact of Krishi Vigyan Kendra, Devataj on the farmers of Anand district. At this juncture of technological development, agricultural technology is advancing at a tremendously high speed. The progress in agriculture depends to a large extent on the quick and effective dissemination of new agricultural practices among the farmers and the reciprocal receiving of farmers'' problems at the research stations for their solutions. But the success of any extension programme depends on the ability and expertise of the extension staff to ensure deliver and direct a speedy flow of information to the farmers at the right time in most appropriate manner.

The training plays an important role in the development of farmers. Such types of training are provided by various institutions and organizations like the Krishi Vigyan Kendras. It is expected that the findings of this study i.e. personal, social, agro-economic, psychological

and communicational characteristics of the beneficiary and non-beneficiary farmers of the study area may prove beneficial.

An attempt has been made in the present study to know the attitude of beneficiary and non-beneficiary farmers towards various activities carried out by KVK to access the knowledge level and media exposure of beneficiary as compared to non-beneficiary and also to determine the extent of adoption of improved technologies by the beneficiary farmers. Results on these aspects will help to raise the knowledge of the KVK personnel about their efficiency of work in the operational area.

The findings of the study about various constraints experienced by the beneficiary in adoption of improved technologies transferred by KVK will be useful for the trainers to overcome them in their future training programmes. Further, the study will be useful to formulate the future strategy for conducting effective activities of KVK. The study will be of immediate help of KVK, Devataj to bring about change and modifications in its type of working. Secondly, the findings of this study will also be helpful to programme planners, policy makers, programme executors to supervise and monitor the programme for effective implementation of various activities of KVK in the operational area.

1.4 LIMITATIONS OF THE STUDY

Although all possible efforts were made to make the study more meaningful and clear, but due to paucity of time, money and facilities

at the disposal of the investigator certain limitations have remained in the study which were:

(1) The study was confined to Krishi Vigyan Kendra located at Devataj, in the district of Anand, Gujarat state.

(2) The study has been confined to only one district and further to only four talukas.

(3) The present investigation was restricted to the activities carried out by KVK, Devataj its operational area.

(4) As usual, the results of the study were based on a small size of study sample and as such the result can be generalized for a large group of farmers.

(5) The findings were based on verbal expression and responses of the respondents.

1.5 NULL HYPOTHESIS

In view of the specific objectives of the study, review of related literature and discussion held with scientists and extension personnel, the following null hypotheses were formulated.

H_1 : There will be no significant impact of KVK activities on the selected characteristics of beneficiary and non-beneficiary farmers.

H_2 : There will be no significant relationship between the extent of adoption of selected agricultural technology of beneficiary and non-beneficiary farmers towards KVK activities.

1.6 THE PARADIGM

The conceptual frame work given in the preceding section may be presented paradigmatic which has been developed during the course of study. The model shown in Fig. 1 is tentative and generalized. The final form of such model has been suggested at the end of this dissertation in the chapter "results and discussion" after the investigation would yielded information regarding the influence of independent variables on the dependent variables and the interrelationship among them irrespective of stimulus (communication process).

The tentative model as based on null hypotheses and show in Fig. 1 there are 17 independent variables which influence the extent of adoption of KVK activities. Further, it also shows the interrelationship among the dependent variables.

1.7 OPERATIONALIZATION OF THE CONCEPT

1. Age :

It refers to chronological years of beneficiary and non-beneficiary farmers on the date of interview rounded off to the nearest years.

2. Education :

It is an ability to read and write or formal education received by the respondents unto certain standard. It is the level of literacy of the respondent beneficiary and non-beneficiary farmers.

3. Size of family :

It denotes the number of individuals living together in a house hold.

4. Socio-economic status :

It is the occupational success in terms of profit maximization and the relative value place by the respondents on socio-economic needs.

5. Occupation :

It refers to involvement, connection and attachment of the beneficiary and non-beneficiary farmers in various income generating activities.

6. Size of land holding :

It denotes possession of land by the beneficiary and non-beneficiary farmers in terms of hectares.

7. Annual income :

It refers to the income obtained annually from agriculture and other sources.

8. Risk preference :

It is a degree to which a beneficiary and non-beneficiary farmers is oriented towards encountering risk and uncertainty in adopting any new idea or innovation.

9. Achievement motivation :

It is an occupational success in terms of profit maximization and relative value on individual places on economic ends.

10. Scientific orientation :

It is a degree to which a beneficiary and non-beneficiary farmers is oriented to use of scientific methods in decision making in relation to their adoption behaviour.

11. Innovativeness :

It is defined as socio-psychological orientation of an individual beneficiary and non-beneficiary farmers to get linked or closely associated with change in adoption of an innovative ideas and practices.

12. Knowledge :

Bloom *et al.* (1995) defined knowledge as those behaviour and test situation which emphasize remembering either by recognition or recall of ideas, materials and phenomena. Broadly speaking, knowledge refers to "a body of understood information possessed by an individual".

In a present investigation, it was referred that it is a body of understood information possessed by beneficiary and non-beneficiary farmers in respect of any new agricultural technology transmitted by KVK.

13. Attitude :

Attitude is the degree of positive or negative effect associated with some psychological object (Thurstone, 1946). For the study, it is the degree of positive or negative affect on the beneficiary and non-beneficiary farmers associated with KVK activities.

14. Cosmopolite-localite :

It refers to the degree of contact of an individual beneficiary and non-beneficiary farmers with out side world, social system of place and informal and formal organization.

15. Extension contact :

Extension contact refers to contact made by the beneficiary and non-beneficiary farmers and frequency and interval of the contact with extension agency or extension workers, employees of KVK, whether locally or outside the village.

16. Adoption :

Rogers (1962) stated that, adoption is a decision to continue full use of an innovation. The adoption process is a mental process through which an individual beneficiary and non-beneficiary farmers passes from first hearing about an innovation to its final adoption. For the study, adoption considered as selected agriculture technology adopted by the respondent farmers.

17. Extent of adoption :

Extent of adoption is a degree of use of improved or new agricultural technology towards KVK.

18. Impact :

Webster describes the impact as the force, impressions or operation of one-thing on the other, affect a forceful control and collusion. In simple words, it is the effect of one on the other. For the study, impact means it is the effect of KVK activities on the beneficiary farmers.

19. Beneficiary farmer :

The farmers who are involved more than two years in KVK activities are known as beneficiary farmers.

20. Non-beneficiary farmer :

The farmers who are not involved in KVK activities are known as non-beneficiary farmers.

21. Technology :

The recommended practices which, if applied in the right form in appropriate time in suitable balance, will yield result of commercial value.

22. Constraint :

Constraint implies forcible restriction and confinement of action. In present context, constraint means hindrance or obstruction in the way of respondents for adoption of KVK activities.

23. Suggestions :

The ways and means of opinions as suggested by the beneficiary farmers to make the KVK activities more effective are considered as the suggestions.

Chapter – II

REVIEW OF LITERATURE

A comprehensive review of literature is an essential part of any scientific investigation. Reviews constitute an important source of information. It helps in clearing some concepts and improving focus, helps in avoidance of unnecessary duplication in research. In accordance with the objectives of the study the literature has been reviewed and presented under the following sub-heads:

2.1 Personal, social, agro-economical, psychological and communicational characteristics of the farmers

2.2 Attitude of the farmers towards various activities of KVK

2.3 Knowledge level of beneficiary and non-beneficiary farmers about recommended technology transmitted by KVK

2.4 Extent of adoption of various selected recommended agricultural technologies transmitted by KVK

2.5 Impact of the respondents towards KVK activities

2.6 Relationship between selected independent variables with the extent of adoption

2.7 Constraints perceived by respondents in adoption of recommended technologies

2.8 Suggestions to overcome the constraints.

2.1 PERSONAL, SOCIAL, AGRO-ECONOMICAL, PSYCHOLOGICAL AND COMMUNICATIONAL CHARACTERISTICS OF THE FARMERS

Generally, it is found that all the farmers residing in the same community do not adopt new technology to the same extent. This might be due to the difference in their personal, social, agro-economical, psychological, and communicational characteristics which are related to the adoption of new technology. Factors which affect this phenomenon are discussed as under:

2.1.1 Personal characteristics

2.1.1.1 Age

Vankar (2000) concluded that majority (76.67 per cent) of the respondents of irrigated villages and unirrigated villages (65.00 per cent) had middle age group.

Baria (2001) indicated that majority (63.00 per cent) of the trained respondents and untrained respondents (52.00 per cent) had middle age group.

Chhodavadia (2001) reported that majority of demonstrator (69.23 per cent) and non-demonstrator (63.46 per cent) fall in middle age group.

Christian (2001) reported that majority of the respondents (70.00 per cent) were in the middle age group followed by 26.67 per cent who were in the old age while 3.33 per cent were in the young age group.

Dabhi (2002) concluded that more than half (51.00 per cent) of the member of PIMS and non-members (47.00 per cent) belong to middle age group.

Joshi (2004) revealed that more than half (53.64 per cent) of the respondents were of old age, followed by middle age (32.72 per cent). The respondents in young age group were found to be 13.64 per cent.

Patel (2004) reported that majority of the beneficiary farmers and non-beneficiary farmers (50.00 and 56.00 per cent) were found in the middle age group.

Vaidya (2004) reported that majority of the respondents (58.00 per cent) had middle age i.e. (31 to 50 years) followed by 35.33 per cent and 6.67 per cent of the respondents who were in the old age group (above 50 years) and young age group (up to 30 years), respectively.

Patel (2005) indicated that more than half (56.15 per cent) of the respondents were found in the middle age group, followed by 31.54 per cent who were in old age group, whereas 12.31 per cent of the respondents were in young age group.

Toppo (2005) revealed that majority (71.67 per cent) of the farmwomen belonged to middle age group followed by 26.67 per cent of them with young age and 1.66 per cent with old age group.

Diwan (2007) reported that majority of the woman sarpanchs and man sarpanchs (66.67 and 60.00 per cent) belong to middle age group.

2.1.1.2 Education

Vankar (2000) concluded that majority (60.00 per cent) of the respondents of unirrigated villages and irrigated villages (66.67 per cent) had primary level of education.

Baria (2001) reported that less than half (46.00 per cent) of the trained respondents and untrained respondents (40.00 per cent) had primary level of education.

Chhodavadia (2001) indicated that majority of the respondents from demonstrator (48.08 per cent) and non-demonstrator (65.38 per cent) groups were low education (1st to 7th Std.), respectively.

Dabhi (2002) concluded that more than half (55.00 per cent) of the member of PIMS and non-members (48.00 per cent) had primary level of education.

Patel (2004) reported that 40.00 per cent of the beneficiary farmers and 70.00 per cent non-beneficiary farmers belong to illiterate group followed by 60.00 and 30.00 per cent of the beneficiary farmers and non-beneficiary farmers belong to the literate group, respectively.

Diwan (2007) reported that majority of the woman sarpanchs and man sarpanchs (72.66 and 88.67 per cent) were educated up to primary to higher secondary level, while the woman sarpanchs and man sarpanchs (6.67 and 9.33 per cent) were educated up to college level education.

2.1.1.3 Caste

Dabhi (1990) observed that more than half of the contact farmers (52.63 per cent) and three-fourth of the non-contact farmers (60.00 per cent) belonged to intermediate caste.

Solanki *et al.* (1992) concluded that majority of the respondents (51.25 per cent) were belonged to upper caste, followed by intermediate caste (45.00 per cent). The respondents in the lower caste group were quite less (3.75 per cent).

Desai (1997) indicated that a great majority (91.43 per cent) of the respondents were belonged to higher caste, followed by backward castes (7.43 per cent).

Baria (2001) indicated that cent per cent (100.00 per cent) of the trained respondents and untrained respondents belong to backward caste.

Dabhi (2002) found that majority of (65.00 per cent) of the members of PIMS and a great majority (87.00 per cent) of the non-members where belonged to backward castes, followed by higher caste (28.00 per cent and 13.00 per cent, respectively) in both groups, whereas, a very few (7.00 per cent) respondents of the members of PIMS were found from most backward castes.

Patel (2004) indicated that the beneficiary farmers and non-beneficiary farmers (40.00 and 60.00 per cent) belong to lower caste while 40.00 and 20.00 per cent of beneficiary farmers and non-beneficiary farmers belong to middle caste, respectively.

Diwan (2007) reported that the woman sarpanchs and man sarpanchs (36.00 and 22.67 per cent) belong to most backward castes, while 34.67 and 44.00 per cent the woman sarpanchs and man sarpanchs belong to backward caste and the woman sarpanchs and man sarpanchs (29.33 and 33.33 per cent) belong to higher caste, respectively.

2.1.1.4 Type of family

Baria (2001) indicated that majority (69.00 per cent) of the trained respondents and untrained respondents (56.00 per cent) had nuclear type of family while 31.00 and 44.00 per cent of the trained respondents and untrained respondents had joint type of family, respectively.

Dabhi (2002) concluded that majority (80.00 per cent) of the member of PIMS and non-members (81.00 per cent) had joint family followed by nuclear family (20.00 and 19.00 per cent), respectably.

Patel (2004) reported that majority of the beneficiary farmers and non-beneficiary farmers (66.00 and 60.00 per cent) were having joint type of family while 34.00 and 40.00 per cent of the beneficiary farmers and non-beneficiary farmers were having nuclear type of family, respectively.

2.1.1.5 Size of family

Baria (2001) indicated that majority of the trained respondents and untrained respondents (73.00 and 70.00 per cent) had medium size of family i.e. family having above five members.

Dabhi (2002) concluded that majority (45.00 per cent) of the member of PIMS and non-members (53.00 per cent) possessed medium size of family.

Dongaradive (2002) revealed that majority (78.67 per cent) of the respondents were found with large size of family, whereas only 21.33 per cent of them were found with small size of family.

Kumar (2003) observed that majority (64.38 per cent) of the respondents were found with small size of family, whereas only 35.62 per cent of them were found with large size of family.

Patel (2004) reported that majority of the beneficiary farmers and non-beneficiary farmers (64.00 and 58.00 per cent) were having the large family size while 36.00 and 42.00 per cent of the beneficiary farmers and non-beneficiary farmers were having small family size, respectively.

Toppo (2005) indicated that majority (71.67 per cent) of the farm women belonged to the large sized family. i.e. above 4 members, while 28.33 per cent of them belonged to small sized families having up to 4 members.

Diwan (2007) reported that high majority of the woman sarpanchs and man sarpanchs (82.67 and 86.67 per cent) were found big family while 17.33 and 13.33 per cent the woman sarpanchs and man sarpanchs were having small family, respectively.

2.1.2 Social characteristics

2.1.2.1 Socio-economic status

Dabhi (2002) reported that majority (80.00 per cent) of the member of PIMS and non-members (89.00 per cent) belonged to medium socio-economic status level.

Patel (2004) reported that equal percent (42.00 per cent) of the beneficiary farmers and non-beneficiary farmers were from medium socio-economic status while 22.00 and 20.00 per cent of the beneficiary farmers and non-beneficiary farmers were found to be high socio-economic status, respectively.

Soni (2005) indicated that majority of the KFM subscriber farmers and non-subscriber farmers (67.50 and 68.75 per cent) fell under the category of medium socio-economic status whereas, 7.50 per cent of the KFM subscriber farmers and 22.50 per cent of the non-subscriber farmers were found under low socio-economic status level while 25.00 and 8.75 per cent of the KFM subscriber farmers and non-subscriber farmers fell under high socio-economic status level, respectively.

2.1.3 Agro-economical characteristics

2.1.3.1 Occupation

Vankar (2000) stated that two-fifth (40.00 per cent) of respondents of unirrigated villages had farming with animal husbandry as their main occupation, whereas slightly less than half (46.67 per cent) of the respondents of irrigated villages had farming, animal husbandry and labour as their source of livelihood.

Dabhi (2002) revealed that equal percentage (72.00 per cent) of the member of PIMS and non-members had occupation of farming and animal husbandry whereas, 60.00 per cent and 24.00 per cent of the member of PIMS and non-members were found occupation of farming with animal husbandry and business as there sources of livelihood.

Soni (2005) indicated that majority of the KFM subscriber farmers and non-subscriber farmers (67.50 and 71.25 per cent) had occupation of farming and animal husbandry.

Diwan (2007) reported that the woman sarpanchs and man sarpanchs (34.67 and 42.66 per cent) were depend on the animal husbandry as a main occupation while 29.33 and 24.00 per cent the woman sarpanchs and man sarpanchs were found in occupation of farming alone as their sources of livelihood and 21.33 and 24.00 per cent the woman sarpanchs and man sarpanchs had farming with animal husbandry, respectively.

2.1.3.2 Size of land holding

Vankar (2000) pointed out that majority of the respondents of unirrigated (61.67 per cent) and irrigated (81.66 per cent) villages had less than 4.0 ha of land holding.

Baria (2001) indicated that less than half of the trained respondents and untrained respondents (47.00 and 48.00 per cent) had medium size of land holding i.e. 2.0 to 5.0 hectares.

Dabhi (2002) observed that majority (66.00 per cent) of the member of PIMS and non-members (57.00 per cent) were with marginal size of land holding. i.e. below 1.0 hectares followed by 17.00 and 31.00 per cent with small land holding i.e. 1.01 to 2.0 hectares, respectively.

Patel (2004) reported that equal per cent of the beneficiary farmers and non-beneficiary farmers (44.00 and 42.00 per cent) were belong to medium land holding i.e. 2.01 to 4.0 ha while 27.00 per cent respondents were from the category of big land holding i.e. above 4.0 ha, respectively.

Soni (2005) indicated that the KFM subscriber farmers and non-subscriber farmers (47.50 and 28.75 per cent) had big size of land holding i.e. above 4.0 hectares while 35.00 and 27.50 per cent of the KFM subscriber farmers and non-subscriber farmers had marginal land holding i.e. below 1.0 hectares and 13.75 and 33.75 per cent of the KFM subscriber farmers and non-subscriber farmers small size of land holding i.e. 1.0 to 2.0 hectares, respectively.

Diwan (2007) reported that majority of the woman sarpanchs and man sarpanchs (86.67 and 87.33 per cent) were medium to big farmers possessed above 2.0 ha land.

2.1.3.3 Annual income

Chhodavadia (2001) indicated that 44.23 per cent and 38.46 per cent demonstrator respondents belong to medium to high annual income group, respectively. The 42.30 per cent non-demonstrator respondent belongs to high income, followed by 28.85 per cent in each category of low and high medium annual income.

Kumar (2003) concluded that majority of the Bt. cotton growers (77.50 per cent) had medium to high level of annual income.

Patel (2004) reported that the beneficiary farmers (48.00 per cent) and non-beneficiary farmers (50.00 per cent) were having medium annual income while 28.00 and 10.00 per cent of the beneficiary farmers and non-beneficiary farmers were having high annual income and 24.00 per cent beneficiary farmers and 40.00 per cent non-beneficiary farmers were having low annual income, respectively.

Diwan (2007) reported that majority of the woman sarpanchs and man sarpanchs (66.67 and 62.67 per cent) had annual income between Rs. 50,001 to 1,00,000/- followed by 30.67 and 33.67 per cent of the woman sarpanchs and man sarpanchs who had annual income up to Rs. 50,000/- and only 2.66 per cent the woman sarpanchs and 4.00 per cent of man sarpanchs had annual income above Rs. 1,00,000/-, respectively.

2.1.4 Psychological characteristics

2.1.4.1 Risk preference

Baria (2001) indicated that of the trained respondents (68.00 per cent) and untrained respondents (20.00 per cent) had high risk preference followed by 14.00 and 65.00 per cent trained respondents and untrained respondents had medium level of risk preference and 8.00 per cent of trained respondents and 15.00 per cent of untrained respondents had low level of risk preference, respectively.

Dabhi (2002) reported that equal majority (79.00 per cent) of the member of PIMS and non-members had medium risk preference whereas, 10.00 and 13.00 per cent respectively had low risk preference.

Patel (2004) reported that the beneficiary farmers (44.00 per cent) and non-beneficiary farmers (50.00 per cent) were having medium risk preference while 26.00 and 40.00 per cent of the beneficiary farmers and non-beneficiary farmers were having high risk preference and 30.00 per cent beneficiary farmers and 15.00 per cent non-beneficiary farmers were having low risk preference, respectively.

Soni (2005) indicated that majority of the KFM subscriber farmers and non-subscriber farmers (67.50 and 73.75 per cent) had medium level of risk preference while 31.25 and 2.50 per cent of the KFM subscriber farmers and non-subscriber farmers had high risk preference and 1.25 and 23.75 per cent of the KFM subscriber farmers and non-subscriber farmers low level of risk preference, respectively.

Thorat (2005) indicated that majority (67.27 per cent) of the respondents had medium level of risk orientation followed by 22.73 per cent and 10.00 per cent of them with high and low level of risk orientation, respectively.

Vasava (2005) revealed that more than three-fifth of the respondents (63.33 per cent) had medium risk orientation followed by 30.00 per cent and 6.67 per cent of them who had high and low level of risk orientation, respectively.

Diwan (2007) reported that majority of the woman sarpanchs and man sarpanchs (73.33 and 88.00 per cent) had medium risk preference whereas, 18.67 and 4.00 per cent the woman sarpanchs and man sarpanchs had high risk preference.

2.1.4.2 Achievement motivation

Palaniswamy (1984) concluded that majority (72.11 per cent) of the respondents had medium level of achievement motivation while 14.28 and 13.61 per cent of the respondents had low and high level of achievement motivation, respectively.

Jagadeeshwara (1994) observed that 16.20, 34.82 and 45.38 per cent of the respondents were having low, medium and high achievement motivation, respectively.

Patel (2004) reported that the beneficiary farmers (48.00 per cent) and non-beneficiary farmers (54.00 per cent) had medium level of achievement motivation while equal per cent (22.00 per cent) of the

beneficiary farmers and non-beneficiary farmers had high level of achievement motivation and 30.00 per cent beneficiary farmers and 24.00 per cent non-beneficiary farmers had low achievement motivation, respectively.

2.1.4.3 Scientific orientation

Baria (2001) indicated that the trained respondents and untrained respondents (70.00 and 25.00 per cent) had high level of scientific orientation while 16.00 and 43.00 per cent of trained respondents and untrained respondents had medium level of scientific orientation and 14.00 and 32.00 per cent of trained respondents and untrained respondents had low level of scientific orientation, respectively.

Dabhi (2002) revealed that majority of the member of PIMS and non-members (74.00 and 66.00 per cent) fell under the category medium scientific orientation followed by equal (16.00 per cent) respondents both the group with high scientific orientation and very less members of PIMS and non-members (10.00 and 18.00 per cent) had low scientific orientation, respectively.

Parashar (2004) observed that a great majority (78.00 per cent) of the respondents were found with medium scientific orientation followed by 20.00 per cent of the respondents having low scientific orientation.

Patel (2004) reported that the beneficiary farmers (46.00 per cent) and non-beneficiary farmers (40.00 per cent) had medium level of scientific orientation while 40.00 and 22.00 per cent of the beneficiary farmers and non-beneficiary farmers had high level of scientific orientation and 14.00 per cent beneficiary farmers and 38.00 per cent non-beneficiary farmers had low level of scientific orientation, respectively.

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.

Soni (2005) indicated that equal per cent of the KFM subscriber farmers and non-subscriber farmers (67.50 per cent) had medium scientific orientation while 22.50 and 6.25 per cent of the KFM subscriber farmers and non-subscriber farmers had high level of scientific orientation and 10.00 and 26.25 per cent from the KFM subscriber farmers and non-subscriber farmers had low level of scientific orientation, respectively.

2.1.4.4 Innovativeness

Siddharth (2001) reported that majority (75.00 per cent) of the poultry farmers had high level of innovativeness.

Kumar (2003) reported that slightly less than three-fourth (72.50 per cent) of the Bt. cotton growers had medium level of innovativeness, followed by 16.25 per cent and 11.25 per cent of them had high and low level of innovativeness, respectively.

Patel (2004) reported that the beneficiary farmers (56.00 per cent) and non-beneficiary farmers (40.00 per cent) had medium level of innovativeness while 24.00 and 36.00 per cent of the beneficiary farmers and non-beneficiary farmers had high level of innovativeness and 20.00 per cent beneficiary farmers and 24.00 per cent non-beneficiary farmers had low level of innovativeness, respectively.

Soni (2005) indicated that the KFM subscriber farmers and non-subscriber farmers (61.25 and 11.25 per cent) had high level of innovativeness while 28.75 and 42.50 per cent of the KFM subscriber farmers and non-subscriber farmers had medium level of innovativeness and 10.00 and 46.25 per cent from the KFM subscriber farmers and non-subscriber farmers had low level of innovativeness, respectively.

2.1.5 Communicational characteristics

2.1.5.1 Cosmopolite-localite

Trivedi (2000) revealed that more than three fourth (78.00 per cent) of the respondents were found with medium cosmopolite-localite, whereas 12.00 percent and 10.00 per cent of them were found with high and low cosmopolite localite, respectively.

Ghosh (2004) found that more than half (52.00 per cent) of the respondents had medium cosmopolite-localite followed by 33.00 per cent and 15.00 per cent of the respondents with high and low cosmopolite-localite, respectively.

Patel (2004) reported that more than half of the beneficiary farmers and non-beneficiary farmers (56.00 and 50.00 per cent) were having medium level of cosmopoliteness while 24.00 and 22.00 per cent of the beneficiary farmers and non-beneficiary farmers were having high level of cosmopoliteness and 20.00 per cent beneficiary farmers and 28.00 per cent non-beneficiary farmers were having low level of cosmopoliteness, respectively.

Diwan (2007) reported that majority of the woman sarpanchs and man sarpanchs (60.00 and 62.68 per cent) had medium level of cosmopolite localite followed by 30.67 and 16.00 per cent the woman sarpanchs and man sarpanchs had high level of cosmopolite localite, respectively.

2.1.5.2 Extension contact

Dabhi (2002) revealed that majority of the member of PIMS and non-members (63.00 and 69.00 per cent) had medium contact with extension agencies, while 16.00 per cent of members of PIMS and 20.00 per cent of non-members were having low contact with extension agencies followed by 21.00 per cent of members of PIMS and 11.00 per cent of non-members with high contact with extension agencies, respectively.

Joshi (2004) observed that 43.63 per cent of the respondents had medium extension contact, while 29.27 per cent and 27.10 per cent of the respondents had low and high extension contact, respectively.

Patel (2004) reported that more than half of the beneficiary farmers and non-beneficiary farmers (62.00 and 52.00 per cent) had medium level of extension contact while equal per cent (18.00 per cent) of the beneficiary farmers and non-beneficiary farmers had high level of extension contact and 20.00 per cent beneficiary farmers and 30.00 per cent non-beneficiary farmers had low level of extension contact, respectively.

Parashar (2004) reported that nearly three-fifth (58.67 per cent) of the respondents had medium extension contact followed by 40.66 per cent of them with low extension contact. Only 0.67 per cent of the respondents had high extension contact.

Patel (2005) revealed that more than half (53.85 per cent) of the farmers had medium contact with the extension personnel, whereas 28.46 per cent and 17.69 per cent of them had low and high level of contact with extension personnel, respectively.

Vasava (2005) marked that a great majority of the respondents (83.33 per cent) had medium extension contact followed by 10.00 per cent and 6.67 per cent who had high and low extension contact, respectively.

2.2 ATTITUDE OF THE FARMERS TOWARDS VARIOUS ACTIVITIES OF KVK

Chauhan (1994) reported that majority of the farmers had their attitude in positive direction (69.00 per cent) and 31.00 per cent of them had favourable and most favourable attitude towards Kisan Mandal, respectively, while the remaining 16.00 per cent of the farmers had unfavourable attitude towards Kisan Mandal.

Singh (1997) reported that majority of respondents (49.33 per cent) had favourable attitude towards rearing of crossbred sheep.

Vanker (2000) concluded that majority (80.00 per cent) of the respondents of unirrigated villages had low to medium whereas majority (87.67 per cent) of the respondents of irrigated villages had medium to high level of favourable attitude towards modern agricultural practices.

Baria (2001) indicated that (87.00 per cent) of the trained respondents and untrained respondents (42.00 per cent) had favourable attitude towards Krishi Vigyan Kendra followed by 10.00 and 53.00 per cent of the trained respondents and untrained respondents had unfavourable attitude towards Krishi Vigyan Kendra, respectively.

Christain (2001) stated that 35.83 per cent of cotton growers had medium level of favourable attitude towards IPM strategy followed by 32.50 per cent and 31.67 per cent of them who had high and low level of favourable attitude, respectively.

Dabhi (2002) inferred that 59.00 per cent of the member of PIMS and 83.00 per cent of the non-members had moderately favourable attitude towards Participatory Irrigation Management Society followed by one-third (31.00 per cent) of the member of the PIMS and only 5.00 per cent non-members with highly favourable attitude.

Patel (2004) reported that less than half of the beneficiary farmers and non-beneficiary farmers (48.00 and 46.00 per cent) were having favourable attitude towards the activities carried out by KVK while equal per cent (20.00 per cent) of the beneficiary farmers and non-beneficiary farmers were having least favourable attitude and 32.00 per cent beneficiary farmers and 34.00 per cent non-beneficiary farmers were having most favourable attitude towards the activities carried out by KVK, respectively.

Patel (2006) revealed that nearly three-fifth (57.20 per cent) of the respondents had neutral attitude towards IPM technology in pigeon pea followed by favourable and unfavourable attitude with 25.60 per cent and 17.20 per cent of the pigeon pea growers, respectively.

Diwan (2007) reported that majority of the woman sarpanchs and man sarpanchs (77.33 and 68.00 per cent) had medium attitude towards modern agriculture while 14.67 and 10.67 per cent the woman sarpanchs and man sarpanchs had high attitude towards modern agriculture.

2.3 KNOWLEDGE LEVEL OF BENEFICIARY AND NON-BENEFICIARY FARMERS ABOUT RECOMMENDED TECHNOLOGY TRANSMITTED BY KVK

Patel (1995) revealed that majority of the demonstrated groundnut growers (65.22 per cent) and the non-demonstrated groundnut growers (74.14 per cent) were belonged to medium level of knowledge category with 66.43 and 48.05 mean knowledge index, respectively. They were found significantly differed in their level of knowledge.

More *et al.* (2000) reported that majority (62.14 per cent) of the respondents had medium level of knowledge of recommended cultivation practices followed by 27.86 per cent and 10.00 per cent high and low level of knowledge of cotton production practices, respectively.

Chinchmalatpure and Saiyed (2001) reported that equal per cent (57.50 per cent) of the trained farmers and untrained farmers had medium level of knowledge regarding recommended practices of paddy crop followed by 27.50 and 17.50 per cent had high and 15.00 and 25.00 per cent of the trained farmers and untrained farmers had low level of knowledge regarding recommended practices of paddy crop, respectively.

Chhodavadia (2001) reported that exactly half (50.00 per cent) of the demonstrator respondents had high knowledge level. While majority of the non-demonstrator (65.39 per cent) respondents fell in medium knowledge level about the groundnut pigeon pea relay cropping system.

Dabhi (2002) revealed that majority of the member of PIMS and non-members (74.00 and 56.00 per cent) had medium level of knowledge regarding recommended water management practices, while 20.00 per cent of members of PIMS and 11.00 per cent of non-members had high level of knowledge followed by only 6.00 per cent of members of PIMS and 33.00 per cent of non-members with low level of knowledge regarding recommended water management practices, respectively.

Sarkar *et al.* (2002) revealed that 57.65 per cent of the respondents had medium level of knowledge, while 27.06 per cent and 15.29 per cent of the respondents had low and high level of knowledge about paddy production technology, respectively.

Patel *et al.* (2003) indicated that majority (63.11 per cent) of the onion growers possessed medium level of knowledge followed by high (19.42 per cent) and low (17.47 per cent) level of knowledge.

Joshi (2004) concluded that majority (71.82 per cent) of the farmers had medium level of knowledge regarding modern practices of cotton cultivation.

Patel (2004) reported that the beneficiary farmers (60.00 per cent) and non-beneficiary farmers (42.00 per cent) possessed medium level of knowledge about various selected technologies transferred by KVK while 30.00 and 12.00 per cent of the beneficiary farmers and non-beneficiary farmers were having high level of knowledge and 10.00 per cent beneficiary farmers and 46.00 per cent non-beneficiary farmers were having low level of knowledge about various selected technologies transferred by KVK, respectively.

Soni (2005) indicated that more than half of the KFM subscriber farmers and non-subscriber farmers (56.25 and 51.25 per cent) had medium level of knowledge regarding selected agricultural technology while 42.50 and 2.50 per cent of the KFM subscriber farmers and non-subscriber farmers had high level of knowledge and 1.25 and 46.25 per cent of the KFM subscriber farmers and non-subscriber farmers had low level of knowledge regarding selected agricultural technology, respectively.

Waman and Girase (2005) indicated that a majority (50.88 per cent) of the irrigated cotton growers had high level of knowledge, followed by 40.53 and 8.77 per cent having medium and low level of knowledge of the recommended chemical plant protection measures, respectively.

Patel (2006) portray that slightly more than three-fifth of the pigeon pea growers (62.40 per cent) were found with medium level of knowledge about recommended integrated pest management technology in pigeon pea, while nearly equal percentage (19.60 per cent and 18.00 per cent) of pigeon pea growers had high and low level of knowledge, respectively.

Rabari (2006) reported that majority (73.34 per cent) of the tomato growers had medium level of knowledge regarding the tomato crop practices, while 15.33 and 11.33 per cent of them had low level and high level of knowledge regarding package of practices of the tomato crop respectively.

Patel (2007) revealed that majority (60.00 per cent) of the banana growers were found with medium level of knowledge about recommended tissue culture raised banana technology, followed by 22.00 per cent and 18.00 per cent of them had low and had high level of knowledge about tissue culture raised banana technology, respectively.

Diwan (2007) reported that majority of the woman sarpanchs and man sarpanchs (70.67 and 81.33 per cent) had medium level of knowledge about modern agriculture followed by 18.66 and 12.00 per cent the woman sarpanchs and man sarpanchs had high level of knowledge about modern agriculture, respectively.

2.4 EXTENT OF ADOPTION OF VARIOUS SELECTED RECOMMENDED AGRICULTURAL TECHNOLOGIES TRANSMITTED BY KVK

Now a day the development of agricultural innovation is not a problem but a problem is its adoption by the farmers. Adoption is a mental process in which an individual passes from awareness to continue use of an idea/technology in his farming situation. It is also decision making process, as adoption of innovation requires decision by an individual. The adoption process has two components (1) Symbolic adoption in which the new idea is accepted and (2) The use of adoption element, in which the material component or practice of innovation is used (Rogers and Shoemaker, 1971). Sharma and Potti (1966) stated that the wide difference exists among farmers in level of adoption even in the same

region. In this study the use of drip irrigation system by the farmers had been considered as the adoption. Some important findings regarding extent of adoption of improved drip irrigation system are presented below.

Jondhale *et al.* (2000) reported that majority of the trained farmers and untrained farmers (55.00 and 63.33 per cent) had medium level of adoption of improved practices of summer groundnut followed by 31.66 and 5.00 per cent had high and 13.33 and 31.66 per cent of the trained farmers and untrained farmers had low level of adoption of improved practices of summer groundnut, respectively.

More *et al.* (2000) reported that majority (57.86 per cent) of the respondents had medium level of adoption of recommended cultivation practices followed by 22.86 per cent and 19.28 per cent high and low level of adoption of cotton production practices, respectively.

Verma and Munshi (2000) reported that majority of the respondents (68.35 per cent) possessed medium level of adoption of groundnut cultivation technologies followed by high (16.02 per cent) and low (15.63 per cent) adoption of respective technology. However, on an average adoption of the recommended groundnut cultivation technologies was 61.14 per cent.

Chinchmalatpure and Saiyed (2001) reported that majority of the trained farmers and untrained farmers (70.00 and 57.50 per cent) had medium level of adoption regarding recommended practices of paddy crop followed by 20.00 and 17.50 per cent had high and 10.00 and 25.00 per

cent of the trained farmers and untrained farmers had low level of adoption regarding recommended practices of paddy crop, respectively.

Chhodavadia (2001) revealed that majority (73.08 per cent) of demonstrator respondents were high adopters. While in case of non–demonstrator, majority (59.62 per cent) of them had fall in medium adoption category.

Christian (2001) indicated that 37.50 per cent of the cotton growers had low level of adoption regarding IPM strategy of cotton followed by 36.67 per cent and 25.83 per cent of them who had medium and high level of adoption, respectively.

Dabhi (2002) reported that majority of the member of PIMS and non-members (69.00 and 77.00 per cent) had medium level of adoption of recommended water management practices, while 21.00 per cent of members of PIMS and 6.00 per cent of non-members had high level of adoption followed by 10.00 per cent of members of PIMS and 17.00 per cent of non-members with low level of adoption of recommended water management practices, respectively.

Lakhera and Sharma (2002) stated that 6.88 per cent, 58.75 per cent and 34.37 per cent of participatory farmers had low, medium and high extent of adoption improved mustard production technology, respectively. While incase of non-participatory farmers 33.75 per cent, 61.25 per cent and 5.00 per cent of them had low, medium and high extent of adoption improved mustard production technology, respectively.

Ramshetwad *et al.* (2002) stated that the banana growers were found to be using resistant variety, crop rotation, mechanical and cultural methods for the control of pest and diseases only to some extent. The use of chemical measures for control of disease and pests in banana was very less due to poor knowledge about fungicide and insecticides, preparation of spray solution and their application.

Kumar and Dangi (2003) revealed that slightly more than half (50.47 per cent) of tribal farmers was medium level of adoption of improved castor production technology, followed by 22.67 per cent and 5.34 per cent of them had low and high level of adoption of improved castor production technology, respectively. While incase of non-tribal farmers, slightly less than half (49.54 per cent) of them had medium level of adoption of improved castor production technology, followed by 25.33 per cent and 4.00 per cent of them had high and low level of adoption of improved castor production technology, respectively.

Patel *et al.* (2003) reported that majority (66.82 per cent) of the beneficiaries of NWDPRA had medium level of adoption of watershed management technology followed by 17.05 per cent with low and 16.13 per cent with high level of adoption of watershed management technology.

Prakash *et al.* (2003) revealed that majority (64.00 per cent) of the respondents had medium extent of adoption category followed by low (20.00 per cent) and high (16.00 per cent) extent of adoption with respect to rice production technology.

Joshi (2004) concluded that great majority of the respondents (71.82 per cent) had medium to high level of adoption with regard to recommended practices of cotton.

Patel (2004) reported that the beneficiary farmers (62.00 per cent) and non-beneficiary farmers (48.00 per cent) possessed medium level of adoption about various selected technologies transmitted by KVK while 26.00 and 12.00 per cent of the beneficiary farmers and non-beneficiary farmers were having high level of adoption and 12.00 per cent beneficiary farmers and 40.00 per cent non-beneficiary farmers possessed low level of adoption about various selected technologies transmitted by KVK, respectively.

Soni (2005) indicated that majority of the KFM subscriber farmers and non-subscriber farmers (66.25 and 51.25 per cent) had medium level of adoption of selected agricultural technology for major crops while 31.25 and 1.25 per cent of the KFM subscriber farmers and non-subscriber farmers had high level of adoption of selected agricultural technology for major crops and 2.50 and 47.50 per cent of the KFM subscriber farmers and non-subscriber farmers had low level of adoption of selected agricultural technology for major crops, respectively.

Vasava (2005) revealed that slightly more than two-third (63.33 per cent) of pigeon pea growers had medium level of adoption followed by 20.00 per cent and 16.67 per cent of them who had high and low level of adoption respectively.

Waman and Girase (2005) indicated that majority (54.38 per cent) of irrigated cotton growers had medium level of adoption, while considerable proportion (38.60 per cent) of them had high level of adoption and a very few (7.02 per cent) had low level of adoption.

Patel (2006) indicated that more than half (56.00 per cent) of the pigeon pea growers had medium level of adoption followed by low and high level of adoption with 24.00 and 20.00 per cent of the pigeon pea growers, respectively.

Rabari (2006) observed that slightly more then three-fifth of the tomato growers (63.34 per cent) had medium level of adoption, while slightly more then one-fifth (23.33 per cent) and 13.33 per cent of the tomato growers had high and low level of adoption, respectively. Thus, it revealed that slightly more than three-fifth (63.34 per cent) of the tomato growers had medium level of adoption for the tomato crop as per recommendation of package of practices in tomato cultivation technique.

Patel (2007) revealed reveals that majority (72.33 per cent) of the banana growers had medium level of adoption followed by low and high level of adoption with 17.00 and 10.67 per cent of the respondents, respectively.

2.5 IMPACT OF THE RESPONDENTS TOWARDS KVK ACTIVITIES

2.5.1 Personal characteristics

2.5.1.1 Age

Dabhi (2002) reported that there was non-significant (t = 1.620) difference in age between the respondents of the members of PIMS and non-members.

Soni (2005) concluded that there was non-significant (t = 0.74) difference in age between the respondents of KFM subscriber farmers and non-subscriber farmers.

2.5.1.2 Education

Vankar (2000) indicated that there was non-significant (t = 0.9925) difference in the level of education between the respondents of irrigated and unirrigated area.

Singh (2000) noted that many farm level production studies show that the level of farm production is significantly higher on farms where the decision maker is literate than the decision maker is illiterate.

Dabhi (2002) reported that there was non-significant (t = 1.0553) difference in the level of education between the respondents of the members of PIMS and non-members.

Soni (2005) concluded that there was highly significant (t = 3.82) difference in the level of education between the respondents of KFM subscriber farmers and non-subscriber farmers. The level of education was higher then that of non-subscriber farmers and the difference was significantly by one per cent level.

2.5.1.3 Caste

Dabhi (2002) reported that there was non-significant (t = 1.2297) difference between the caste of the members of PIMS and non-members.

2.5.2 Social characteristics

2.5.2.1 Socio-economic status

Dabhi (2002) noted that the members of PIMS was significantly (t = 5.3021) superior to non-members regarding their socio-economic status. It means that the PIMS showed highly significantly impact regarding the socio-economic status of the members of PIMS at the one per cent level.

Soni (2005) concluded that the KFM subscriber farmers were significantly (t = 9.75) superior to non-subscriber farmers regarding their socio-economic status. The participant mean socio-economic status was higher than that of the non-subscriber farmers and the difference was significantly by one per cent level.

2.5.3 Agro-economical characteristics

2.5.3.1 Occupation

Vankar (2000) reported that there was non-significant (t = 1.2391) difference between the occupation of SC farmers of irrigated and unirrigated area.

Dabhi (2002) indicated that there was non-significant (t = 0.1165) difference the occupation of the members of PIMS and non-members.

Soni (2005) reported that there was non-significant (t = 0.03) difference the occupation of the KFM subscriber farmers and non-subscriber farmers.

2.5.3.2 Size of land holding

Vankar (2000) indicated that there was non-significant (t = 0.2906) difference between the land holding of SC farmers of irrigated and unirrigated area.

Dabhi (2002) reported that there was non-significant (t = 1.4903) difference between the land holding of the members of PIMS and non-members.

Soni (2005) concluded that there was non-significant (t = 1.30) difference between the land holding of KFM subscriber farmers and non-subscriber farmers.

2.5.3.3 Annual income

Dabhi (2002) reported that there was highly significant (t = 3.7838) difference between annual income of the members of PIMS at one per cent level.

Soni (2005) concluded that there was highly significant (t = 7.27) difference between annual income of KFM subscriber farmers and non-subscriber farmers. The participant mean adoption quotient was higher than that of the non-subscriber farmers and the difference was significant by one per cent level.

2.5.4 Psychological characteristics

2.5.4.1 Risk preference

Vankar (2000) indicated that risk preference of SC farmers of irrigated area was significantly (t = 2.2402) superior than the SC farmers of unirrigated area. The mean quotient was higher than the SC farmers of unirrigated area and the difference was significantly by five per cent level.

Dabhi (2002) reported that impact of PIMS on risk preference of member of PIMS not found significantly (t = 1.0073) higher than non-members.

Soni (2005) noted that risk preference of the KFM subscriber farmers found significantly (t = 4.32) higher than non-subscriber farmers at one per cent level.

2.5.4.2 Scientific orientation

Dabhi (2002) reported that there was non-significant (t = 1.0114) difference between the scientific orientation of the members of PIMS and non-members.

Soni (2005) concluded that there was significant (t = 2.36) difference between the scientific orientation of KFM subscriber farmers and non-subscriber farmers at five per cent level.

2.5.4.3 Innovativeness

Soni (2005) reported that there was highly significant (t = 3.48) difference between the KFM subscriber farmers and non-subscriber farmers regarding their innovativeness at one per cent level.

2.5.4.4 Knowledge

Veeraiah *et al.* (1997) studied knowledge and adoption level of farmers trained at Krishi Vigyan Kendra and reported that majority (61.33 per cent) of the farmers had medium level of knowledge about recommended critical skill in rainfed groundnut cultivation. This was followed by low level of knowledge (20.00 per cent) and high level of knowledge (18.67 per cent).

Aski *et al.* (1997) studied the impact of training on sugarcane growers and concluded that 18.57 per cent of trained respondents had 18.65 per cent and above knowledge score. While 11.43 per cent of untrained respondents were found in high knowledge category with 18.16 per cent and above knowledge score majority of trained and untrained farmers found in medium knowledge category.

Shrivastava and Yadav (1998) studied impact of training and visit system and reported that higher percentage of the contact farmers (38.00 per cent) possessed fair level of knowledge, followed by 36.00 per cent and 26.00 per cent having good and poor level of knowledge, respectively. On the other hand the majority (74.00 per cent) of non-contact farmers had poor level of knowledge, followed by 14.00 and 12.00 per cent having good and fair level of knowledge. The chi-square test was found significant which indicated that there was significant difference between knowledge level of contact and non-contact farmers.

2.5.4.5 Attitude

Dabhi (2002) reported that attitude of the members of PIMS was more favourable (t = 3.3128) than the non-members towards PIMS at one per cent level.

Soni (2005) concluded that attitude of the KFM subscriber farmers was significant favourable (t = 2.34) than the non-subscriber farmers towards farm literature. The participant mean attitude quotient was higher than the non-subscriber farmers and the difference was significant by five per cent level.

2.5.5 Communicational characteristics

2.5.5.1 Extension contact

Dabhi (2002) reported that there was highly significant (t = 2.5839) impact of PIMS was observed in the members of PIMS in terms of their contact with various extension agencies at one per cent level.

2.5.6 Extent of adoption

Yadikikar (1991) reported that 65.50 per cent of the respondents showed their level of adoption at the medium level while 16.50 per cent and 6.00 per cent of the respondents fell under low and high levels of adoption respectively.

Deshmukh *et al.* (1995) studied impact of Pilot Project reported 47.50 per cent of the respondents had high adoption regarding improved farm practices, 31.50 per cent of them were medium adoption whereas 1/6 fell in the category of low adoption.

Patil and Deshmukh (1995) in his study related impact of Training and Visit System and found that technology adoption index for a complete package of practices for paddy cultivation as such, in case of contact and non contact farmers was worked out to 60.43 and 42.27 per cent respectively. An overall level mean score of adoption of complete package of practices for rice production by the contact clientele was higher than that of the non-contact and it was significant at 1.00 per cent level of probability.

Gowda and Jayaramaiah (1996) concluded that the adoption level of participants of soil and moisture conservation practices in respect of ragi was significantly higher than the non-participants. The participant mean adoption quotient was higher than that of the non-participant and the difference was significant by five per cent level.

Shrivastava *et al.* (1996) indicated that in case of adoption of storage of food grains practice, only 40.00 per cent female farmers were of high adoption category and 60.00 per cent were of low adoption before the training programme, but after the training imparted as high as 68.00 per cent were in high adoption category and only 32.00 per cent left with low adoption category.

Shrivastava *et al.* (1995 and 1996) found-that out of the total farmers, before training 24.00 per cent had high adoption and 76.00 per cent were having low adoption of improved seed, while after training 72.00 per cent were of high adoption and 28.00 per cent were in low adoption.

Aski *et al.* (1997) observed that 17.14 per cent of trained farmers had 85.44 and above adoption score in high adoption category. While 14.29 per cent of untrained were found in high adoption with 76.85 and above adoption score. Almost equal percentage of trained and untrained farmers was found in the medium adoption category. The mean adoption score of two groups had a significant difference.

Mohod *et al.* (1997) conducted a study on impact of National Watershed Development Programme. It was observed from the result that National Watershed Development Programme has left impact with a short period of time in terms of increase in area (13.63 per cent) under irrigation, change in cropping pattern with particular reference to introduction of *Rabi* crops such as soybean, wheat, gram and safflower and significant increase in the yield levels of the existing crops growth by the project beneficiaries and the crop introduced after the project.

Patel and Patel (1997) in an experimental study on impact of Lab to Land and programme found that nearly seventy per cent of beneficiary and non-beneficiary farmers were found under medium adoption group. Twenty four per cent of beneficiary farmers were found in high adoption group as against a lower percentage of beneficiary farmers (7.00 per cent) in low adoption group. While only single non-beneficiary farmer was found in high adoption group as against the higher percentage of (29.00 per cent) non-beneficiary farmers were found low adoption group. The mean adoption of beneficiary farmers was seen to be higher than that of non-beneficiary farmers and the difference is statistically significant at one per cent level.

Sharma *et al.* (1997) studied the impact of Krishi Vigyan Kendra reported that the majority (78.33 per cent) of the trained farmers had moderate extent of adoption of maize production technology followed by 13.33 per cent having low adoption and 8.34 per cent having high adoption. In case of untrained farmers, the majority (56.66 per cent) had low adoption followed by 40.00 per cent having medium adoption. There was significantly higher adoption of maize production technology by trained farmers.

Veeraiah *et al.* (1997) in their study related to knowledge and adoption level of farmers trained at Krishi Vigyan Kendra revealed that the majority (50.67 per cent) of the trained farmers had the medium level of adoption of recommended critical skills in rainfed groundnut cultivation. The percentage of farmers having the low level of adoption being 28.67 per cent and 22.66 per cent, respectively.

Patel (1998) stated that the mean adoption score of respondents from participant group was 10.20, while that of respondents from non-participant group was 6.24. The adoption level of participant and non-participant of respondents differ significantly.

Shrivastava and Yadav (1998) revealed that the majority (46.00 per cent) of the contacted farmers had good level of adoption, followed by fair (30.00 per cent) and poor (24.00 per cent) level of adoption, respectively. On the contrary most of the non-contacted farmers (72.00 per cent) had the poor level of adoption followed by good (16.00 per cent) and fair (12.00 per cent) levels of adoption, respectively.

Singh (2000) noted that many farm level production studies show that the level of farm production is significantly higher on farms were the decision maker is literate than where the decision maker is illiterate.

Gupta *et al.* (2003) reported that more than 91.00 per cent subscribers get information on agriculture and allied field causally and applied to field causally.

2.6 RELATIONSHIP BETWEEN SELECTED INDEPENDENT VARIABLES WITH THE EXTENT OF ADOPTION

2.6.1 Personal characteristics and dependent variable

2.6.1.1 Age and extent of adoption

Jondhale *et al.* (2000) reported that age of trained farmers had negative and significant correlation with their adoption of improved practices of summer groundnut.

Trivedi (2000) reported that age of respondents had negative and non-significant correlation with adoption of Rose cultivation, while it had positive but non-significant correlation with adoption of Lily cultivation.

Vankar (2000) revealed that, significant impact of canal irrigation was not observed on the age of SC farmers of the irrigated and unirrigated villages.

Christian (2001) indicated that age of cotton growers had non-significant relationship with extent of adoption of IPM strategy in cotton crop.

Dongardive (2002) reported that age of chilli growers had non-significant correlation with their adoption of recommended technology of chilli crop.

Lakhera and Sharma (2002) stated that age of participatory farmers was non-significantly correlated with the extent of adoption of improved mustard production technology.

Patel *et al.* (2003) inferred that there was a negative and significant association between age of respondents and extent of adoption of watershed management technology.

Patel (2004) reported that age of beneficiary farmers had negative and significant correlation with their adoption of recommended technology transmitted by KVK.

Patel (2005) reported that age had negative and significant correlation with the adoption of recommended chilli cultivation technology by the chilli growers

Soni (2005) reported that age of KFM subscriber farmers had negative and significant correlation with their extent of adoption of selected agricultural technology.

Vasava (2005) revealed that that age of pigeon pea growers had non-significant correlation with their adoption of recommended technology of pigeon pea crop.

Patel (2006) indicated that age of pigeon pea growers were negative and significantly correlated with adoption of IPM technology of pigeon pea crop.

2.6.1.2 Education and extent of adoption

Jondhale *et al.* (2000) indicated that level of education of trained farmers had positive and significant correlation with their adoption of improved practices of summer groundnut.

Vankar (2000) indicated that there was non-significant difference in the level of education of the SC farmers of the irrigated and unirrigated area.

Christian (2001) indicated that education had significant relationship with extent of adoption of IPM strategy in cotton crop.

Dabhi (2002) revealed that level of education of the members of PIMS and non-members were significantly correlated with the extent of adoption of recommended water management practices.

Lakhera and Sharma (2002) stated that level of education of participatory farmers was significantly correlated with the extent of adoption of improved mustard production technology.

Patel *et al.* (2003) observed that there was a positive and highly significant association between education of respondents and extent of adoption of watershed management technology.

Joshi (2004) found positive and significant correlation between education of the farmers and their adoption level.

Patel (2004) reported that level of education of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Soni (2005) reported that level of education of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

Patel (2006) indicated that pigeon pea growers were positive and significantly correlation between education and their adoption of IPM technology.

2.6.1.3 Caste and extent of adoption

Chuahan (1994) revealed that caste had positive and significant correlation with socio-techno-economic change of the general peasants.

Dabhi (2002) reported that no relationship between caste and extent of adoption.

Patel (2004) reported that caste of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

2.6.1.4 Type of family and extent of adoption

Patel and Sangle (1994) did not find any relationship between respondents' type of family of techno-economic change.

Dabhi (2002) reported that no relationship of the members of PIMS and non-members were negative and significantly correlated with the extent of adoption of recommended water management practices.

Patel (2004) reported that type of family of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

2.6.1.5 Size of family and extent of adoption

Trivedi (2000) reported that there was positive and non-significant relationship between size of family and adoption level of Rose and Lily cultivation.

Dabhi (2002) raveled that size of family of beneficiary farmers had positive and non-significant relationship with their extent of adoption of recommended water management practices.

Patel (2004) reported that size of family of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Patel (2005) revealed that there was non significant association between size of family and level of adoption of chilli growers regarding chilli technology.

Vasava (2005) indicated that there was positive and non-significant relationship between size of family and adoption level of pigeon pea cultivation technology.

Patel (2006) stated that there was a negative and non-significant association between size of family and level of adoption of pigeon pea growers regarding IPM technology.

Rabari (2006) stated that there was non-significant association between size of family and level of adoption of tomato growers regarding tomato cultivation technology.

2.6.2 Social characteristics and dependent variable

2.6.2.1 Socio-economic status and extent of adoption

Dabhi (2002) revealed that the socio-economic status of the members of PIMS and non-members and their extent of adoption of recommended water management practices was positively correlated.

Jondhale *et al.* (2000) reported that the socio-economic status of trained farmers had positive and significant correlation with their adoption of improved practices of summer groundnut.

Patel (2004) reported that socio-economic status of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Soni (2005) indicated that the socio-economic status of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

2.6.3 Agro-economical characteristics and dependent variable

2.6.3.1 Occupation and extent of adoption

Dabhi (2002) reported that there was positive and non-significant association between occupation of the respondents and their extent of adoption of recommended watershed management technology.

Patel (2005) indicated that there was negative and non-significantly association between occupation of the respondents and their extent of adoption of recommended chilli cultivation technology.

Soni (2005) indicated that occupation of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

2.6.3.2 Size of land holding and extent of adoption

Jondhale *et al.* (2000) reported that size of land holding of trained farmers had positive and significant correlation with their adoption of improved practices of summer groundnut.

Christian (2001) observed that size of land holding of cotton growers had non-significant relationship with the extent of adoption of IPM strategy in cotton crop.

Dabhi (2002) reported that there was positive and significant association between size of land holding of the member of PIMS and non-members and their extent of adoption of recommended watershed management technology.

Lakhera and Sharma (2002) stated that size of land holding of participatory farmers was significantly correlated with the extent of adoption of improved mustard production technology.

Patel *et al.* (2003) revealed that size of land holding of the respondents had highly significant correlation with their adoption of watershed management technology.

Patel (2004) reported that size of land holding of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Soni (2005) indicated that size of land holding of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

Patel (2006) observed that there was a non-significant relationship between size of land holding and their adoption of IPM technology in pigeon pea crop.

Rabari (2006) clearly indicate that size of land holding of the tomato grower's had non-significant association with their adoption level of recommended tomato cultivation technology.

2.6.3.3 Annual income and extent of adoption

Jondhale *et al.* (2000) reported that annual income of trained farmers had positive and significant correlation with their adoption of improved practices of summer groundnut.

Christian (2001) observed that annual income of cotton growers had significant relationship with extent of adoption of IPM strategy in cotton crop.

Dabhi (2002) reported that there was positive and significant association between annual income of the member of PIMS and their extent of adoption of recommended watershed management technology.

Dongardive (2002) revealed that annual income had non-significant relation with adoption of recommended technology of chilli crop.

Lakhera and Sharma (2002) stated that annual income of participatory farmers was significantly correlated with the extent of adoption of improved mustard production technology.

Patel *et al.* (2003) observed that annual income of the respondents had highly significant correlation with their adoption of watershed management technology.

Patel (2004) reported that annual income of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Patel (2005) indicated that the annual income of chilli growers had non significant correlation with their extent of adoption of recommended chilli technology. Thus annual income did not play significant role in increasing or decreasing adoption level of chilli cultivation technology.

Soni (2005) indicated that annual income of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

Patel (2006) revealed that annual income of pigeon pea growers had non-significant relationship with adoption of IPM technology.

Rabari (2006) reported that annual income of the tomato growers had no-significant correlation with their extent of adoption of recommended tomato cultivation technology.

2.6.4 Psychological characteristics and dependent variable

2.6.4.1 Risk preference and extent of adoption

Jondhale *et al.* (2000) reported that risk preference of trained farmers had positive and significant correlation with their adoption of improved practices of summer groundnut.

Trivedi (2000) reported that risk preference was found to be positive but non-significant with adoption level of rose cultivation, whereas, it was found highly significant with adoption level of Lily cultivation.

Christian (2001) observed that risk orientation of cotton growers was significantly related with their extent of adoption of IPM strategy in cotton crop.

Dabhi (2002) reported that there was positive and significant association between risk preference of the member of PIMS and their extent of adoption of recommended watershed management technology.

Dongardive (2002) reported that risk orientation of chilli growers was significantly correlated with their adoption of recommended chilli technology.

Patel (2004) reported that risk preference of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Patel (2005) indicated that risk orientation of the chilli growers had positive and significant correlation with their level of adoption of recommended chilli technology.

Soni (2005) indicated that risk preference of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

Patel (2006) clearly indicated that risk orientation of the pigeon pea grower's had positive and significant correlation with their level of adoption.

Rabari (2006) clearly indicated that risk orientation of the tomato growers had positive and significant correlation with their level of adoption of recommended tomato technology.

2.6.4.2 Achievement motivation and extent of adoption

Patil and Sangle (1990) revealed that significant relationship was found between achievement motivation and adoption.

Jagadeeshwara (1994) reported that positive and significant relationship was found between achievement motivation and extent of adoption.

Patel (2004) reported that achievement motivation of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

2.6.4.3 Scientific orientation and extent of adoption

Trivedi (2000) observed that scientific orientation was positively and significantly correlated with the adoption level of Rose and Lily cultivation.

Christian (2001) indicated that scientific orientation was significantly related with the extent of adoption of IPM strategy in cotton crop.

Dabhi (2002) reported that there was positive and significant association between scientific orientation of the member of PIMS and their extent of adoption of recommended watershed management technology.

Dongardive (2002) observed that scientific orientation was positively and significantly correlated with adoption of recommended technology of chilli crop by chilli growers.

Patel *et al.* (2003) revealed that scientific orientation of the respondents had highly significant correlation with their adoption of watershed management technology.

Patel (2004) reported that scientific orientation of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Joshi (2004) reported positive and significant correlation between scientific orientation and adoption level.

Patel (2005) reported that scientific orientation of the chilli growers had positive and significant correlation with the adoption of recommended chilli technology by the chilli growers which indicates that scientific orientation is an important variable for adoption of chilli cultivation technology.

Soni (2005) indicated that scientific orientation of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

Patel (2006) observed that scientific orientation was highly significant correlated with their adoption of IPM technology in pigeon pea growers.

Rabari (2006) indicated that scientific orientation of the tomato growers had negative and non-significant correlation with the adoption of recommended tomato cultivation technology by the tomato growers which indicate that scientific orientation had no influence on adoption of tomato cultivation technology.

2.6.4.4 Innovativeness and extent of adoption

Patel *et al.* (1995) stated that the innovativeness was found to have positive and significant influence on the techno-economic change of the pooled sample farmers.

Prajapati (2003) showed that innovativeness of castor growers had significant correlated with their adoption of recommended hybrid cater cultivation technology.

Patel (2004) reported that innovativeness of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Soni (2005) indicated that innovativeness of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

Patel (2006) revealed that there was a highly significant association between innovativeness of the pigeon pea growers and their adoption of IPM technology.

2.6.4.5 Knowledge and extent of adoption

Vankar (2000) observed positively significant correlation between knowledge and adoption level of the respondents.

Christian (2001) clearly indicated that significant relationship was observed between level of knowledge and extent of adoption of IPM strategy in cotton crop.

Dabhi (2002) reported that there was positive and significant association between knowledge of the member of PIMS and non-members and their extent of adoption of recommended watershed management technology.

Dongardive (2002) revealed that knowledge was highly and positively correlated with adoption level of chilli growers.

Patel & Patel (2002) revealed that there was positive and significant correlation between knowledge level and adoption level.

Patel *et al.* (2003) inferred that there was highly significant relationship between knowledge and adoption of watershed management technology.

Patel (2005) indicated that the adoption level of chilli growers regarding chilli technology had positive and significant correlation with their knowledge level. It indicates that as knowledge level of chilli growers increases, the adoption level increases.

Soni (2005) indicated that knowledge of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

Patel (2006) observed that there was highly significant correlation with their knowledge level and adoption of IPM technology.

Rabari (2006) indicated that the adoption level of tomato growers regarding tomato cultivation technology had positive and significant correlation with their knowledge level.

2.6.4.6 Attitude and extent of adoption

Vankar (2000) concluded that attitude of the respondents of irrigated and unirrigated villages towards modern agriculture had positive and significant relationship with adoption of modern agricultural practices of wheat.

Christian (2001) reported that attitude towards IPM strategy had significant relationship with the extent of adoption of IPM strategy in cotton crop.

Patel *et al.* (2003) revealed that attitude towards watershed management technology had highly significant correlation with their beneficiaries farmers.

Soni (2005) indicated that attitude of KFM subscriber farmers had positive and significant correlation with their extent of adoption of selected agricultural technology.

Patel (2006) concluded that attitude towards IPM technology had highly significant association with their extent of adoption.

2.6.5 Communicational characteristics and dependent variable

2.6.5.1 Cosmopolite-localite and extent of adoption

Khan *et al.* (1997) revealed that cosmopoliteness was found to be significantly associated with the adoption of paddy technology.

Shinde *et al.* (1999) concluded that cosmopoliteness was found significantly correlated with adoption of improved animal husbandry management practices.

Trivedi (2000) observed that cosmopolite-localite was non-significantly associated with adoption level of Rose and Lily cultivation.

Parashar (2004) stated that there was significant and positive correlation between cosmopolite-localite and level of adoption.

Patel (2004) reported that cosmopoliteness of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Patel (2006) indicated that there was highly significant correlation between cosmopolite-localite and level of adoption.

2.6.5.2 Extension contact and extent of adoption

Jondhale *et al.* (2000) reported that extension contact of trained farmers had positive and significant correlation with their adoption of improved practices of summer groundnut.

Christian (2001) reported that extension contact had significant relationship with the extent of adoption of IPM strategy in cotton crop.

Dabhi (2002) reported that there was positive and significant association between extension contact of the member of PIMS and non-members and their extent of adoption of recommended watershed management technology.

Dongardive (2002) observed significant correlation between sources of information utilized and adoption level of chilli growers about chilli technology.

Sarkar *et al.* (2002) reported that the source of information had positive and significant relationship with adoption of recommended paddy technology.

Patel (2004) reported that extension contact of beneficiary farmers had positive and significant correlation with their adoption of recommended technology transmitted by KVK.

Patel (2005) revealed that extension contact of the chilli growers had positive and significant correlation with adoption level of recommended chilli-cultivation technology. It indicates that extension contact is an important variable which plays a crucial role in adoption of chilli cultivation technology.

Patel (2006) reported that the extension contact had positive and significant relationship with adoption of recommended pigeon pea technology.

2.7 CONSTRAINTS PERCEIVED BY RESPONDENTS IN ADOPTION OF RECOMMENDED TECHNOLOGIES

Constraints play an obstructive role in adoption process of agricultural technology. Therefore, for better results of extension approach, it is very essential to minimize the constraints in adoption process. Findings of various investigators regarding constraints faced by the farmers are presented below.

Chhodavadia (2001) reported that the important constraints of groundnut- pigeon pea relay cropping system as faced by the demonstrator and non- demonstrator groundnut- pigeon pea relay crop growers were; non- remunerative price of crop produce, high price of improved seeds, lack of irrigation facility, high price of chemical fertilizers, non–availability of finance in time, high price of weedicides / pesticides and fungicides, high labour requirement, extension workers dose not remain in village as per time schedule, difficulty in interculturing and unawareness about the recommendation of pesticides/ fungicides.

Christian (2001) reported that major constraints faced by the cotton growers in descending order were unavailability of training in time, lack of skilled labourers, unavailability of plant protection appliances in time, lack of quality in plant protection appliances and bio-agent, high cost of plant protection inputs, unavailability of remunerative price of product and lack of finance.

Dongardive (2002) reported that the major constraints faced by chilli growers were heavy attack of pests and diseases (95.33 per cent), shortage of electric power (84.66 per cent), non-availability of pure seeds (80.00 per cent), not getting remunerative price of agricultural produce (74.66 per cent), insufficient transport facilities (64.00 per cent) and high cost of inputs (60.00 per cent).

Prajapati (2003) showed that constraints had been faced by the castor growers in adopting castor production technology viz., irregular rainfall, irregular supply of electricity, lack of technical guidance, high rate of electricity, high product on cost, high cost of fertilizer, inadequate finance, unavailability of certified seed and shortage and high wage of labour.

Joshi (2004) concluded that non-availability of irrigation facilities including under ground salty water and shortage of rainfall, shortage of FYM, poor social and economic conditions, high price and shortage of inputs, shortage of labourers and its high rate were the major constraints faced by the cotton growers in adoption of modern practices of cotton cultivation.

Patel (2006) indicated that unavailability of bio-agents ,lack of adequate knowledge about use of pheromone trap and lack of technical know-how about economic injury level were the major constraints as perceived by the pigeon pea growers in adoption of Integrated Pest Management technology in pigeon pea.

2.8 SUGGESTIONS TO OVERCOME THE CONSTRAINTS

The suggestions endorsed by various researchers in order to overcome the constraints faced by the farmers in adoption of recommended technology are reproduced as under:

Patel (1995) reported that important suggestions offered by demonstrator groundnut growers were; purchase of plot production as seed stock, optimum visits of the scientist should be available for the produce and number of demonstrations be increased in the village.

Christian (2001) reported that major suggestions given by the cotton growers in descending order were training should be available in time, training should be imparted to agricultural labourers on spraying/dusting or using bio-agents and quality of plant protection appliances and bio-agents should be maintained.

Dongardive (2002) reported the suggestions of the chilli growers as there should be regulation of rate of agricultural produce in market (95.33 per cent) followed by training on new technology should be imparted (84.66 per cent) and sufficient and timely electric power should be made available (80.66 per cent). Moreover 74.66 per cent of chilli growers suggested that availability of disease free seedlings/planting materials be made, the prices of inputs be minimized (70.00 per cent), timely technical guidance (50.00 per cent) be provided and provision of sufficient credit be made available at reasonable interest (40.00 per cent).

Prajapati (2003) showed that suggestions given by the castor growers in adopting castor production technology viz., timely technical guidance should be provided, regular supply of electricity for irrigation purpose, reducing the rate of electricity per unit, provision of reasonable price to the produce, reducing the price of fertilizers and seeds, crop loan

should be provided at proper time, develop high yielding, wilt and root rot resistant varieties and availability of certified seed from co-operative society and government agency.

Joshi (2004) concluded that farmer's suggestions to overcome constraints in adoption of modern practices of cotton cultivation were government should provide irrigation facility through canal, give subsidy and loan for seeds and fertilizers and also give information as well as documents rations.

Patel (2006) stated that the major suggestions as expressed by pigeon pea growers to overcome the constraints were: Benefits of IPM should be extended to all pigeon pea growers in the village, kits and literature about IPM programme should be made available and training on IPM technology should be imparted.

Chapter – III
METHODOLOGY

This chapter deals with the research design, tools and techniques of a scientific investigation employed for the collection of data in light of the objectives of the study. It also concerns with the selection of proper sampling techniques for investigation as well as devices used for the analysis of data. The chapter contains methodology adopted for the study and it is discussed under the following heads:

4.1 Locale of the study

4.2 Research design

4.3 Sampling technique

4.4 Development of an interview schedule

4.5 Pre-testing of an interview schedule

4.6 Collection of data

4.7 Selection and measurement of variables

4.8 Statistical frame work used for the analysis of data.

4.1 LOCALE OF THE STUDY

4.1.1 The setting

The present investigation was conducted in Anand district of Gujarat state, which is located at an elevation of 45.1 meters above the mean See level and is situated at between north 22.06^0 to 23.43^0 latitudes and east 72.20^0 to 73.12^0 longitudes respectively. Anand district covers

some part of Charotar area and some track of Bhal area. The southern boundary of the district touches to Bay of Khambhat, while northern boundary touches Kheda district. The western boundary touches Kheda and Amdavad districts whereas eastern boundary touches Kheda and Vadodara districts.

As per the revenue record, the Anand district comprises of 8 talukas consisting of 354 villages, 11 towns and spread over 2951.10 sq. km. It comprises 2.95 lakh hectares of total land and occupies about 1.50 per cent of the total land of the Gujarat state (i.e. 196 lakh hectares) and supports about 3.71 per cent of the total population of Gujarat state. The cultivated land is 69.15 per cent of total land of the district which is higher than the state average i.e. 50.00 per cent.

4.1.2 Soil

The soil of Anand district broadly classified into three principle groups. First one is sandy fertile soil of Anand, Umreth, Borsad, Ankalav and Petlad talukas. Second one is kyari land of Khambhat, Sojitra and Tarapur talukas. Third one is upland soil of Anand and some part of Borsad talukas.

4.1.3 The climate

Anand district receive precipitation through South-West monsoon from June to September. The average rainfall of the Anand district (770 mm). The climate of Anand district is dry and warm. The winter is normally cold whereas summer is too hot. The maximum monthly

temperature ranged between 26.0^0 to 40.1^0C while minimum monthly temperature varied between 10.8^0 to 27.4^0 C. The average annual wind speed is 5.6 km/hr exists in the district.

4.1.4 The population

According to 2001 census, the population of Anand district is over 18, 56,872 comprised 9, 72,000 males and 8, 84,872 female.

4.2 RESEARCH DESIGN

The present study was confined to Ex-Post-Facto research design as the independent variable is already operated in study area. Kerlinger (1976) stated that ex-post-facto research design is worthy to apply when the independent variables have already acted upon.

4.3 SAMPLING TECHNIQUE

4.3.1 Selection of district

For any social research involving farmers as a unit of study, a two way direct communication between researcher and respondent is a must to buildup good rapport to ensure free and frank dialogue and to get satisfactory responses from them. With this basic consideration in view, Anand district of Gujarat State Table 1 and Fig. 2, from where researcher hails was purposively selected for the study in favour of following reasons:

1. The Krishi Vigyan Kendra, Devataj is situated in Anand district.
2. The Anand district is well known through Anand Milk Producers' Union Limited (AMUL) for its extraordinary contribution in co-operative sector, IRMA and NDDB at national and international level.

3. Water and Land Management Institute (WALMI) of Gujarat state is located in the district, which is the pioneer institution for PIMS.
4. The district having one of the four agricultural university, i.e. Anand Agricultural University, where the college of agriculture, college of dairy science, college of veterinary and animal husbandry colleges are located as well as research as on various subjects are conducted in the university.
5. Very few studies in have been conducted so for on the topic there fore; it is essential to assess the knowledge and adoption level of farmers about KVK activities.

4.3.2 Selection of Talukas

Anand district is composed of eight talukas, out of which, four talukas *viz.,* Sojitra, Petlad, Anand and Borsad were selected for the study. Because Sojitra and Petlad have maximum activities about crop production and allied fields were carried out by Krishi Vigyan Kendra, Devataj and Anand and Borsad had not any activities conducted by KVK, Devataj, during up to 2006-07. The talukas selected from Anand district showing in Table 1 and Fig. 3.

4.3.3 Selection of Villages

For selection of villages, a list of all those villages where various activities carried out by Krishi Vigyan Kendra Devataj was prepared from the selected talukas. This list was prepared with the help of KVK personnel. Ten villages were selected randomly on the basis of

maximum activities carried out by KVK Devataj during the preceding two years. These selected villages were considered as beneficiary villages. Ten villages were also selected randomly from other talukas were none of the activity was conducted by the KVK Devataj and these were termed as non-beneficiary villages. Thus, a total of twenty villages, i.e. ten beneficiary and ten non-beneficiary villages were included in the study. The selected talukas as well as villages have been depicted in the map of Anand district Table 1 and Fig. 4.

4.3.4 Selection of the Respondents

For the selection of respondents a comprehensive list of the farmers benefited by KVK Devataj was prepared from ten beneficiary villages. With the help of KVK personnel. Total 4-15 respondents from each beneficiary village were selected by proportionately random sample method. Thus, the total number of beneficiary farmers was eighty. To select non-beneficiary farmers, a list collected from the Talati and Mantri of gram panchayat of selected villages. Those farmers who were not benefited by KVK Devataj were listed from each selected non-beneficiary village. Total 2-22 respondents from each non-beneficiary village were selected by proportionately random sample method. Thus, in all, eighty non-beneficiary farmers were included in the study. The total sample comprised of one hundred sixty respondents (eighty beneficiary and eighty non-beneficiary). Details about selected talukas, villages and respondents are shown in Table 1.

Table 1: Taluka- wise and village- wise distribution of respondents

Sr. No.	Name of taluka	Name of villages	No. of farmers according to selection criteria	No. of selected respondents
1	2	3	4	5
A.	Beneficiary farmers			
1.	Sojitra	1. Kothavi	25	06
		2. Khanshol	15	04
		3. Gada	38	10
		4. Devataj	47	12
		5. Limbali	20	05
2.	Petlad	1. Jesarva	58	15
		2. Rangaipura	20	05
		3. Simardha	38	10
		4. Ashi	31	08
		5. Ishrama	20	05
		Total	**312**	**80**
B.	Non- Beneficiary farmers			
1.	Anand	1. Jitodiya	56	10
		2. Mogar	138	22
		3. Vanskhilia	33	05
		4. Khandhli	30	05
		5. Meghwa (Gana)	52	08
2.	Borsad	1. Napa (Talpad)	75	11
		2. Surkuva	48	07
		3. Dhobikui	09	02
		4. Santokpura	11	03
		5. Dhundhakuva	50	07
Total			**502**	**80**
Overall Total (A+B)			**814**	**160**

4.4 DEVELOPMENT OF AN INTERVIEW SCHEDULE

The tool used for study purpose was personal interview schedule. 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 the Advisory Committee, Research Scientists of Anand Agricultural University. Government Officers of agriculture department of Gujarat State and staff of Extension Education Institute, Anand to seek and invite their opinion and suggestions to make an interview schedule more scientific and meaningful.

4.5 PRE-TESTING OF AN INTERVIEW SCHEDULE

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

4.6 COLLECTION OF DATA

The actual work of data collection was done during the month of March to April, 2008. The respondents were interviewed personally either at their home or at community place or at their fields. Before conducting an interview, the aim and objectives of the study were

explained to the respondents 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 their responses were recorded on the spot.

4.7 SELECTION AND MEASUREMENT OF VARIABLES

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

The list of variables along with techniques used for their measurement is presented in Table 2.

Table 2 : Variables and their measurement

Sr. No.	Name of the variables	Empirical measurement
(A)	**Independent variables**	
I	**Personal characteristics :**	
1	Age	Chronological age of the respondents
2	Education	SES scale procedure adopted by

		Patel (2006) was used with due modification
3	Caste	SES scale procedure adopted by Dabhi (2002) was used with due modification
4	Type of family	SES scale procedure adopted by Patel (2006) was used with due modification
5	Size of family	Total number of members in the family
II	**Social characteristics :**	
6	Socio-economic status	SES scale procedure adopted by Patel (2006) was used with due modification
III	**Agro-economical characteristics :**	
7	Occupation	SES scale procedure adopted by Patel (2004) was used with due modification
8	Size of land holding	Structured schedule developed
9	Annual income	Structured schedule developed

Conti…

Conti…

Sr. No.	**Name of the variables**	**Empirical measurement**
IV	**Psychological characteristics :**	
10	Risk preference	Scale procedure adopted by Patel (2004) was used with due modification
11	Achievement motivation	Scale procedure adopted by Patel (2004) was used with due modification

12	Scientific orientation	Scale procedure adopted by Patel (2006) was used with due modification
13	Innovativeness	Scale procedure adopted by Patel (2006) was used with due modification
14	Knowledge	Structure schedule developed
15	Attitude	Scale procedure adopted by Patel (2004) was used with due modification
V	**Communicational characteristics :**	
16	Cosmopolite-localite	Scale procedure adopted by Patel (2006) was used with due modification
17	Extension contact	Scale procedure adopted by Patel (2004) was used with due modification
(B)	**Dependent variable :**	
1	Extent of adoption	Structure schedule developed

The measurement technique for each of the selected dependent as well as independent variables was as under:

Measurement of variables :

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

(A) Independent variables

4.7.1 Personal variables

4.7.1.1 Age

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

Sr. No.	Age group
1	Young age group (up to 35 years)
2	Middle age group (36 to 50 years)
3	Old age group (above 50 years)

4.7.1.2 Education

It refers to formal education obtained by the respondents in terms of their level of education. According to their level of education they were classified into five groups and measured with the help of SES scale adopted by Patel (2006) with due modifications. The score assigned to actual possessed education as under :

Sr. No.	Educational level	Score
1	Illiterate	1
2	Primary (1^{st} to 7^{th} standard)	2
3	Secondary (8^{th} to 10^{th} standard)	3
4	Higher secondary (11^{th} to 12^{th} standard)	4
5	College and above (above 12^{th} std.)	5

4.7.1.3 Caste

The data collected from the respondents about their caste status were categorized into three groups. The method of scoring for caste adopted by Dabhi (2002) in his SES scale was followed with some modifications as under :

Sr. No.	Caste group	Castes involved	Score
1	Higher caste	Patel, Brahmin, Rajput, Baniya	3
2	Backward caste	Socially and Educationally	2

		backward castes	
3	Most Backward caste	SC and ST castes	1

4.7.1.4 Type of family

The type of family is most important among social factors. It was measured with the help of SES scale adopted by Patel (2004) with due modification. The scoring system followed to quantify the family type was as under :

Sr. No.	Category	Score
1	Nuclear family	1
2	Joint family	2

4.7.1.5 Size of family

Family size was measured as the number of individuals of both sexes living together in household. The respondents were classified into three categories based on number of members and the scoring was done as follow :

Sr. No.	Category	Score
1	Small family (Up to 5 members)	1
2	Medium family (6 to 10 members)	2
3	Big family (Above 10 members)	3

4.7.2 Social variables

4.7.2.1 Socio-economic status

The socio-economic status of the respondents was measured with the help of socio-economic status (SES) scale, especially adopted for rural families by Patel (2006). The items taken into consideration for measuring SES were (i) family type, (ii) family size, (iii) education,

(iv) caste, (v) occupation (vi) social participation, (vii) land, (viii) herd size, (ix) material possession and housing facility. The summation of scores of all the nine items indicated the SES of an individual respondent. The items of SES scale and scores allotted to each of them are appended in Appendix. The respondents were classified into three groups as under:

SR. NO.	CATEGORY	SCORE
1	Low socio-economic status	< $\overline{X}$ - S.D.
2	Medium socio-economic status	In between $\overline{X}$ ± S.D.
3	High socio-economic status	> $\overline{X}$ + S.D.

4.7.3 Agro-economical variables

4.7.3.1 Occupation

It refers to the number of occupations in which beneficiary and non-beneficiary farmers involved as a source of income. It was determined with the help of SES scale adopted by Patel (2004) with due modifications. The respondents were classified into four categories by following the scoring system as given below :

Sr. No.	Category	Score
1	Farming alone	1
2	Farming and animal husbandry	2
3	Farming, animal husbandry and business	3
4	Farming, animal husbandry and service	4

4.7.3.2 Size of land holding

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

SR. NO.	CATEGORY	SCORE
1	Marginal (Up to 1.00 ha)	1
2	Small (1.01 to 2.00 ha)	2
3	Medium (2.01 to 4.00 ha)	3
4	Big (above 4.00 ha)	4

4.7.3.3 Annual income

It refers to the gross annual earning of an individual respondent from all the sources. It was measured in terms of range and grouped into following categories into three groups as under :

Sr. No.	Category	Annual income
1	Low	Upto Rs.50,000
2	Medium	Rs.50,000 to Rs.1,00,000
3	High	Above Rs.1,00,000

4.7.4 Psychological variables

4.7.4.1 Risk preference

It is the degree to which a farmer is oriented towards risk, uncertainty and has courage to face the problem in farming. It was measured with the help of scale adopted by Patel (2004) with due modification. The scale consisted of six statements with four positive and two negative statements. The responses of the respondents were obtained against each statement in terms of their agreement or disagreement. The positive statements were scored 5, 4, 3, 2 and 1 for strongly agree, agree, undecided, disagree and strongly disagree, respectively. Whereas, the scoring system was reverse in case of negative statements.

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

SR. NO.	CATEGORY	SCORE
1	Low risk preference	< $\overline{X}$ - S.D.
2	Medium risk preference	In between $\overline{X}$ ± S.D.
3	High risk preference	> $\overline{X}$ + S.D.

4.7.4.2 Achievement motivation

It is defined as the desire to excel in ones endeavour regardless of social position. This variable was measured by a scale adopted by Patel (2004) with due modification. All of them were positive.

The responses from the respondents were obtained against each item in terms of their agreement or disagreements with statement on a five-point continuum ranging from strongly agree to strongly disagree. The statements were scored 5, 4, 3, 2 and 1 for strongly agree, agree, undecided, disagree and strongly disagree, respectively.

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

SR. NO.	CATEGORY	SCORE
1	Low achievement motivation	< $\overline{X}$ - S.D.
2	Medium achievement motivation	In between $\overline{X}$ ± S.D.
3	High achievement motivation	> $\overline{X}$ + S.D.

4.7.4.3 Scientific orientation

It is characterized by a belief in science and scientific approach to solve the problems in farming. The scale has been

constructed to measure the degree to which the farmers are oriented to use scientific methods in farming and decision making by Patel (2006) with due modifications.

The responses from the respondents were obtained against each item in terms of their agreement or disagreement with statement. There were six statements in the scale. Out of which statement number 1, 3, 4, 5 and 6 were positive and statement number 2 alone was negative (Appendix). The responses from the respondents were obtained against each item in term of their agreement or disagreements with statement on a five-point continuum ranging from strongly agree to strongly disagree. The positive statements were scored 5, 4, 3, 2 and 1 for strongly agree, agree, undecided, disagree and strongly disagree, respectively. In case of negative statements the scoring system was reversed.

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

SR. NO.	CATEGORY	SCORE
1	Low scientific orientation	< $\overline{X}$ - S.D.
2	Medium scientific orientation	In between $\overline{X}$ ± S.D.
3	High scientific orientation	> $\overline{X}$ + S.D.

4.7.4.4 Innovativeness

It refers to the degree to which an individual is relatively earlier to adopt new ideas than other members of a society. To measure innovativeness of the respondents, the scale adopted by Patel (2006) was used with some modifications. The scale consisted of three statements out

of which statement number 3, 2 and 1 were asked to choose any one statement. Accordingly, the specified score of the statement was the score for innovativeness of the respondents (Appendix).

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

SR. NO.	CATEGORY	SCORE
1	Low innovativeness	< $\overline{X}$ - S.D.
2	Medium innovativeness	In between $\overline{X}$ ± S.D.
3	High innovativeness	> $\overline{X}$ + S.D.

4.7.4.5 Knowledge

To determine the knowledge of the respondents towards various technologies transferred by KVK, a schedule was constructed for this study. Schedule consisted of 15 major practices pertaining to castor crop production and allied fields. Responses of the respondents about each practice were recorded. Therefore, possible maximum score for knowledge one could obtain was 15 and minimum zero.

All the respondents were grouped into three categories as under on the basis of mean and standard deviation.

SR. NO.	CATEGORY	SCORE
1	Low level of knowledge	< $\overline{X}$ - S.D.
2	Medium level of knowledge	In between $\overline{X}$ ± S.D.
3	High level of knowledge	> $\overline{X}$ + S.D.

4.7.4.6 Attitude

Attitude refers to the "degree of positive or negative effect associated with some psychological object" (Thurston, 1946). To measure the attitude of beneficiary respondents about the various activities of KVK, a scale adopted by Patel (2004) with some due modification. This scale consists of 22 statements reflecting positive and negative attitude towards the KVK activities. Each statement in the scale was provided with 5 response categories *viz.,* strongly agree, agree, undecided, disagree and strongly disagree. Each response category of positive items was assigned with score 5, 4, 3, 2 and 1, respectively. These scores were reverse for negative items. The respondents were asked to reach on each of the statement of scale in terms of their own agreement or disagreement of the statement.

The respondents were grouped into three categories as under :

SR. NO.	CATEGORY	SCORE
1	Less favourable attitude	< $\overline{X}$ - S.D.
2	Moderately favourable attitude	In between $\overline{X}$ ± S.D.
3	High favourable attitude	> $\overline{X}$ + S.D.

4.7.5 Communicational variables

4.7.5.1 Cosmopolite-localite

Cosmopolite-localite refers to the number of visits made by the individual respondent to nearby taluka / district head quarter etc. the procedure followed by Patel (2006) was used with due modification to measure the cosmopolite-localite of the respondents. The cosmopolite-

localite score of a respondent was computed by summing up the products of respective category as indicated in Appendix.

The respondents were classified into three categories on the basis of mean and standard deviation is as under :

SR. NO.	CATEGORY	SCORE
1	Low Cosmopolite-localite	< $\overline{X}$ - S.D.
2	Medium Cosmopolite-localite	In between $\overline{X}$ ± S.D.
3	High Cosmopolite-localite	> $\overline{X}$ + S.D.

4.7.5.2 Extension contact

It refers to the contact made by the farmers with the extension agency in a specified period of time. By contacting extension agency individual farmer may gain knowledge and motivation for adoption (Vijayraghavan, 1977). This variable was measured in terms of frequency and purpose of meeting with change agents by farmers. The scores used by Patel (2004) was used with due modification and score of respondent was computed by summing up the products of respective category as indicated in Appendix.

Sr. No.	Extension contact	Score
1	Regularly	4
2	Frequently	3
3	Occasionally	2
4	Never	1

The pooled score expressed the degree of contact of the farmers with the extension agency. On the basis of mean and standard deviation, the respondents were classified into three categories on the basis of mean and standard deviation is as under :

Sr. No.	Category	Score
1	Low contact	< $\overline{X}$ - S.D.
2	Medium Contact	In between $\overline{X} \pm$ S.D.
3	High Contact	> $\overline{X}$ + S.D.

(B) Dependent variable

Extent of adoption of recommended agricultural technology transmitted by KVK

To know the level of adoption towards various activities transmitted by KVK, the schedule was developed for this study. The schedule of 21 major practices pertaining to castor crop production and allied fields. Responses of the respondents about each practice were recorded into one score. Therefore, possible maximum score for adoption, one could obtain was 21 and minimum zero. The respondents adoption level was determined by calculating adoption quotient based on formula developed by Sengupta (1967).

$$\text{Adoption Quotient (A.Q.)} = \frac{\text{Number of practices used}}{\text{Number of applicable practices}} \text{ x } 100$$

The adoption quotient was calculated for every respondent. Later on, all the respondents were classified into three categories on the basis of mean ($\overline{X}$) and standard deviation (S.D.).

Sr. No.	Category	Score

1	Low level of adoption	< $\bar{X}$ - S.D.
2	Medium level of adoption	In between $\bar{X} \pm$ S.D.
3	High level of adoption	> $\bar{X}$ + S.D.

4.7.6 Measurement of constraints faced by the respondents

To find out the constraints being faced by the respondents in adoption of recommended technology, a suitable schedule was developed. To measure the degree of severity of the constraints the response were recorded on a three-point continuum i.e. most important, important and least important, which was assigned 3, 2 and 1 scores, respectively. To find out the priority of each constraint frequencies of the respondents under different categories of response were calculated and multiplied with the respective scores. The sum of score under each category of response gave overall score on the basis of which all the constraints were arranged in a descending order and ranked accordingly.

4.7.7 Suggestions to overcome the constraints experienced by the respondents

An attempt was also made to know the suggestions of the respondents to overcome the constraints and thereby promoting the use of recommended agricultural technology. The respondents' suggestions were elicited through a simple open-ended question. They were asked to suggest possible solution(s) in form of their suggestions to overcome the

constraints associated with adoption of recommended agricultural technology and thereby promoting the use of recommended agricultural technology. Number of respondents making the same suggestion(s) was counted in frequency and then percentage of the respondents making the same suggestion(s) was calculated.

4.8 STATISTICAL FRAME WORK FOR ANALYSIS OF DATA

The data collected through interview schedule from respondents were processed and tabulated. The following statistical tools were used for interpretation of data.

4.8.1 Frequency and Percentage

Simple comparisons were made on the basis of frequency and percentage.

4.8.2 Mean score

Total score obtained by the respondents was divided by number of respondents.

$$\overline{X} = \frac{\sum_{i=1}^{n} Xi}{n}$$

$\overline{X}$ = Arithmetic mean

$\sum Xi$ = Total score

n = Number of respondents

4.8.3 Standard Deviation (S.D.)

It is defined as the square root of a ratio of sum of square of the deviations calculated from arithmetic mean to the number of

observations minus one. The standard deviation (S.D.) was estimated by formula given by Chandel (1978). This indicates the variation within sample and utilized for preparation of categories of variables.

$$S.D. = \sqrt{\frac{\sum (Xi - \overline{X})^2}{(n-1)}}$$

Where,

S.D. = Standard Deviation

$Xi - \overline{X}$ = Deviation from mean

n = Number of observations

4.8.4 "t" test

Two samples "t" test was used to test the differences between two mean values of a category of members of beneficiary and non-beneficiary farmers. Formula used for this test was :

$$t = \frac{\overline{X} - \overline{Y}}{SE(\overline{X} - \overline{Y})}$$

Where,

(1) $$\overline{X} = \frac{\sum_{i=1}^{80} Xi}{n_1}$$

(2) $$\overline{Y} = \frac{\sum_{i=1}^{80} Yi}{n_2}$$

(3) SE of $(\overline{X} - \overline{Y}) = \sqrt{S^2 p(\frac{1}{n_1} + \frac{1}{n_2})}$

$$S^2 p = \frac{S.S.(X) - S.S.(Y)}{n_1 + n_2 - 2}$$

Where,

n_1 and n_2 are sample size of beneficiary and non-beneficiary groups, respectively.

4.8.5 Coefficient of correlation

To find out the correlation coefficient between two variables the Karl Pearson's method was used. The formula is as under :

$$r = \frac{\sum xy}{(\sum x^2 \sum y^2)^{1/2}}$$

Where,

r = Coefficient of correlation

$\sum x^2 = \sum (X_i - \overline{X})^2$ = The sum of square of deviations of X taken from mean ($\overline{X}$)

$\sum y^2 = \sum (Y_i - \overline{Y})^2$ = The sum of square of deviations of Y taken from mean ($\overline{Y}$)

$\sum xy = \sum (X_i - \overline{X})(Y_i - \overline{Y})$ = The sum of the cross product of deviations of X and Y from $\overline{X}$ and $\overline{Y}$, respectively.

Chapter – IV

RESULTS AND DISCUSSION

The information pertinent to this study was collected from the beneficiary farmers through interview schedule. The data thus, collected were classified, tabulated and analyzed in terms of the objectives of the study. The facts and findings derived after analyzing the information have been presented under following main heads:

4.1 Personal, social, agro-economical, psychological and communicational characteristics of the farmers

4.2 Attitude of the farmers towards various activities of KVK

4.3 Knowledge level of beneficiary and non-beneficiary farmers about recommended technology transmitted by KVK

4.4 Extent of adoption of various selected recommended agricultural technologies transmitted by KVK

4.5 Impact of the respondents towards KVK activities

4.6 Relationship between selected independent variables with the extent of adoption

4.7 Constraints perceived by respondents in adoption of recommended technologies

4.8 Suggestions to overcome the constraints.

4.1 PERSONAL, SOCIAL, AGRO-ECONOMICAL, PSYCHOLOGICAL AND COMMUNICATIONAL CHARACTERISTICS OF THE RESPONDENTS

The adoption of agricultural innovation is viewed as a complex process which is influenced by various personal, social, agro-economical, psychological and communicational characteristics of the farmers like age, education, caste, type of family, size of family, socio-economic status, occupation, size of land holding, annual income, risk preference, achievement motivation, scientific orientation, innovativeness, knowledge regarding KVK activities, attitude towards KVK activities, cosmopolite-localite, extension contact etc.

In this investigation these characteristics were studied and results obtained are presented as under:

4.1.1 Personal characteristics

4.1.1.1 Age

In the process of adoption of new ideas and practices, age of the farmers plays an important role in diffusion of agricultural innovation is 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 3 and diagrammatically in Fig. 5.

Table 3 Distribution of respondents according to their age

n = 160

Sr. No.	Age group	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Young age (up to 35 years)	08	10.00	05	06.25
2.	Middle age (36 to 50 years)	46	57.50	52	65.00
3.	Old age (above 50 years)	26	32.50	23	28.75
Total :		**80**	**100.00**	**80**	**100.00**

Perusal of the Table 3 indicated that nearly three-fifth and two-third of the beneficiary and non-beneficiary farmers (57.50 per cent and 65.00 per cent, respectively) belonged to middle age group whereas, 32.50 per cent and 28.75 per cent of the beneficiary and non-beneficiary farmers belonged to Old age group, respectively. Only 10.00 per cent and 6.25 per cent of the beneficiary and non-beneficiary farmers belonged to young age group.

Thus, it can be concluded that majority of the beneficiary farmers belonged to middle to old age group. The young aged are busy either with study or other activities and that might be the probable reason for their less involvement in farming. On the other hand, middle and old aged farmers were engaged in farming as they were responsible for maintaining their families. They were mostly decision makers in farming. The another reason might be that in joint family system the name of the

land holder till continued either from old age or middle age members of the family in revenue record.

This finding supports the views as expressed by Vankar (2000), Baria (2001), Patel (2004) and Soni (2005).

4.1.1.2 Education

Normally, it is considered that formal education of the beneficiary farmers plays an important role in perception and performance of various roles. Logically, members with higher level of formal education are expected to have better participation in the society than those with lower level of formal education. Considering these aspects, the formal education of beneficiary and non-beneficiary farmers was studied. The data in this respect are presented in Table 4 and illustrated in Fig. 6.

Table 4 Distribution of respondents according to their level of education n = 160

Sr. No.	Level of education	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Illiterate	07	08.75	13	16.25
2.	Primary (1^{st} to 7^{th} std.)	09	11.25	29	36.25
3.	Secondary (8^{th} to10^{th} std.)	30	37.50	13	16.25
4.	H.S.C. (11^{th} to 12^{th} std.)	25	31.25	19	23.75
5.	College (Above 12^{th} std.)	09	11.25	06	07.50
	Total :	**80**	**100.00**	**80**	**100.00**

The data presented in Table 4 indicate that the non-beneficiary and non-beneficiary farmers (8.75 per cent and 16.25 per cent, respectively) were found illiterate. More than one-tenth of the beneficiary and non-beneficiary farmers (11.25 per cent and 36.25 per cent, respectively) were educated up to primary level. 37.50 per cent and 16.25 per cent of the beneficiary and non-beneficiary farmers were educated up to secondary (8^{th} to 10^{th} Std.) level. Whereas beneficiary and non-beneficiary farmers (31.25 per cent and 23.75 per cent, respectively) were educated up to higher secondary (11^{th} to 12^{th} Std.) level. Only beneficiary and non-beneficiary farmers (11.25 per cent and 7.50 per cent, respectively) were educated up to college level.

It can be concluded that, vast majority of the beneficiary and non-beneficiary farmers (80.00 per cent and 76.25 per cent, respectively) were educated up to primary to higher secondary level, while beneficiary and non-beneficiary farmers (11.25 per cent and 7.50 per cent, respectively) were educated up to college level education.

The probable reason for this might be that the good education facilities were available in Anand District from very ancient time and they had awareness regarding importance of education to improve the economic condition. Other reason might be due to that the availability of primary school and secondary school.

These findings are in line with the findings of Patel (2004), and Diwan (2007).

4.1.1.3 Caste

The data collected from the beneficiary farmers about their caste status were categorized into three groups. The data in this regards are presented in Table 5 and diagrammatically in Fig. 7.

Table 5 Distribution of respondents according to their caste

n = 160

Sr. No.	Caste group	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Higher caste (General)	61	76.25	38	47.50
2.	Backward caste (O.B.C.)	11	13.75	09	11.25
3.	Most Backward caste (SC, ST)	08	10.00	33	41.25
Total :		**80**	**100.00**	**80**	**100.00**

The data presented in Table 5 indicate that beneficiary and non-beneficiary farmers (76.25 per cent and 47.50 per cent, respectively) belonged to higher castes. 13.75 per cent and 11.25 per cent of the beneficiary and non-beneficiary farmers belonged to backward caste. Whereas beneficiary and non-beneficiary farmers (10.00 per cent and 41.25 per cent, respectively) belonged to most backward caste.

It can be concluded that the majority of the beneficiary and non-beneficiary farmers were belonged to higher caste.

The probable reason for this might be that the higher castes were predominantly, the farming community in the study area. While backward caste farmers did not knowledge about K.V.K. activities.

This finding supports the view expressed by Solanki *et al.* (1992) and Desai (1997).

4.1.1.4 Type of family

The beneficiary farmers based on their family type were classified into two groups' *viz.,* nuclear and joint family type. The data in this regard are presented in Table 6 and showed in Fig. 8.

Table 6 Distribution of respondents according to their type of family n = 160

Sr. No.	Type of family	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Nuclear family	18	22.50	16	20.00
2.	Joint family	62	77.50	64	80.00
Total :		**80**	**100.00**	**80**	**100.00**

It is clear from the Table 6 that a slightly more than three-fourth and four-fifth of the beneficiary and non-beneficiary farmers (77.50 per cent and 80.00 per cent, respectively) had joint family followed by nuclear family (22.50 per cent and 20.00 per cent, respectively).

From the above discussion, it can be inferred that a great majority of the beneficiary farmers were belonged to joint type of family.

This indicates the existence of traditional system of living together in a family.

Similar findings were reported by Dabhi (2002) and Patel (2004).

4.1.1.5 Size of family

The family as a single entity influences thoughts and actions of the individual members in farming on a large scale. Generally, the large family finds it more difficult to arrive at a decision regarding the adoption of innovation in comparison with small size family. Hence, the family size of the beneficiary farmers was studied. The data in this regard are presented in Table 7 and showed in Fig. 9.

Table 7 Distribution of respondents according to their size of family n = 160

Sr. No.	Category	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Small family (Up to 5 members)	30	37.50	26	32.50
2.	Medium family (6 to 10 members)	42	52.50	47	58.75
3.	Big family (Above 10 members)	08	10.00	07	08.75
Total :		**80**	**100.00**	**80**	**100.00**

It is apparent from Table 7 that more than half of the beneficiary and non-beneficiary farmers (52.50 per cent and 58.75 per cent, respectively) had medium size of family, while 37.50 per cent and 32.50 per cent of the beneficiary and non-beneficiary farmers had small

size of family, respectively, whereas, 10.00 per cent of the beneficiary farmers and 8.75 per cent non-beneficiary farmers had big size of family.

From the above discussion, it can be inferred that a vast majority of the beneficiary and non-beneficiary farmers (90.00 per cent and 91.25 per cent, respectively) had small to medium size of family. The probable reason for this might be their education and favourable attitude toward family planning.

Similar findings were reported by Baria (2001) and Dabhi (2002).

4.1.2 Social characteristics

4.1.2.1 Socio-economic status

It was measured with the help of the socio-economic scale designed by Patel (2006) with some modification which is given in the Appendix. Keeping this in view, socio-economic status of the beneficiary farmers was studied and data are presented in Table 8 and illustrated in Fig. 10.

Table 8 Distribution of respondents according to their socio-economic status n = 160

Sr. No.	Socio-economic Status	Frequency of Respondents	
		Beneficiary farmers (n=80)	Non-Beneficiary farmers (n=80)

		Frequency	Percentage	Frequency	Percentage
1.	Low	12	15.00	18	22.50
2.	Medium	51	63.75	48	60.00
3.	High	17	21.25	14	17.50
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		80.96		71.78	
S.D. :		12.96		13.83	

It could be observed from the Table 8 that more than three-fifth and three-fifth of the beneficiary and non-beneficiary farmers (63.75 per cent and 60.00 per cent, respectively) fell under the category of medium SES (Socio-economic status), whereas, 21.25 per cent of the beneficiary farmers and 17.50 per cent non-beneficiary farmers were found under high SES level. While 15.00 per cent and 22.50 per cent of beneficiary and non-beneficiary farmers fell under low SES level, respectively.

From the above results, it can be concluded that a majority of the beneficiary and non-beneficiary farmers belonged to medium socio-economic status level.

This might be due to the fact that yet farmers were not in position to earn higher income through agriculture and animal husbandry occupation alone.

Similar findings were reported by Dabhi (2002) , Patel (2004) and Soni (2005).

4.1.3 Agro-economic characteristics

4.1.3.1 Occupation

Occupation of the beneficiary farmers has been considered as one of the important factors contributing to the annual income and

cosmopoliteness of the person. It also reflects socio-economic status of an individual in society. Keeping this in view, occupations of the beneficiary farmers was studied and data are presented in Table 9 and illustrated in Fig. 11.

Table 9 Distribution of respondents according to their occupation

n = 160

Sr. No.	Category	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Farming alone	10	12.50	05	06.25
2.	Farming + animal husbandry	45	56.25	59	73.75
3.	Farming + animal husbandry + business	20	25.00	14	17.50
4.	Farming + animal husbandry + service	05	06.25	02	02.50
Total :		**80**	**100.00**	**80**	**100.00**

It could be observed from the Table 9 that majority of the beneficiary and non-beneficiary farmers (56.25 per cent and 73.75 per cent, respectively) had farming and animal husbandry as their main occupation. Whereas, 25.00 per cent and 17.50 per cent of the beneficiary and non-beneficiary farmers were found occupation of farming with animal husbandry and business as their sources of livelihood. A very few percentage (6.25 per cent and 2.50 per cent, respectively) of the beneficiary and non-beneficiary farmers had occupation of farming alongwith animal husbandry and service, while 12.50 per cent and 6.25

per cent of the beneficiary and non-beneficiary farmers were engaged with farming alone.

From the foregoing discussion, it can be concluded that majority of the beneficiary and non-beneficiary farmers had occupation of farming and animal husbandry. The probable reason may be that the beneficiary farmers may have considered the farming as a business enterprise and it is also possible that there might be less opportunities for getting suitable job even after higher education in the state, which might have prevented them to go for any other supplementary income.

Similar findings were reported by Vankar (2000), Dabhi (2002) and Soni (2005).

4.1.3.2 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 innovation as a matter of risk-taken may not be 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 more improved agricultural practices than the

farmers of small size holding. Keeping this in view, size of land holding of the beneficiary farmers was studied and data are presented in Table 10 and illustrated in Fig. 12.

Table 10 Distribution of respondents according to their size of land holding n = 160

Sr. No.	Category	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Marginal (Up to 1.00 ha)	12	15.00	26	32.50
2.	Small (1.01 to 2.00 ha)	43	53.75	28	35.00
3.	Medium (2.01 to 4.00 ha)	17	21.25	20	25.00
4.	Big (above 4.00 ha)	08	10.00	06	07.50
Total :		**80**	**100.00**	**80**	**100.00**

A look into Table 10 shows that 53.75 per cent of the beneficiary farmers and 35.00 per cent of the non-beneficiary farmers were found to be small farmers. Percentage of beneficiary and non-beneficiary farmers having a medium land holding were 21.25 per cent and 25.00 per cent, respectively. On the other hand 15.00 per cent of the beneficiary farmers and 32.50 per cent of the non-beneficiary farmers were found to have marginal size of farm. Only 10.00 and 7.50 per cent of the beneficiary and non-beneficiary farmers were found to have big land holding.

Thus, it is obvious that more than half of the beneficiary farmers and three-fourth non-beneficiary farmers were small farmers

possessed 1.01 to 2.00 ha. of land. The possible explanation for the present finding might be that majority of the beneficiary farmers were from higher caste and predominantly, the farming community and average land holding of such type of farmers in the study area.

This finding supports the view expressed by Baria (2001), Patel (2004) and Diwan (2007).

4.1.3.3 Annual income

Higher income leads to high investment on farming and thus reduces technological gap. Multipurpose programme planning can only be possible when the finance is available on hand. It also helps in optimum and timely procurement of inputs for the adoption of technology which leads to reduce the technological gap. Keeping this in view, an annual income of the beneficiary farmers was studied and data of which are presented in Table 11 and diagrammatically depicted in Fig. 13.

Table 11 Distribution of respondents according to their annual income n = 160

Sr. No.	Level of annual income	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Low (up to50,000)	11	13.75	18	22.50
2.	Medium (50,001 to 1,00000)	48	60.00	47	58.75
3.	High (above 1,00000)	21	26.25	15	18.75
Total		**80**	**100.00**	**80**	**100.00**

Table 11 portrays that exactly two-third (60.00 per cent) of the beneficiary farmers and nearly two-third (58.75 per cent) of the non-beneficiary farmers had annual income between Rs. 50,001 to Rs. 1,00,000 followed by 26.25 per cent and 18.75 per cent of the beneficiary and non-beneficiary farmers who had annual income above Rs. 1,00,000 and 13.75 per cent beneficiary farmers and 22.50 per cent of the non-beneficiary farmers had annual income up to Rs. 50,000, respectively.

It could be inferred that majority of the beneficiary and non-beneficiary farmers (60.00 per cent and 58.75 per cent, respectively) had medium level annual income. The possible explanation, as could be known during the field survey, might be that majority of the beneficiary farmers had animal husbandry with business income source along with agriculture which might have put them.

This finding is in line with the findings reported by Chhodavadia (2001), Kumar (2003) and Patel (2004).

4.1.4 Psychological characteristics

4.1.4.1 Risk preference

Farming in general is characterized by many uncontrollable variables such as rainfall, pests and diseases, price fluctuations etc. Thus, there is a risk in farming. Studies in the developed countries have shown that individuals vary in their willingness to take risk. Beal and Sibley (1967) reported that an individual perceiving a high degree of risk in innovation may not be intended to try out or interested to acquire sufficient

information. Therefore, it was felt appropriate to study the risk orientation of the farmers. Data in this regard are presented in Table 12 and graphically shown in Fig. 14.

Table 12 Distribution of respondents according to their risk preference n = 160

Sr. No.	Risk preference category	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Low	11	13.75	20	25.00
2.	Medium	49	61.25	47	58.75
3.	High	20	25.00	13	16.25
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		21.89		15.85	
S.D. :		03.90		02.98	

It is evident from the data reported in Table 12 that slightly more than three-fifth (61.25 per cent) of the beneficiary farmers were found to have medium risk preference followed by high and low risk preference with 25.00 and 13.75 per cent, respectively. Whereas, in case of the non-beneficiary farmers, nearly three-fifth (58.75 per cent) were found to have medium risk preference followed by low and high risk preference with 25.00 and 16.25 per cent, respectively.

From the above discussion it could be concluded that majority of the beneficiary farmers were having medium to high level of risk preference.

The possible reason for above situation might be due to the fact that selected technologies involves very low risk ,more knowledge of

crops, skill and alternative sources of income available in case of beneficiary farmers.

This finding is in conformity with the findings as reported by Dabhi (2002), Vasava (2005) and Diwan (2007).

4.1.4.2 Achievement motivation

Achievement motivation is a social value that emphasizes a degree for excellence in order to obtain a sense of personal accomplishment. The data regarding achievement motivation of the beneficiary farmers are presented in Table 13 and illustrated in Fig. 15.

Table 13 Distribution of respondents according to their achievement motivation n = 160

Sr. No.	Category	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Low	14	17.50	17	21.25
2.	Medium	49	61.25	48	60.00
3.	High	17	21.25	15	18.75
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		19.83		14.14	
S.D. :		03.84		02.76	

The results in Table 13 indicate that more than three-fifth (61.25 per cent) of the beneficiary farmers had medium achievement motivation followed by high and low achievement motivation with 21.25 and 17.50 per cent, respectively. In case of the non-beneficiary farmers,

two-third (60.00 per cent) had medium achievement motivation followed by low and high achievement motivation with 21.25 and 18.75 per cent, respectively.

From the above discussion it could be concluded that majority of the beneficiary farmers were having medium to high level of achievement motivation.

The probable reason might be that the achievement motivation of individual drives for excellence of ones occupation in attainment of desire for excellence of ones occupation. An attainment of distinction needs medium to high aspiration level.

This finding is in conformity with the finding as reported by Palaniswamy (1984) and Patel (2004).

4.1. 4.3 Scientific orientation

This is characterized by a belief in science and scientific approaches to solve 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 beneficiary farmers are presented in Table 14 and illustrated in Fig. 16.

Table 14 Distribution of respondents according to their scientific orientation n = 160

Sr.	Category	Frequency of Respondents	
		Beneficiary farmers	Non-Beneficiary farmers

No.		(n=80)		(n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Low	12	15.00	16	20.00
2.	Medium	51	63.75	50	62.50
3.	High	17	21.25	14	17.50
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		21.83		15.21	
S.D. :		03.83		03.02	

It is apparent from Table 14 that majority of the beneficiaries and non-beneficiary farmers (63.75 per cent and 62.50 per cent) fell under the category medium scientific orientation followed by 21.25 and 17.50 per cent beneficiary farmers from both the group with high scientific orientation and very less beneficiaries and non-beneficiary farmers (15.00 per cent and 20.00 per cent) had low scientific orientation, respectively.

It can thus be inferred that majority of the beneficiary farmers had medium to high scientific orientation. This might be due to good social participation, extension contact, extension participation and literacy level. Another reason might be the beneficiary farmers growing field crops which required high knowledge, skill, and technical competence on the part of growers would have necessitated them to go for a scientific and modern farming.

This finding is in conformity with the findings as reported by Patel (2004), Patel (2005) and Soni (2005)

4.1.4.4 Innovativeness

Innovativeness is the degree of an individual interest and desire to seek changes in farming techniques and to introduce each

change into his own operations as and when found practicable and feasible. Innovativeness is a socio-psychological orientation of farmers to get linked or closely associated with change, adopting innovative ideas and practices. The data regarding innovativeness of the beneficiary farmers were categorized into three groups and presented as shown in Table 15 and illustrated in Fig. 17.

Table 15 Distribution of respondents according to their Innovativeness n = 160

Sr. No.	Category	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Low	11	13.75	19	23.75
2.	Medium	50	62.50	49	61.25
3.	High	19	23.75	12	15.00
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		5.65		4.70	
S.D. :		1.82		1.50	

As evident from Table 15 that more than three-fifth (62.50 per cent and 61.25 per cent) of the beneficiaries and non-beneficiary farmers had medium innovativeness, followed by 23.75 per cent beneficiaries and 15.00 per cent non-beneficiaries with high innovativeness and 13.75 per cent and 23.75 per cent had low innovativeness, respectively.

It can be concluded that majority of the beneficiary farmers were found to be medium innovative. The probable reason may be that

innovators minds are willing to seek new ideas or information about the farm practices and future motivates individuals to adopt new scientific practice on their farm earliest to excel others in a social system to attain social prestige to the respondents.

Similar findings were also observed in the finding of Kumar (2003) and Patel (2004).

4.1.5 Communicational characteristics

4.1.5.1 Cosmopolite-localite

Cosmopolite-localite is the degree to which respondent is oriented to his immediate outside social system for various kinds of help and guidance. Thus, this variable can play a crucial role on the knowledge and adoption level of modern technology adopted farmer. Data in this regard are presented in Table 16 and illustrated in Fig. 18.

Table 16 Distribution of respondents according to their Cosmopolite-localiteness n = 160

Sr. No.	Category	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Low	07	08.75	19	23.75
2.	Medium	54	67.50	52	65.00
3.	High	19	23.75	09	11.25
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		6.66		4.18	
S.D. :		1.73		1.07	

It is obvious from the Table 16 that more than two-third (67.50 per cent) of the beneficiary farmers had medium level of

cosmopolite-localite followed by 23.75 per cent with high level cosmopolite-localite and 8.75 with low level of cosmopolite-localite. Whereas, more than three-fifth (65.00 per cent) of the non-beneficiary farmers had medium level of cosmopolite-localite followed by 23.75 per cent and 11.25 per cent with low and high level of cosmopolite-localite, respectively.

It can be concluded that a vast majority (91.25 per cent) of the beneficiary farmers had medium to high level of cosmopolite-localite.

The possible reason might be that majority of the farmers were from middle and old age group and had tendency of contacting outside community to solve their problems.

This result confirms the results reported by Trivedi (2000), Ghosh (2004) and Diwan (2007).

4.1.5.2 Extension contact

Extension contact helps the farmers not only to acquire detail knowledge about agricultural technology and to seek help directly from extension personnel to solve their problems. Sharing the experience by interacting with each other may increase confidence, which may result in high rate of adoption. Having this in view, extension contact of the beneficiary farmers was studied and data are stratified in Table 17 and illustrated in Fig. 19.

Table 17 Distribution of respondents according to their extension contact n = 160

Sr. No.	Extension contact	Frequency of Respondents	
		Beneficiary farmers (n=80)	Non-Beneficiary farmers (n=80)

		Frequency	Percentage	Frequency	Percentage
1.	Low	11	13.75	22	27.50
2.	Medium	46	57.50	44	55.00
3.	High	23	28.75	14	17.50
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		20.18		12.81	
S.D. :		03.69		03.33	

It is obvious from the Table 17 that more than half (57.50 per cent) of the beneficiary farmers had medium level of extension contact followed by 28.75 per cent with high level extension contact and 13.75 per cent with low level of extension contact. Whereas, more than half (55.00 per cent) of the non-beneficiary farmers had medium level of extension contact followed by 27.50 per cent and 17.50 per cent with low and high level of extension contact, respectively.

It can be concluded that vast majority (86.25 per cent) of the beneficiary farmers had medium to high level of extension contact. As observed in the study that majority of the respondents were literate up to higher secondary level and this much literacy level would have partially driven them to contact extension personnel to quench their curiosity.

This result confirms the results reported by Joshi (2004), Parashar (2004) and Patel (2005).

4.2 ATTITUDE OF THE FARMERS TOWARDS VARIOUS ACTIVITIES OF KVK

Attitude is defined as the degree of encouraging or depressing feeling of beneficiary farmers towards modern technology. Attitude is a way of thinking, acting or feeling of a person towards a

situation or cause. It is accepted fact that an attitude of an individual plays an important role in determining his behavior. Thus, attitude towards advanced KVK technology is certainly an important variable in motivating beneficiary farmers to make maximum use of KVK activities which leads them towards improvement of farming. To understand role of this factor, information was collected and is presented in Table 18 and showed in Fig. 20.

Table 18 Distribution of respondents according to their attitude towards various activities carried out by KVK

n = 160

Sr. No.	Level of attitude	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Less favourable attitude	10	12.50	21	26.25
2.	Moderately favourable attitude	48	60.00	46	57.50
3.	High favourable attitude	22	27.50	13	16.25
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		75.74		51.08	
S.D. :		09.90		08.32	

It is evident from the Table 18 that three-fifth (60.00 per cent) of the beneficiary farmers had moderately favourable attitude towards the activities carried out by KVK, Whereas, remaining more than one-fourth (27.50 per cent) and 12.50 per cent of the beneficiary farmers had highly favourable and less favourable attitude towards the activities carried out

by KVK, respectively. In case of non-beneficiary farmers, nearly three-fifth (57.50 per cent) had moderately favourable attitude towards the activities carried out by KVK, while more than one-fourth (26.25 per cent) of them had low and 16.25 per cent of them had high level of attitude towards the activities carried out by KVK.

To epitomize the result it can be stated that a great majority (87.50per cent) of the beneficiary farmers had moderately favourable to highly favourable attitude towards the activities carried out by KVK. This may be due to the facts that farmers might have been motivated through tremendous benefits of KVK activities.

The finding is in agreement with the findings of Baria (2000), Christian (2001) and Patel (2004).

Table 19 Comparison between beneficiary and non-beneficiary farmers in respects of attitude regarding recommended technology transmitted by KVK

Sr. No.	Category of farmers	Numbers	Mean ($\overline{X}$)	Variance (S^2)	' t ' Value
1.	Beneficiary	80	75.74	98.15	17.048 **
2.	Non-beneficiary	80	51.08	69.30	

The data presented in Table 19 and Fig. 21 indicates that there is highly significant difference between the attitude of beneficiary and non-beneficiary farmers.

Highly significant favourable attitude towards KVK activities of the beneficiary farmers was due to the fact that beneficiary farmers were in advantage of reaping maximum benefits of KVK activities. Secondly

beneficiary farmers were found better contact with various extension agencies and personnel. Moreover due to their participation in various KVK training programmes, field trip and relevant literatures, respondents could have strengthened their technical know-how regarding KVK activities and also realized the importance of the KVK.

Hence, the null hypothesis (H_1) in case of attitude was rejected.

This finding is supported by Dabhi (2002) and Soni (2005).

4.3 KNOWLEDGE LEVEL OF BENEFICIARY AND NON-BENEFICIARY FARMERS ABOUT RECOMMENDED TECHNOLOGY TRANSMITTED BY KVK

Knowledge is the cognitive behaviour of an individual. The body of knowledge is the product of learning process. Once the knowledge is acquired, it produces changes in the thinking process of an individual which would lead to further changes in attitude and helps the farmers in making rational decisions. It is a pre-requisite for adoption of any agricultural innovation. With this view an attempt has been made to determine the level of knowledge of KVK activities.

In the present study, knowledge refers to know-how about KVK activities possessed by the farmers. Adequate knowledge is essential to farmers for successful. It was therefore thought necessary to obtain information from the farmers about the level of knowledge they possessed

about KVK activities. The data regarding level of knowledge are given in Table 20 and diagrammatically depicted in Fig. 22.

Table 20 Distribution of respondents according to their level of knowledge n = 160

Sr. No.	level of Knowledge	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Low	09	11.25	21	26.25
2.	Medium	47	58.75	45	56.25
3.	High	24	30.00	14	17.50
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		11.83		8.85	
S.D. :		01.83		1.59	

The data presented in Table 20 portray that nearly three-fifth (58.75 per cent) of the beneficiary farmers had medium level of knowledge about various selected technologies transferred by KVK followed by 30.00 per cent with high and 11.25 per cent with low level of knowledge about various selected technologies transferred by KVK. Whereas, nearly three-fifth (56.25 per cent) of the non-beneficiary farmers had medium level of knowledge, whereas remaining 26.25 per cent and 17.50 per cent of non-beneficiary farmers had low and high level of knowledge about various selected technologies transferred by KVK, respectively.

The foregoing discussion pointed out that a large majority (88.75 per cent) of the beneficiary farmers had medium to high level of knowledge regarding various selected technologies transferred by KVK.

The probable reason for above finding may be their higher education, extension contact and participation, favourable attitude towards the system and some degree of economic gain as well as satisfaction availed by the respondents.

This finding is similar to the findings of More *et al.* (2006), Patel (2004) and Diwan (2007).

Table 21 Comparison between knowledge level of beneficiary and non-beneficiary farmers recommended technology transmitted by KVK

Sr. No.	Category of farmers	Numbers	Mean ($\overline{X}$)	Variance (S^2)	' t ' Value
1.	Beneficiary	80	11.83	3.36	10.959 **
2.	Non-beneficiary	80	8.85	2.53	

Table 21 and Fig. 23 indicate that there is highly significant difference between knowledge of the beneficiary and non-beneficiary farmers.

It means that significant impact of KVK activities was observed in improving knowledge of selected agricultural technology of the beneficiary farmers. The probable reason for above finding might the membership of KVK center could have expanded their knowledge regarding improved agricultural practices and more extension as well as social participation, participation in training programmes, field demonstrations and field trips regarding KVK activities.

Hence, the null hypothesis (H_1) in case of knowledge was rejected.

This finding is supported by Veeraiah *et al.* (1997) and Srivastava and Yadav (1998).

4.4 EXTENT OF ADOPTION OF VARIOUS SELECTED RECOMMENDED AGRICULTURAL TECHNOLOGIES TRANSMITTED BY KVK

New technology so far developed in recent past for boosting up agricultural production and productivity is complex and hence, it requires proper assimilation by the consumers for adoption. Unless the technology is properly adopted to larger extent by the farmers, the desired targets can not be achieved. Efforts are made in this direction by the extension personnel for bringing down communication gap as well as making the farmers to understand the new technology finally adopting into practices. Farmers may adopt or reject new agricultural technology. Some farmers are aware of new agricultural technology and realize its importance. Hence, they adopt the technology to achieve higher yield for their betterment of life. Past studies have shown that farmers adopt the technology to its maximum limit and some of them adopt to its lower limit while some of the farmers adopt the technology at medium level.

Keeping this in view, extent of adoption of recommended technology transmitted by KVK among the farmers was studied as dependent variable. In present study it is considered as "Extent of adoption of was a mental process through which recommended technology transmitted by KVK passed from hearing about recommended technology to final adoption to a full extent".

Respondents, according to their extent of adoption recommended technology transmitted by KVK were categorized into three groups as shown in Table 22 and graphically depicted in Fig. 24.

Table 22 Distribution of respondents according to their level of Adoption n = 160

Sr. No.	Level of adoption	Frequency of Respondents			
		Beneficiary farmers (n=80)		Non-Beneficiary farmers (n=80)	
		Frequency	Percentage	Frequency	Percentage
1.	Low	12	15.00	19	23.75
2.	Medium	46	57.50	44	55.00
3.	High	22	27.50	17	21.25
Total :		**80**	**100.00**	**80**	**100.00**
Mean :		**77.38**		**46.88**	
S.D. :		**08.14**		**11.65**	

A perusal of Table 22 reveals that nearly three-fifth (57.50 per cent) of the beneficiary farmers had medium level of adoption about various selected technologies transmitted by KVK followed by 27.50 per cent with high level adoption and 15.00 with low level of adoption about various selected technologies transmitted by KVK. Whereas, more than half (55.00 per cent) of the non-beneficiary farmers had medium level adoption followed by 23.75 per cent and 21.25 per cent with low and high level adoption about various selected technologies transmitted by KVK respectively.

It can be concluded that vast majority (85.00 more per cent) of the beneficiary farmers had medium to high level of adoption.

The probable reason might be their middle age and moderate education level having ability to read, concentration in maximizing profit, understand and concretize the ideas which would have led to medium adoption level.

This finding derives support from the findings of Jondhale *et al.* (2000), Soni (2005) and Rabari (2006).

4.5 IMPACT OF THE RESPONDENTS TOWARDS KVK ACTIVITIES

Some personal, social, agro-economical, psychological and communicational characteristics were selected to find out impact towards KVK activities. The personal characteristics were age, education, caste, type of family, size of family and socio-economic status and agro-economical characteristics were occupation, size of land holding and annual income were studied. Six psychological characteristics like risk preference, achievement motivation, scientific orientation and innovativeness were studied. For the study of knowledge, attitude and adoption of selected agricultural technology were studied. The two communicational characteristics viz., cosmopolite localite and extension contact were studied. The impact regarding all the characteristics of the beneficiary and non-beneficiary farmers were presented in Table 23 and Fig. 25 (I) to 25 (V).

Table 23 Impact of beneficiary and non-beneficiary farmers towards KVK activities

SR. NO.	INDEPENDENT VARIABLES	MEAN VALUE		'T' VALUE	
		Beneficiary Farmers (n=80)	Non-Beneficiary Farmers (n=80)		
I	**Personal characteristics**				
1.	Age	46.79	46.55	0.224	NS
2.	Education	2.25	1.63	3.516	**
3.	Caste	2.66	2.06	4.664	**
4.	Type of family	1.78	1.80	(-)0.384	NS
5.	Size of family	1.73	1.76	(-)0.383	NS
II	**Social characteristics**				
6.	Socio-economic status	80.96	71.71	4.378	**
III	**Agro-economical characteristics**				
7.	Occupation	2.25	2.16	0.832	NS
8.	Size of Land holding	2.26	2.08	1.333	NS
9.	Annual income	88212.50	67062.50	3.433	**
IV	**Psychological characteristics**				
10.	Risk preference	21.89	15.85	10.988	**
11.	Achievement motivation	19.83	14.14	10.756	**
12.	Scientific orientation	21.83	15.21	12.108	**
13.	Innovativeness	5.65	4.70	3.596	**
V	**Communicational characteristics**				
14.	Cosmopolite-localiteness	6.66	4.18	10.895	**
15.	Extension contact	20.18	12.81	13.242	**
16.	Extent of adoption	77.38	46.89	19.176	**

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability

4.5.1 Impact on Personal characteristics

4.5.1.1 Impact on age

Table 23 and Fig. 25 (I) clearly indicates that there is non-significant difference in age between the beneficiary and non-beneficiary farmers. It means that impact towards KVK activities did not indicate any relation on age of the beneficiary and non-beneficiary farmers.

The probable reason for this might be that majority of the beneficiary and non-beneficiary farmers of both the groups fall under middle to old age group and generally aged farmers had less risk taking capacity and less enthusiastic than the younger ones.

Hence, the null hypothesis (H_1) in case of age was accepted. This finding is supported by Dabhi (2002) and Soni (2005).

4.5.1.2 Impact on Education

Table 23 and Fig. 25 (I) clearly indicates that there is significant difference in the level of education between the beneficiary and non-beneficiary farmers. It means that impact towards KVK activities indicated any relation on level of education of the beneficiary and non-beneficiary farmers.

The probable reason for above findings might be that yet the beneficiary and non-beneficiary farmers of the study area have real awareness regarding the importance of education.

Hence, the null hypothesis (H_1) in case of education was rejected. This finding is in contradiction with the findings of Singh (2000) and Soni (2005).

4.5.1.3 Impact on Caste

Table 23 and Fig. 25 (I) clearly indicates that there is highly significant difference between the caste of the beneficiary and non-beneficiary farmers. It means that impact towards KVK activities might have played pivotal role on caste.

The probable reason for above findings might be that majority of the beneficiary farmers were belonging to higher caste while backward caste farmers might be engaged in other occupation rather than farming.

Hence, the null hypothesis (H_1) in case of caste was rejected. This finding is contrast by the finding of Dabhi (2002).

4.5.1.4 Impact on type of family

The data presented in Table 23 and Fig. 25 (I) clearly indicates that there is non-significant difference in type of family between the beneficiary and non-beneficiary farmers. It means that impact towards KVK activities did not indicate any relation on type of family of the beneficiary and non-beneficiary farmers.

The possible explanation for the finding might be that majority of the beneficiary and non-beneficiary farmers were from joint type of family.

Hence, the null hypothesis (H_1) in case of type of family was accepted.

4.5.1.5 Impact on size of family

Table 23 and Fig. 25 (I) indicates that there is non-significant difference in size of family between the beneficiary and non-beneficiary farmers. It means that impact towards KVK activities did not indicate any relation between size of family of the beneficiary and non-beneficiary farmers.

The possible explanation for the finding might be that majority of the beneficiary and non-beneficiary farmers were from small to medium size of family.

Hence, the null hypothesis (H_1) in case of type of family was accepted.

4.5.2 Impact on social characteristics

4.5.2.1 Impact on socio-economic status

The result in table 23 and Fig. 25 (II) portrays that there is highly significant difference in the level of socio-economic status between the beneficiary and non-beneficiary farmers. It means that the highly significant impact regarding the socio-economic status of the beneficiary and non-beneficiary farmers.

It means that the KVK centers showed highly significant impact regarding the socio-economic status of the beneficiary farmers. This might be due to impact of KVK activities on its beneficiary farmers.

Hence, the null hypothesis (H_1) in case of level of socio-economic status was rejected. This finding is in line with the findings of Dabhi (2002) and Soni (2005).

4.5.3 Impact on agro-economical characteristics

4.5.3.1 Impact on occupation

It can be seen from the table 23 and Fig. 25 (III) that there was non-significant difference between the occupation of the beneficiary and non-beneficiary farmers. It means that even after improvement in

economic condition through irrigated farming, respondents might have considered the farming as a business enterprise and did not feel to invest money in other than agricultural occupation. Moreover they might also be realized less opportunities for getting suitable job even after higher education, which might have prevented them to go for any other supplementary income.

Hence, the null hypothesis (H_1) in case of occupation was accepted. This present finding gets support from the findings of Vankar (2000) and Dabhi (2002).

4.5.3.2 Impact on size of land holding

The data presented in Table 23 and Fig. 25 (III) indicates that there is non-significant difference between the land holding of beneficiary and non-beneficiary farmers. It means that impact towards KVK activities did not play a role in increasing size of land of land holding of the respondents.

The possible explanation for the finding might be that majority of the respondents were from higher caste and predominantly, the farming community having average small to medium land holding. Another possible reason might be due to fact that farmers of irrigated area won't be ready to sale their agricultural land immediately as considered it more profitable.

Hence, the null hypothesis (H_1) in case of occupation was accepted. This present finding gets support from the findings of Vankar (2000) and Soni (2005).

4.5.3.3 Impact on annual income

Table 23 and Fig. 25 (III) indicates that there is highly significant difference between annual income of the beneficiary and non-beneficiary farmers. It means that annual income of the beneficiary farmers was significantly higher than non-beneficiary farmers.

It means annual income of the beneficiary farmers were significantly higher due to intensive cropping with higher adoption of improved agricultural technology.

Hence, the null hypothesis (H_1) in case of annual income was rejected. This finding is supported by Dabhi (2002) and Soni (2005).

4.5.4 Impact on psychological characteristics

4.5.4.1 Impact on risk preference

It can be seen from the table 23 and Fig. 25 (IV) that there was highly significant difference between the risk preference of the beneficiary and non-beneficiary farmers.

This might be due to fact that the beneficiary farmers have gained useful knowledge from KVK centre. Due to this; necessary confidence and capabilities were developed in them to bear risk. The better economic condition of the beneficiary farmers as compared to non-beneficiary farmers might have essential courage to face uncertainties, this might be the another reason for above results.

Hence, the null hypothesis (H_1) in case of risk preference was rejected. This finding is supported by Vankar (2000) and Soni (2005).

4.5.4.2 Impact on achievement motivation

The data presented in Table 23 and Fig. 25 (IV) indicates that there is highly significant difference between the achievement motivation of beneficiary and non-beneficiary farmers. It means that impact towards KVK activities play a role in increasing achievement motivation of the respondents.

Hence, the null hypothesis (H_1) in case of achievement motivation was rejected.

4.5.4.3 Impact on scientific orientation

Table 23 and Fig. 25 (IV) indicates that there is highly significant difference between scientific orientation of the beneficiary and non-beneficiary farmers. It means that scientific orientation of the beneficiary farmers was significantly higher than non-beneficiary farmers.

The possible reason for this might be that the beneficiary farmers had more faith in science and improved agricultural technology by gained scientific knowledge through KVK centre.

Hence, the null hypothesis (H_1) in case of scientific orientation was rejected. This finding is supported by Soni (2005).

4.5.4.4 Impact on innovativeness

The data presented in Table 23 and Fig. 25 (IV) indicates that there is highly significant difference between the innovativeness of beneficiary and non-beneficiary farmers. It means that impact towards KVK activities play a role in increasing innovativeness of the respondents.

It means that beneficiary and non-beneficiary farmers were differ with innovativeness due to their higher knowledge. The probable

reason for above finding might be the membership of KVK centre could have developed their knowledge and innovativeness as well as favourable attitude towards KVK activities, more extension participation and social participation.

Hence, the null hypothesis (H_1) in case of innovativeness was rejected. This finding is supported by Soni (2005).

4.5.5 Impact on communicational characteristics

4.5.5.1 Impact on cosmopolite-localite

Table 23 and Fig. 25 (V) indicate that there is highly significant difference between cosmopolite-localite of the beneficiary and non-beneficiary farmers.

The probable reason might be that the beneficiary farmers are taking more interest to solve the field problem at any cost. They are the most punctual to attend any programme at anywhere as compare to non-beneficiary farmers.

Hence, the null hypothesis (H_1) in case of cosmopolite-localite was rejected.

4.5.5.2 Impact on extension contact

The data presented in Table 23 and Fig. 25 (V) indicates that there is highly significant difference between the extension contact of beneficiary and non-beneficiary farmers.

The probable reason might be due to fact that beneficiary farmers might have got more and more opportunities to had contact with various extension workers, scientists, research centers of AAU and State

Department of agriculture etc. KVK centre might have also helped to establish contact with personnel of other extension agencies.

Hence, the null hypothesis (H_1) in case of extension contact was rejected.

This finding is supported by Dabhi (2002).

4.5.6 Impact on extent of adoption

The data presented in Table 23 and Fig. 25 (V) indicates that there is highly significant difference between the extent of adoption of beneficiary and non-beneficiary farmers.

It means that KVK activities have shown its impact on adoption of selected agricultural technology of the beneficiary farmers. This might be due to favourable attitude towards farm literature, knowledge of agricultural recommendation encouraged through KVK centres. Moreover, frequent extension contact, utilization of mass media, socio-economic status and social participation which might have motivated the beneficiary farmers for adoption of selected agricultural technology.

Hence, the null hypothesis (H_1) in case of extent of adoption was rejected.

This finding is supported by Singh (2000).

4.6 RELATIONSHIP BETWEEN SELECTED INDEPENDENT VARIABLES OF BENEFICIARY FARMERS AND THEIR ADOPTION LEVEL TOWARDS VARIOUS ACTIVITIES OF KVK

Acceptance of advanced agricultural technology is not a unique but a complex process involving sequence and thought of action. The action of an individual farmer is governed by physical, socio-

economical, communicational and psychological 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, the process of action is changed thereby changing the pattern of adoption. In nut-shell it may be stated that the adoption of KVK activities differs when there is difference in physical, personal, socio-economic, communicational and psychological of the respondents. Hence, considering the importance of these traits and review of past research studies, an attempt has been made in this dimension to ascertain the relationship, if any, between socio-personal, agro-economic, psychological and communicational characteristics of the beneficiary farmers and their level of adoption of KVK activities. This was determined and tested with the help of Karl Pearson's coefficient correlation test (r) and the results thus obtained are presented in Table 24 and depicted in Fig. 26.

Table 24 Relationship between characteristics of the beneficiary farmers and their extent of adoption regarding KVK activities

SR. NO.	INDEPENDENT VARIABLES	COEFFICIENT OF CORRELATION ('R' VALUE)
1.	Age	(-)0.228 *
2.	Education	0.334 **
3.	Caste	0.246 *
4.	Type of family	(-)0.097 NS
5.	Size of family	0.064 NS

6.	Socio-economic status	0.297 **
7.	Occupation	0.353 **
8.	Size of Land holding	0.342 **
9.	Annual income	0.338 **
10.	Risk preference	0.307 **
11.	Achievement motivation	0.305 **
12.	Scientific orientation	0.331 **
13.	Innovativeness	0.389 **
14.	Knowledge	0.325 **
15.	Attitude	0.584 **
16.	Cosmopolite-localiteness	0.592 **
17.	Extension contact	0.653 **

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability

4.6.1 Personal characteristics and dependent variable

4.6.1.1 Age and extent of adoption

It is apparent from the data presented in the Table 24 that age of the beneficiary farmers had negative and significant correlation (r = -0.228) with extent of adoption of KVK activities. Thus, the null hypothesis (H_2) that "there is no relationship between age of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

The negative trend indicates that as age increased the extent of adoption of new innovations decreased. The age is the factor which determines the zeal, aptitude and hard work required for determing

effectiveness in any activity. The old age farmers, generally seen apathetic statusquo maintaining and feel happy in existing condition. On the contrary youngster are energetic enthusiastic and economically motivated and work for excellence in the life. This could be a reason for negative correlation between age of the beneficiary farmers and their extent of adoption of KVK activities.

This finding is in line with the findings reported by Chaudhari and Soni (1996), Patel *et al.* (2003) and Patel (2004).

4.6.1.2 Education and extent of adoption

The data presented in Table 24 reflect that adoption level of the beneficiary farmers had positive and significant (r = 0.334) correlation with their level of education, which indicates that education is an important variable which influences the adoption level of beneficiary farmers in relation to KVK activities. It also indicates that as educational level of the respondent increased, the level of adoption also increased. Thus, the null hypothesis (H_2) that "there is no relationship between education of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

It can be concluded that farmers having higher education with inquisitive mind harvest the rich fruit of research resulted in rational pragmatic decision making. Thus, education plays an important role in influencing farmer in their change in adoption behaviour.

This finding is in conformity with the findings of Patel (2004) and Soni (2005).

4.6.1.3 Caste and extent of adoption

As revealed from data presented in Table 24 there was positive and significant association (r = 0.246) between caste and extent of adoption of KVK activities.

The reason for this might be that educated higher caste farmers had greater skill, progressive outlook and ability to adopt new innovations than less educated and illiterate farmers. Thus, the null hypothesis (H_2) that "there is no relationship between caste of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

This finding is similar to the findings reported by Chauhan (1994) and Patel (2004).

4.6.1.4 Type of family and extent of adoption

It can be observed that in Table 24 there was negative and non-significant association (r = -0.097) between type of family and extent of adoption of KVK activities.

This shows that joint type of family systems put certain restrictions on decision making because of differing view points among members of family. This might be the probable reason for non-significant relationship in case of beneficiary farmers. Thus, the null hypothesis (H_2)

that "there is no relationship between type of family of the beneficiary farmers and their extent of adoption of KVK activities" is accepted.

Similar findings were reported by Dabhi (2002).

4.6.1.5 Size of family and extent of adoption

It can be observed that in Table 24 there was non-significant association (r = 0.064) between size of family and extent of adoption of KVK activities.

This shows that size of family is not an important variable which influenced on adoption level of beneficiary farmers regarding KVK activities. Thus, the null hypothesis (H_2) that "there is no relationship between size of family of the beneficiary farmers and their extent of adoption of KVK activities" is accepted.

Similar findings were reported by Trivedi (2000), Dabhi (2002) and Vasava (2005).

4.6.2 Social characteristics and dependent variable

4.6.2.1 Socio-economic status and extent of adoption

The data presented in Table 24 clearly indicate that socio-economic status of beneficiary farmers had positive and significant correlation (r = 0.297) with extent of adoption of KVK activities. Thus, the null hypothesis (H_2) that "there is no relationship between socio-economic status of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

Therefore, it can be inferred that the number of occupation of the beneficiary farmers increase the extent of adoption increases. Higher

income through more number of occupations might have encouraged the beneficiary farmers for higher adoption of recommended KVK activities.

Similar trend were also observed by Jondhale *et al. (2000)*, Patel (2004) and Soni (2005).

4.6.3 Agro-economic characteristics and dependent variable

4.6.3.1 Occupation and extent of adoption

A searching looks in to Table 24 clearly indicate that occupation had positive and significant association (r = 0.353) with extent of adoption of KVK activities. Thus, the null hypothesis (H_2) that "there is no relationship between occupation of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

The probable reason for this might be that the beneficiary farmers were engaged in animal husbandry, business and service besides farming might have known more about the applicability benefits and adoptability of the system due to their wide contacts as compared to those who were solely dependent on farming.

Similar trend was observed by Soni (2005).

4.6.3.2 Size of land holding and extent of adoption

It is apparent from the data presented in Table 24 clearly indicate that size of land holding of the beneficiary farmers had positive and significant association (r = 0.342) with their extent of adoption of KVK activities. Thus, the null hypothesis (H_2) that "there is no relationship

between size of land holding of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

It can be concluded that there was a positive and significant correlation between size of land holding of the beneficiary farmers and their extent of adoption of KVK activities.

The probable reason for this might be that generally farmers adopt the new technology proportionate to their land holding and other resources available to them. The farmers with larger land holding are generally sound in economic position and higher risk bearing capacity, hence, possibility of adopting new technology with necessary investment is great.

This finding is in conformity with the findings of Dabhi (2002), Patel *et al.* (2003) and Soni (2005).

4.6.3.3 Annual income and extent of adoption

It is apparent from the data presented in the Table 24 that annual income of the beneficiary farmers had highly significant correlation (r = 0.338) with their extent of adoption of KVK activities. It provides sufficient ground to reject null hypothesis (H_2) entitled "there is no relationship between annual income of the beneficiary farmers and their extent of adoption of KVK activities".

Thus, it can be said that, middle Gujarat being on of the intensive agricultural areas with irrigation facility and also having high cropping intensity which will fetch the farmers higher income. Secondly additional income derived from dairy enterprise also would have resulted

in high annual income to the farmers. Higher income facilities help in optimum and timely procurement of inputs, proper utilization of information sources and desired technical guidance which are important contributing factors for the adoption of new innovations ultimately leading to higher extent of adoption. Hence, annual income significantly contributed to extent of adoption of KVK activities.

This finding is supported by findings of Christian (2001), Patel (2004) and Soni (2005).

4.6.4 Psychological characteristics and dependent variable

4.6.4.1 Risk preference and extent of adoption

The data presented in Table 24 clearly indicate that, risk preference of the beneficiary farmers had positive and highly significant correlation (r = 0.307) with their level of adoption of KVK activities. This result provides sufficient ground to reject the null hypothesis (H_2) entitled" there is no relationship between risk preference of the beneficiary farmers and their extent of adoption of KVK activities ".

From the above findings, it can be inferred that the farmers with higher levels of risk preference would be much ahead of other in

exploiting the potentiality of technology availed and thus risk preference might have influenced on extent of adoption of KVK activities.

Similar findings were reported by Christian (2001), Patel (2004) and Patel (2006).

4.6.4.2 Achievement motivation and extent of adoption

The data presented in Table 24 reflect that achievement motivation of beneficiary farmers had positive and significant correlation (r = 0.305) with their level of adoption which leads to reject the null hypothesis (H_2) that" there is no relationship between achievement motivation of the beneficiary farmers and their extent of adoption of KVK activities."

The reason might be that, farmers with high achievement motivation might have established a pride of becoming the outstanding KVK model farmers in the society to attain the position in farming. Thus, the need for high achievement motivation might have led them towards the adoption of improved farm practices due to KVK.

This result is supported by Jagadeeshwara (1994) and Patel (2004).

4.6.4.3 Scientific orientation and extent of adoption

It is apparent from the data presented in Table 24 that, scientific orientation of the beneficiary farmers had positive and significant correlation (r = 0.331) with extent of adoption of KVK activities by the

beneficiary farmers which indicate that scientific orientation is an important variable for adoption of KVK activities. Thus, the null hypothesis (H_2) that "there is no relationship between scientific orientation of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

The probable reason might be that the beneficiary farmers with high education which attempt to acquire more knowledge regarding KVK activities, higher income, higher participation in social organizations, active involvement in various extension programmes might have help to develop progressiveness and wider outlook, leading to higher contacts with outside world and in creation of scientific mentality, and it is quite true that scientifically oriented farmers are likely to have more inclination to use scientific methods in farming, which led them for higher adoption of KVK activities.

This finding is in line with the findings of Christian (2001), Dabhi (2002) and Patel (2006).

4.6.4.4 Innovativeness and extent of adoption

It can be observed from the data presented in Table 24 that there was positive and significant relationship (r = 0.389) between innovativeness and extent of adoption of KVK activities. Hence, the null hypothesis (H_2) stating that "there was no relationship between of the beneficiary farmers and their extent of adoption of KVK activities" is rejected. Thus, results prove that innovativeness of beneficiary farmers played a key role in determining of the beneficiary farmers and their extent of adoption of KVK activities.

The conclusion emerged out from above finding indicates that innovativeness offers an impetus working for excellence which would enable an individual to manifest this excellence in his field of activities resulting into developing decisiveness to adopt an innovation.

Similar trend was observed by Patel *et al.* (1995), Prajapati (2003) and Patel (2004).

4.6.4.5 Knowledge and extent of adoption

It is obvious from the data presented in Table 24 that the knowledge level of beneficiary farmers had positive and significant correlation (r = 0.325) with their adoption level. It indicated that as knowledge level of beneficiary farmers increased, the adoption level increased. Thus, the null hypothesis (H_2) that "there is no relationship between knowledge and their extent of adoption of KVK activities" is rejected.

When farmers understand the main features of the new innovation/idea very well, they would most likely adopt such innovation/idea, since the knowledge itself is an important precursor to adoption leading to higher level of extent of adoption of KVK activities.

Similar trend was observed by Vankar (2000), Dongardive (2002) and Rabari (2006).

4.6.4.6 Attitude and extent of adoption

It is apparent from the data presented in Table 24 that, attitude towards KVK activities of the beneficiary farmers had positive and significant correlation (r = 0.584) with of extent of adoption of KVK

activities by the beneficiary farmers which indicate that attitude is one of the important variables which would have helped them in making a concomitant change positively for adoption of KVK activities. Thus, the null hypothesis (H_2) that "there is no relationship between attitude of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

On the basis of data presented in Table 18, it is indicative that majority of the beneficiary farmers were having moderately to highly favourable attitude towards KVK activities. Though this advanced recommended technology transmitted by KVK is oriented, it has made the farming a variable enterprise. The system is preferred over traditional technology due to the facts that farmers might have reaped the benefits of saving in water, higher yield, higher price of the product, less unit cost of production, higher net profit and increase in quality of produce. So, these factors in turn might have helped for the development of favourable attitude towards extent of adoption of KVK activities and hence, the present finding on attitude of farmers towards extent of adoption of KVK activities is quite revealing and contributed significantly towards KVK activities.

Similar findings were reported by Christian (2001), Soni (2005) and Patel (2006).

4.6.5 Communicational characteristics and dependent variable

4.6.5.1 Cosmopolite-localiteness and extent of adoption

The data presented in Table 24 revealed that cosmopolite-localiteness of the beneficiary farmers had positive and significant association (r = 0.592) with the extent of adoption of KVK activities. Hence, the null hypothesis (H_2) that "there is no relationship between cosmopolite-localiteness of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

Concluding the findings, it is well accepted that cosmopolite-localiteness of the farmer increases his contact with outside social system where an individual will be exposed to new idea and experience of variety of people. This interaction provides him a benefit of vicarious experience thereby decision making ability and application of new ideas by the individual will be resulted into adoption.

Similar trend was observed in the findings of Parashar (2004) and Patel (2006).

4.6.5.2 Extension contact and extent of adoption

The perusal of data in Table 24 high-lighted that extension contact of the beneficiary farmers had positive and significant correlation (r=0.653) with extent of adoption of KVK activities. It indicates that extension contact is an important variable which played a crucial role in adoption of KVK activities. Thus, the null hypothesis (H_2) that "there is no relationship between extension contact and adoption of the beneficiary farmers and their extent of adoption of KVK activities" is rejected.

The probable reason for positive and significant association between extension contact and adoption level may be due to interaction

between extension personnel with extension agencies enables the farmers to have favourable predisposition to acquire more and information, skills, knowledge, etc. To become modern, such individuals believe that extension participation is very much necessary which might have enabled them to contact the extension workers frequently to seek useful farm information, either to solve farm problems or to venture to adopt new innovation. The extent of KVK activities among the farmers is largely determined by the extent to which farmers keep themselves well equipped with the new innovation/idea regarding principles as well as "how to do" type of knowledge. These may be the possible reasons that could be accounted for significant and positive correlation of these variables with extent of adoption of KVK activities.

This finding is supported by the findings of Jondhale *et al. (2000)*, Christain (2001) and Sarkar *et al.* (2002).

4.7 CONSTRAINTS PERCEIVED BY RESPONDENTS IN ADOPTION OF RECOMMENDED TECHNOLOGIES

Scientific technology in the field of agriculture and allied sector is moving very fast. However, its effective transmission to ultimate users is a challenging area. Though, various institutions and organizations have been established for this purpose yet, there is a wide gap in the adoption of technology at the farmers' level. This might be due to various constraints faced by the farmers in adoption of technology. Keeping this point in view, efforts have been made to identify the constraints perceived by the respondents in adoption of recommended technology.

Table 25 Constraints as perceived by beneficiary farmers in adoption of recommended technology n = 80

Sr. No.	Constraints	Mean Score	Rank
1.	Inadequate knowledge/skill provided by KVK	2.25	X
2.	Lack of feed back received by KVK staff	2.15	XI
3.	Unavailability of the improved seeds	2.90	I
4.	Non-availability of the fertilizers in time in the area	2.52	VII
5.	Lack of irrigation facilities	1.85	XIV
6.	High cost of equipments	2.70	V
7.	High cost of insecticides and pesticides	2.85	II
8.	Shortage of water for successful growing the crops	1.90	XIII
9.	Inadequate credit facilities in the area	2.36	IX
10.	Lack of marketing facilities	1.72	XV

Conti…

Conti…

Sr. No.	Improved practices	Mean Score	Rank
11.	Lack of artificial/insemination centre/breeding bull in/around the village	2.75	IV
12.	Non-availability of cheap and timely concentrate for animals	2.62	VI
13.	High cost of dry fodder and concentrate	2.46	VIII
14.	Unavailability of veterinary services	2.00	XII
15.	Cheap and timely medicines are not available	2.82	III
16.	Less member of milk co-operatives	1.57	XVI
17.	Low price of milk and other products	1.40	XVII
18.	Unavailability of the land for the social forestry	1.22	XVIII

The data in Table 25 and Fig. 27 reveals that "Unavailability of improved seeds" was expressed by the farmers with mean score 2.90 and ranked first. This was followed by "High cost insecticides and pesticides" (2.85) and "Cheap and timely medicines are not available" (2.82), were also considered important constraints and ranked second and third in the problem hierarchy, respectively. Similarly "Lack of

artificial/insemination centre/breeding bull in/around the village" (2.75), "High cost of equipments" (2.70), "Non-availability of cheap and timely concentrate for animals" (2.62) and "Non-availability of the fertilizers in time in the area" (2.52), were realized as next important constraints by the respondents and ranked fourth, fifth, sixth and seventh, respectively.

The realization of the constraints regarding unavailability of improved seeds and high cost of insecticides and pesticides might be because of the poor functioning of the co-operative societies and unavailability of private dealers in the villages. Problem related to cheap and timely medicines are not available and lack of artificial/insemination centre/breeding bull in/around the village due to veterinary hospital is not available near in the village area. Like wise, High cost of equipments may be due to inadequate subsidy provided by government and equipment market not available near by villages, and farmers were also not fully acquainted with other loaning institutions which are located out side of the villages. Due to this reasons farmers were unable to purchase costly equipments/instruments which are essential in the adoption of improved crop production and animal husbandry technology. Problem related to non-availability of veterinary services due to lake of veterinary hospital and lake of employee. Problem related to unavailability of the fertilizers in time in the area might be because of the poor functioning of the co-operative societies and unavailability of private dealers in the villages.

This finding is in line with the findings reported by Chhodavadia (2001) and Prajapati (2003).

4.8 SUGGESTIONS TO OVERCOME THE CONSTRAINTS

An attempt was also made to know the suggestions of beneficiary farmers to overcome the problems for efficient use of KVK activities. The respondents' suggestions were invited through simple open-ended questions. The data in this respect are presented in Table 26 and Fig. 28.

Table 26 Suggestions given by beneficiary farmers to overcome constraints in recommended new agricultural technologies transmitted by KVK n = 80

Sr. No.	Suggestions	Number	Per cent
1.	More number of training should be imparted though KVK regarding new agricultural technologies.	76	95.00
2.	Timely availability of the improved seeds and fertilizers in the area.	70	87.50
3.	Cheap rate of the insecticides / pesticides and veterinary medicines provided in the area.	66	82.50
4.	Increase in subsidy / loan should be made	58	72.50

	available timely.		
5.	Proper marketing facilities should be provided.	61	76.25
6.	Agricultural spare parts should be available locally at reasonable rates.	55	68.75

It is apparent from the Table 26 that more number of training should be imparted though KVK regarding new agricultural technologies (95.00 per cent), timely availability of the improved seeds and fertilizers in the area (87.50 per cent), cheap rate of the insecticides / pesticides and veterinary medicines provided in the area (82.50 per cent), proper marketing facilities should be provided (76.25 per cent), Increase in subsidy / loan should be made available timely (72.50 per cent) and Agricultural spare parts should be available locally at reasonable rates (68.75 per cent) were the most important suggestions offered by the beneficiary farmers for the adoption of recommended agricultural technologies.

Thus, it can be concluded that more number of training should be imparted though KVK regarding new agricultural technologies, timely availability of the improved seeds and fertilizers in the area as well as cheap rate of the insecticides / pesticides and veterinary medicines provided in the area should be given in valuable suggestions by beneficiary farmers.

The similar finding is obtained by Joshi (2004) and Patel (2006).

Chapter – V

SUMMARY AND CONCLUSIONS

In this chapter, a nutshell description of the present study in respect of summary, major findings, conclusions, implications and suggestions for further study have been given.

5.1 SUMMARY

Krishi Vigyan Kendra (KVK) is an innovative scientific training institution which has been established through out the country with its mandate to impart need based and skill oriented training to the practicing farmers, in-service field level extension workers and to those who wish to go in for self employment.

At present, a network of 550 KVKs has been established till the March, 2007. At present total 25 KVKs are working in Gujarat State. The basic objectives of the KVKs are focused on demonstration of the recent technology at the farmer's field and imparting skill oriented vocational training to the farmers. The Krishi Vigyan Kendra at Devataj in the district of Anand was established on 20th November, 1985 and working under the administrative control of Anand Agricultural University, Anand.

The main aim of establishing the KVK was to bring improvement in production and economy of the farmers. In order to achieve these objectives, the KVK, Devataj has carried out a number of training programme and various other activities on crop production and allied fields.

The institution is rendering the service in the proposed talukas since 22 years. In order to assess the impact of Krishi Vigyan Kendra on the farmers in operational area it was planned to undertake the impact assessment study entitled "Impact of Krishi Vigyan Kendra, Devataj on the Farmers of Anand District" with the following specific objectives as under:

5.1.1 Objectives of the study

1. To study the personal, social, agro-economic, psychological and communicational characteristics of the beneficiary farmers and non beneficiary farmers
2. To know attitude of the beneficiary farmers and non-beneficiary farmers towards KVK activities
3. To find out possession of knowledge by beneficiary farmers and non- beneficiary farmers about various selected recommended agricultural technologies
4. To find out extent of adoption of various selected recommended agricultural technologies by beneficiary farmers and non- beneficiary farmers about agricultural technologies
5. To measure the impact of KVK on selected characteristics of the beneficiary and non-beneficiary farmers
6. To ascertain relationship between independent variables of beneficiary farmers and extent of adoption level
7. To identify the constraints perceived by respondents in adoption of recommended technologies

8. To seek suggestions offered by the respondents to overcome such constraints.

5.1.2 Review of literature

A brief account of literature reviewed has been presented in different heads *viz.,* selected characteristics of respondents, extent of adoption of recommended agricultural technologies transmitted by KVK, Impact of the respondents towards KVK activities, relationship between selected independent variables with the extent of adoption, Constraints in adoption of recommended agricultural technologies and suggestions made by the respondents to overcome constraints faced by them in adoption of recommended agricultural technologies.

5.1.3 Methodology

The methodological procedure consisted locale of study, procedure for selection of respondents, research design, selection of operationalization and empirical measurement of independent and dependent variables, method of data collection and statistical tools used.

The present investigation was undertaken in Anand district of Gujarat state. Anand district consists of total eight talukas, out of which two talukas were selected on the basis of maximum activities carried out by KVK during the preceding two years in 2005-06 and 2006-07. For selection of villages, five villages were selected from the above selected talukas on the basis of maximum activities carried out by KVK. These

selected villages were considered as adopted villages in the present study. To select a control group of respondents, five villages were taken from other talukas were KVK are not under taking any of the activities, such villages were termed as non adopted villages in the present investigation. Thus, in all 20 villages (10 adopted and 10 non-adopted) were included in the study sample. For the selection or respondents, a comprehensive list of the beneficiary farmers from each adopted villages was prepared with the help of KVK personnel and four to fifteen respondents were selected proportionate randomly from each selected village and were considered as beneficiary respondents. Thus, the total numbers of beneficiary respondents were eighty. Likewise, eighty non-beneficiary respondents were also selected proportionate randomly from selected non-adopted villages where any activity was not undertaken by KVK. Thus, the total sample was comprised of one hundred sixty i.e. (eighty beneficiary and eighty non-beneficiary) respondents.

The independent and dependent variables were measured with the help of response to appropriate questions. Suitable and appropriate scales were used for the measurement of such variables in light of the derived objective. The collected data were compiled, tabulated and analyzed to get proper answer for the specific objectives of the study with the help of various statistical tools to test the hypotheses under study.

The statistical tools such as percentage, mean, standard deviation, co-efficient of correlation, and two sample t-test were used. The important findings of the study are summarized as under:

5.2 MAJOR FINDINGS AND CONCLUSIONS

The important findings of the study are summarized as below:

5.2.1 Characteristics of the respondents

(1) Age

Nearly three-fifth and two-third of the beneficiary and non-beneficiary farmers (57.50 per cent and 65.00 per cent, respectively) belonged to middle age group.

(2) Education

Slightly more than two-third (68.75 per cent) of the beneficiary and two-fifth (40.00 per cent) of the non-beneficiary farmers were educated up to secondary to higher secondary (8^{th} to 12^{th} Std.) level.

(3) Caste

Majority of the beneficiary and non-beneficiary farmers (76.25 per cent and 47.50 per cent, respectively) belonged to higher castes.

(4) Type of family

Slightly more than three-fourth and four-fifth of the beneficiary and non-beneficiary farmers (77.50 per cent and 80.00 per cent, respectively) had joint family.

(5) Size of family

More than half of the beneficiary and non-beneficiary farmers (52.50 per cent and 58.75 per cent, respectively) had medium size of family.

(6) Socio- economic status

A great majority (85.00 per cent) of the beneficiary farmers belonged to medium to high socio-economic status level whereas non-beneficiary farmers (82.50 per cent) belonged to low to medium SES level (Socio-economic status).

(7) Occupation

More than half (56.25 per cent) of the beneficiary and nearly three-fourth (73.75 per cent) of the non-beneficiary farmers had farming and animal husbandry as their main occupation.

(8) Size of land holding

Exactly three-fourth of the beneficiary and three-fifth of the non-beneficiary farmers (75.00 per cent and 60.00 per cent, respectively) were found to be small to medium size of land holding.

(9) Annual income

Exactly three-fifth (60.00 per cent) of the beneficiary farmers and nearly three-fifth (58.75 per cent) of the non-beneficiary farmers had annual income between Rs. 50,001 to Rs. 1,00,000.

(10) Risk preference

A great majority of the beneficiary and non-beneficiary farmers (86.25 per cent and 83.75 per cent, respectively) had medium to high level and low to medium level of risk preference.

(11) Achievement motivation

More than four-fifth (82.50 per cent) of the beneficiary farmers had medium to high level whereas more than four-fifth (81.25 per cent) of the non-beneficiary farmers had low to medium level of achievement motivation.

(12) Scientific orientation

A great majority (85.00 per cent) of the beneficiary farmers were found to have medium to high level of scientific orientation while more than four-fifth (82.50 per cent) of the non-beneficiary farmers where found to have low to medium level of scientific orientation.

(13) Innovativeness

Majority (86.25 per cent) of the beneficiary farmers had medium to high level whereas majority (85.00 per cent) of the non-beneficiary farmers had low to medium level of innovativeness.

(14) Cosmopolite-localite

Nearly more than two-third and more than three-fifth (67.50 per cent and 65.00 per cent) the beneficiary and non-beneficiary farmers had medium level of cosmopolite-localite.

(15) Extension contact

A great majority (86.25 per cent) of the beneficiary farmers had medium to high level of extension contact while majority (82.50 per cent) of the non-beneficiary farmers had low to medium level of extension contact.

5.2.2 Attitude of the farmers towards various activities of KVK

A great majority (87.50 per cent) of the beneficiary farmers had moderately favourable to highly favourable attitude and majority (83.75 per cent) of the non-beneficiary farmers had less favourable to moderately favourable attitude towards KVK activities.

5.2.3 Knowledge level of beneficiary and non-beneficiary farmers about recommended technology transmitted by KVK

A great majority (88.75 per cent) of the beneficiary farmers had medium to high level of knowledge whereas majority (82.50 per cent) of the non-beneficiary farmers had low to medium knowledge about recommended agricultural technology transmitted by KVK.

5.2.4 Extent of adoption of various selected recommended agricultural technologies transmitted by KVK

Majority (85.00 per cent) of the beneficiary farmers had medium to high level of adoption while nearly four-fifth (78.75 per cent) of the non-beneficiary farmers where found with low to medium level of adoption of various selected technologies transmitted by KVK.

5.2.5 Impact of the respondents towards KVK activities

Significant impact towards KVK activities was observed on many characteristics of the beneficiary and non-beneficiary farmers. These characteristics were education, caste, socio-economic status; annual income, risk preference, achievement motivation, scientific orientation, innovativeness, cosmopolite localite, extension contact, knowledge about recommended agricultural technologies, attitude towards KVK activities and extent of adoption of recommended agricultural technologies transmitted by KVK.

5.2.6 Relationship between selected independent variables of beneficiary farmers and their adoption level towards various activities of KVK

The independent variables studied *viz.,* education, caste, socio-economics status, occupation, size of land holding, annual income, risk preference, achievement motivation, scientific orientation, innovativeness, knowledge, attitude, cosmopolite localite and extension contact had positive and significant correlation with extent of adoption of respondents in relation to agricultural technologies transmitted by KVK whereas age of the respondents had negative and significant correlation and type of family had negative non-significant with extent of adoption of recommended agricultural technologies. Rest of the traits *viz.,* size of family exerted no relationship with the adoption behaviour of respondents about agricultural technologies transmitted by KVK.

5.2.7 Constraints perceived by respondents in adoption of recommended technologies

Majority of the beneficiary farmers perceived major constraints likes Unavailability of improved seeds, High cost insecticides and pesticides and Cheap and timely medicines are not available were also considered important constraints perceived by beneficiary farmers in adoption of recommended agricultural technologies transmitted by KVK.

5.2.8 Suggestions to overcome the constraints

The study revealed that timely availability of improved seeds and fertilizers in the area and cheap and timely availability of insecticides and pesticides and veterinary medicines were also considered important suggestions perceived by beneficiary farmers.

5.3 ACTION IMPLICATIONS

Having discussed the factors affecting the impact of KVK, constraints as perceived by them as well as suggestions to over come the constraints, some measures could be suggested emerging from this study for making the impact of KVK more effective and efficient transfer of farm technology. Based on the finding of the study, following implications can be recommended.

1. The study facilitate in knowing the characteristics of the respondents and it would help to serve as guideline for policy makers, planners and extension workers to implement such type of work/programme.

2. The findings of this study reveal that majority of the beneficiary farmers were of middle age and literate, who have vital role in adoption of new agricultural technology transmitted by KVK and hence, such type of beneficiary farmers should be approached in accelerating the adoption of new agricultural technology.

3. The farmer's back ground factors which influence the adoption of recommended agricultural technology transmitted by KVK must be reckoned within any programme of planned communication.

4. The findings indicated that extension contact, knowledge, education and annual income were the prominent variables influencing the extent of adoption of new agricultural technology. Therefore, extension workers should concentrate to increase the extension contact, knowledge, education and annual income for promotion of new agricultural technology.

5. The beneficiary farmers should be given opportunities to attend more and more training programmes concerning their fields of specialization so as to make them able to learn more recent advances necessary to raise their production and productivity in major crops like paddy, wheat, mustard, gram and castor.

6. The sources of information namely visit to research farm, visit to farm training centre (FTC), personnel visit to researchers might least used by the respondents, means they had utilized mostly localite

sources. Trainees should be encouraged to use these sources to a greater extent.

7. The administrators can also help by making arrangements for supply of requisite facilities so as to enable them to use more suitable channels for information.
8. The cost of essential inputs needs to be subsidized to accelerate adoption rate.
9. All the possible efforts should be made to overcome the major constraints related to finance and assured supply of inputs.

5.4 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 districts and states where such conditions are prevailing. Some of new areas in which research work may be under taken are as under:

1. The present study was conducted only in the Anand district of Gujarat state. To strengthen the finding of this study, similar study may be replicated in other districts of middle Gujarat.
2. The area of research should be extended further with a sufficiently large number of beneficiary and non- beneficiary farmers to drawn more valid conclusions.
3. Some characteristics of the respondents other than those included in the study might be affecting the impact of KVK for transfer

of technology to the client systems. They should be identified and their association with he impact of KVK be ascertained.

4. Such studies should be repeated after lapse of some time.

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APPENDIX

"IMPACT OF KRISHI VIGYAN KENDRA, DEVATAJ ON THE FARMERS OF ANAND DISTRICT"

-: Interview Schedule :-

Interview schedule No: _____ Date: _____

Name of respondent: _____

Name of Village: _____ Taluka: _____ District: _____

Note: Please put (✓) mark where it is applicable

PART – 1

PERSONAL CHARACTERISTICS OF THE FARMERS

1. **Age** : _____ years

2. **Education** :

Sr. No.	Educational level	put tick mark (✓)
1.	Illiterate	
2.	Primary (1^{st} to 7^{th} standard)	
3.	Secondary (8^{th} to 10^{th} standard)	
4.	Higher secondary (11^{th} to 12^{th} standard)	
5.	College and above (above 12^{th} std.)	

3. **Caste** : _____

4. **Type of family** : Nuclear family / Joint family

5. Size of family :

Sr. No.	Details	Number
1.	Male	
2.	Female	
3.	children	

PART – 2

SOCIAL CHARACTERISTICS OF THE FARMERS

6. Socio-economic status :

Sr. No.	Category		Score
(1)	**Caste**		
	1.	Higher caste	3
	2.	Backward caste	2
	3.	Most Backward caste	1
(2)	**Occupation**		
	1.	Farming alone	1
	2.	Farming and animal husbandry	2
	3.	Farming, animal husbandry and business	3
	4.	Farming, animal husbandry and service	4
(3)	**Education**		
	1.	Illiterate	1
	2.	Primary (1^{st} to 7^{th} standard)	2
	3.	Secondary (8^{th} to 10^{th} standard)	3
	4.	Higher secondary (11^{th} to 12^{th} standard)	4
	5.	College and above (above 12^{th} std.)	5

Conti…

Conti…

Sr. No.	Category		Score
(4)	**Social Participation**		
	1.	Member of one organization	1
	2.	Member of more than one organization	1
	3.	office holder	3
	4.	Public Leader MLA / MP	6
(5)	**Land**		
	1.	Marginal (Up to 1.00 ha)	1
	2.	Small (1.01 to 2.00 ha)	2
	3.	Medium (2.01 to 4.00 ha)	3
	4.	Big (above 4.00 ha)	4
(6)	**House**		

	1.	No own house		1
	2.	Kachha house		2
	3.	Pakka house		3
(7)	**Farm machinery / Farm implements and household items (during last 5 years)**			
	I.	**Farm machinery**		
		1.	Tractor	10
		2.	Trolly	7
		3.	Cultivator	4
		4.	Plough	4
		5.	Thresher (Power)	6
		6.	Submersible pump	6
		7.	Electric motor	5
		8.	Oil engine	5
		9.	Groundnut / castor shelling machine	4

Conti…

Conti…

Sr. No.	Category			Score
	II.	**Improved implements**		
		1.	Iron plough	4
		2.	Iron hoe	3
		3.	Gandhi Allen hoe	3
		4.	Bund former	3
	III.	**Farm equipments**		
		1.	Power sprayer	4
		2.	Hand sprayer	3
		3.	Hand duster	2
		4.	Chaff cutter (Hand operated)	1
		5.	Bullock-cart	2
	IV.	**Household items**		
		1.	Cycle	1
		2.	Scooter / Motor cycle	6
		3.	Radio	2
		4.	Tape recorder	3
		5.	Television (Colour)	6
		6.	Television (Black & White)	4
		7.	V.C.R.	5
		8.	DVD	7
		9.	Refrigerator	4
		10.	Electric fan	2
		11.	Sewing machine	3

		12.	Iron table	2
		13.	Chair	1
		14.	Steel cupboard	3
		15.	Steel cot	2

Conti…

Conti…

Sr. No.	Category			Score
		16.	Wall clock	1
		17.	Cooking gas (LPG)	3
		18.	Gobar gas	2
		19.	Jeep / car	10
		20.	Telephone	8
		21.	Iron	1
	V.	**Animal information**		
		1.	1-2 animal	1
		2.	3-4 animals	2
		3.	5-6 animals	3
		4.	More than 8 animals	4

PART – 3

AGRO-ECONOMICAL CHARACTERISTICS OF THE FARMERS

7. Occupation :

Sr. No.	Category	put tick mark (✓)
1.	Farming alone	
2.	Farming and animal husbandry	
3.	Farming, animal husbandry and business	
4.	Farming, animal husbandry and services	

8. Size of land holding :

Sr. No.	Category	put tick mark (✓)
1.	Marginal (Up to 1.00 ha)	
2.	Small (1.01 to 2.00 ha)	
3.	Medium (2.01 to 4.00 ha)	
4.	Big (above 4.00 ha)	

9. Annual income of family (Rs.) :

Sr. No.	Source of income	Approximately Income Rs.

1.	Agriculture	
2.	Animal Husbandry	
3.	Business	
4.	Service	
5.	Any other (Specify)	

PART – 4

PSYCHOLOGICAL CHARACTERISTICS OF THE FARMERS

10. Risk preference :

The following are some statements regarding risk preference. Please state the degree of agreement by putting tick (✓) mark.

Sr. No.	Statement	SA	A	UD	DA	SDA
1.	A farmer should grow large number of crops to avoid greater risk involved in growing one or two crops					
2.	A farmer should rather take more chance in making a big profit than to be content with smaller but less risky profit					
3.	A farmer who is willing to take greater risk than the average farmer usually does financially better					
4.	It is good for the farmer to take risk when he knows his chance of success fairly high					
5.	It is better for the farmer not to try new farming methods unless most other farmers have used them with success					
6.	Trying an entirely new methods in farming by farmers involves risk but it worth					

SA = strongly agree A = Agree UD = undecided

DA = disagree SDA = strongly disagree

11. Achievement motivation :

Please state your opinion about the following statements:

Sr. No.	Statement	SA	A	UD	DA	SDA
1.	One should enjoy work as much as play					

2.	One should work like a slave at everything one undertakes until is satisfied with a result					
3.	One should succeeded in his occupation even if one has been neglectful of his family					
4.	One should have determination and deriving ambition to achieve certain things in life even if these qualities make one unpopular					
5.	Work should come first even if one can not get rest					
6.	Even when one's interests are in danger, he should concentrate on his job and forgot his obligation to others					
7.	One should set difficult goals for ones at any try to reach them					

SA = strongly agree A = Agree UD = undecided

DA = disagree SDA = strongly disagree

12. Scientific orientation :

The following are some statements representing scientific orientation.

Please state the degree of agreement by putting tick (✓) mark.

Sr. No.	Statement	SA	A	UD	DA	SDA
1.	Modern methods of farming gives better results to a farmer than traditional methods					
2.	The way a farmer's forefathers farmed is					

	still the best way to farm today					
3.	Even a farmer with lots of experience in traditional farming should use modern methods of farming					
4.	Though, it takes time for a farmer to learn modern farming it is worth the efforts					
5.	A modern farmer experiments with new ideas in farming					
6.	Traditional methods of farming have to be changed in order to raise the level of living of a farmer					

SA = strongly agree A = agree UD = undecided

DA = disagree SDA = strongly disagree.

13. Innovativeness :

When would you prefer to adopt new agricultural technologies transmitted by KVK ?

Please check anyone of the following by (✓) mark.

Sr. No.	Statement		Remarks
I	(a)	I try to keep myself up to date with information on new farm practices, but that does not mean that, I try out all the new method on my farm	
	(b)	I feel restless till try out a new farm practice, I have heared about	
	(c)	The talk of may farm practices these days, but who knows they are better then the old	

		ones	
II	(a)	From time to time, I have heared of reversal new farm practices and I have tried out most of them in the last few years	
	(b)	I usually wait to see the results of my neighbour obtain before. I try out the new methods or practices	
	(c)	Some how, I believe that the traditional ways of farming are best	
III	(a)	I am cautious about trying a new farm practice	
	(b)	After all our fore fathers were wise in their farming	
	(c)	Often new farm practices are not successful, however, if they are promising, I would surely like to adopt them	

14. Knowledge level of beneficiary and non-beneficiary farmers about recommended technology transmitted by KVK :

(1) Which varieties of castor is recommended for your area ?

(i) _____ (ii) _____

(2) Do you know seed treatment given before sowing the castor seeds ?

Yes / No. Give the name of treatments.

Sr. No.	Name of chemicals	Rate
1.		
2.		
3.		
4.		

(3) What is the recommended dose of chemical fertilizers per hectare for castor crop ?

N : _____ Kg /ha, P : _____ Kg /ha, K : _____ Kg /ha

(4) Which are the methods for applications of chemical fertilizers ?

(i) _____ (ii) _____

(5) Which method is followed for sowing of castor crop in your area ?

(i) _____ (ii) _____

(6) Do you know the control measures of two important diseases ?

Sr. No.	Name of Disease/Insect	Control measures
1.		
2.		
3.		
4.		

(7) Do you know the recommended fertilizer doses for vegetable crops ?

Crop : _____

N : _____ Kg /ha, P : _____ Kg /ha, K : _____ Kg /ha

(8) Do you know the seed treatment of vegetable crops ?

_____

(9) Name the two important insect/diseases which appear in the vegetable crops ?

Sr. No.	Crop	Insect / Diseases
1.		
2.		
3.		

(10) Do you know the name of plant protection equipments for controlling insect / pest / diseases ?

(i) _____

(ii) _____

(iii) _____

(11) Which are the methods of animal breeding ?

(i) _____

(ii) _____

(iii) _____

(12) Name the disease which occurs in animals ?

(i) _____

(ii) _____

(iii) _____

(13) Do you know for which diseases the animals are vaccinated ?

(i) _____

(ii) _____

(iii) _____

(14) Do you know from where agricultural credit facilities are available ?

Yes / No

(15) Do you know the storage facilities for vegetable crops ?

(i) _____

(ii) _____

15. Attitude of the farmers towards various activities of KVK :

Put tick mark (✓) in appropriate box :

Sr. No.	Statements	SA	A	UD	DA	SDA
1.	The production of crops is increased by the advise of scientists working at KVK.					
2.	The KVK is not helpful in raising your living standard.					
3.	The KVK keeps abreast you with the latest technological changes.					
4.	The demonstrations conducted by KVK are useful in motivating the farmers towards the improved agricultural practices.					

5.	The training period is not sufficient to cover all the information about fields.					
6.	The subject matter information given in the training programmes is adequate.					

Conti...

Conti...

Sr. No.	Statements	SA	A	UD	DA	SDA
7.	The trainers are not having enough knowledge of subject matter.					
8.	All the recommendations given in the training are profitable.					
9.	The duration of gap between two training is not adequate.					
10.	Kisan Mela organized by KVK is useful to you in providing improved farming technology.					
11.	The place of training is not suitable.					
12.	Fields days organized by KVK is useful to solving your problems right in the field.					
13.	Film shows are not helpful to your in developing confidence towards new technology.					
14.	Farmer's training programmes organized by KVK provides you the practical knowledge about the new agricultural techniques.					
15.	Press releases are not helpful to you in providing timely information.					
16.	Campaigns organized by KVK are beneficial to you.					
17.	Youth training is not beneficial in improving physical as well as mental status of youth.					
18.	The training does not help you in developing confidence in your work.					
19.	Farmers guidance at head quarter organized by KVK is beneficial to you in					

	transfer of new technology.					

SA = strongly agree A = agree UD = undecided

DA = disagree SDA = strongly disagree

PART – 5

COMMUNICATIONAL CHARACTERISTICS OF THE FARMERS

16. Cosmopolite localite :

Are you aware about extension agents working in your circle ?

Yes / No.

(A) Frequency of Visit

Please indicate the number of times your visit the nearest town:

Sr. No.	Statement	Put tick mark (✓) in appropriate box
1.	Two or more times a week (5)	
2.	Once per week (4)	
3.	Once in a fortnight (3)	
4.	Once in month (2)	
5.	Occasionally (1)	

(B) Purpose of visit

What generally would be the main purpose of your visit ?

Sr. No.	Statement	Put tick mark (✓) in appropriate box
1.	Majority of the visit relating to agriculture and allied work (5)	
2.	Some relating to agriculture and allied work (4)	
3.	Personal domestic and entertainment (3)	
4.	Casual (2)	
5.	Not response (1)	

19. Extension contact :

Sr. No.	Agency	Regularly	Frequently	Occasionally	Never
		3	2	1	0
1.	Village Level Worker/ Gram Sevak				
2.	Agriculture Extension Officer				
3.	Sub-divisional Agricultural officer				
4.	Scientist of the Agricultural University or Research station				
5.	Subject Matter Specialist				
6.	Scientist of Krishi Vigyan Kendra				
7.	Officer of Sarder Smruti Kendra				
8.	Any other (Specify)				

PART – 6

EXTENT OF ADOPTION OF RECOMMENDED AGRICULTURAL TECHNOLOGIES TRANSMITTED BY KVK AMONG THE FARMERS

(1) Which varieties of castor crop is did you grown in the previous year ?

(i) _____ (ii) _____

(2) Did you give seed treatment before sowing the castor seeds ?

Yes / No. Give the name of treatments.

Sr. No.	Name of chemicals	Rate
1.		
2.		
3.		
4.		

(3) What distance did you maintain at the time of sowing ?

(i) Between two rows : _____ cm

(ii) Between two plants : _____ cm

(4) Did you apply chemical fertilizers at the time of sowing in previous year ? Yes / No.

If Yes, give the following details.

Sr. No.	Name of fertilizers	Quantity (Kg/ha)	Area
1.			
2.			
3.			
4.			

(5) Which methods did you followed for applications of chemical fertilizers ?

(i) _____ (ii) _____

(6) Which method did you followed for sowing the seeds ?

(i) _____ (ii) _____

(7) Which are the critical stages of irrigation in castor crop during which we have to care to maintain minimum water level ?

(i) _____

(ii) _____

(iii) _____

(8) Was there any insect/pests infection in your castor crop ? Yes / No.

If yes, give the following details.

(i) _____

(ii) _____

(iii) _____

(9) Did you find any disease(s) in your castor crop ? Yes / No.

If yes, give the following details.

(i) _____

(ii) _____

(iii) _____

(10) Did you take any steps to control for above disease(s) ? Yes / No.

If yes, give information about control measures adopted for control of above diseases.

Sr. No.	Name of pest / Disease	Name of pesticide / fungicide	Rate
1.			
2.			
3.			

(11) Did you prepared the seedlings for vegetable crops ? For which crops ?

(i) _____

(ii) _____

(iii) _____

(12) How much quantity of F.Y.M. did you used in vegetables crop ?

(i) _____ t / ha.

(ii) _____ t / ha.

(13) Did you used the recommended does of fertilizers in vegetable crops ?

N : _____ Kg /ha, P : _____ Kg /ha, K : _____ Kg /ha

(14) Did you followed seed treatment in vegetable crops grown your field ?

Sr. No.	Crop	Seed treatment
1.		
2.		
3.		

(15) Did you control any insect/diseases of vegetable crops ?

Sr. No.	Insect / Diseases	Chemical used
1.		
2.		
3.		

(16) Did you used of plant protection equipments for controlling insect/ pest/diseases ?

Sr. No.	Equipments
1.	
2.	
3.	

(17) Which practice did you follow for breeding your animals ?

(i) _____

(ii) _____

(18) Have you got treated your animals ?

For which disease ?

(i) _____

(ii) _____

(iii) _____

(19) Have you got vaccinated your animals ? Yes / No.

For which diseases ?

(i) _____

(ii) _____

(iii) _____

(20) Did you available credit facilities for your farming ?

Sr. No.	Purpose	Amount (Rs.)
1.		
2.		
3.		

(21) Did you used the storage facilities for your vegetable produce ?

(i) _____

(ii) _____

PART – 7

CONSTRAINTS PERCEIVED BY FARMERS IN ADOPTION OF RECOMMENDED AGRICULTURAL TECHNOLOGIES

Put tick mark (✓) in appropriate box

Sr. No.	Major constraints	Responses		
		M	I	L
1.	Inadequate knowledge/skill provided by KVK			
2.	Lack of feed back received by KVK staff			
3.	Unavailability of the improved seeds			
4.	Non-availability of the fertilizers in time in the area			
5.	Lack of irrigation facilities			
6.	High cost of equipments			
7.	High cost of insecticides and pesticides			
8.	Shortage of water for successful growing the crops			
9.	Inadequate credit facilities in the area			
10.	Lack of marketing facilities			
11.	Lack of artificial/insemination centre/breeding bull in/ around the village			

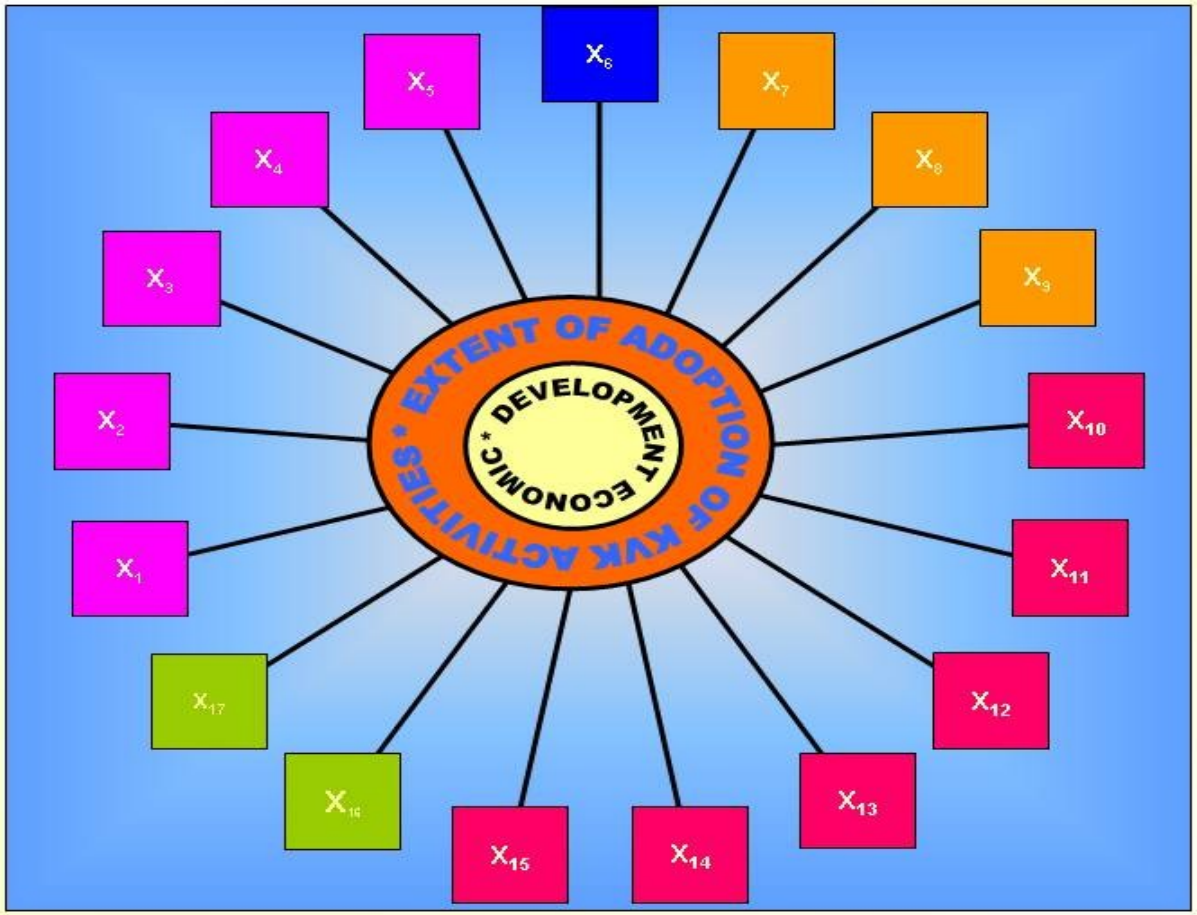
12.	Non-availability of cheap and timely concentrate for animals			
13.	High cost of dry fodder and concentrate			
14.	Unavailability of veterinary services			
15.	Cheap and timely medicines are not available			
16.	Less member of milk co-operatives			
17.	Low price of milk and other products			
18.	Unavailability of the land for the social forestry			

M = Most important; L = Least important; I = Important

PART – 8

PLEASE GIVE YOUR VALUABLE SUGGESTIONS TO OVER COME CONSTRAINTS FACED BY YOU IN ADOPTION OF RECOMMENDED AGRICULTURAL TECHNOLOGIES

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



KEY TO FIGURE

INDEPENDENT VARIABLE

- X_1 : Age
- X_2 : Education
- X_3 : Caste
- X_4 : Type of family
- X_5 : Size of family
- X_6 : Socio-economic status
- X_7 : Occupation
- X_8 : Size of land holding
- X_9 : Annual income
- X_{10} : Risk preference
- X_{11} : Achievement motivation
- X_{12} : Scientific orientation
- X_{13} : Innovativeness
- X_{14} : Knowledge
- X_{15} : Attitude
- X_{16} : Cosmopolite localite
- X_{17} : Extension contact

DEPENDENT VARIABLE

Extent of adoption of KVK Activities

Fig. 1 Conceptual model showing influence of Independent variables on dependent variable

Fig. 2 Map of Gujarat State Showing Anand District

Fig. 3 Map of Anand District showing selected talukas

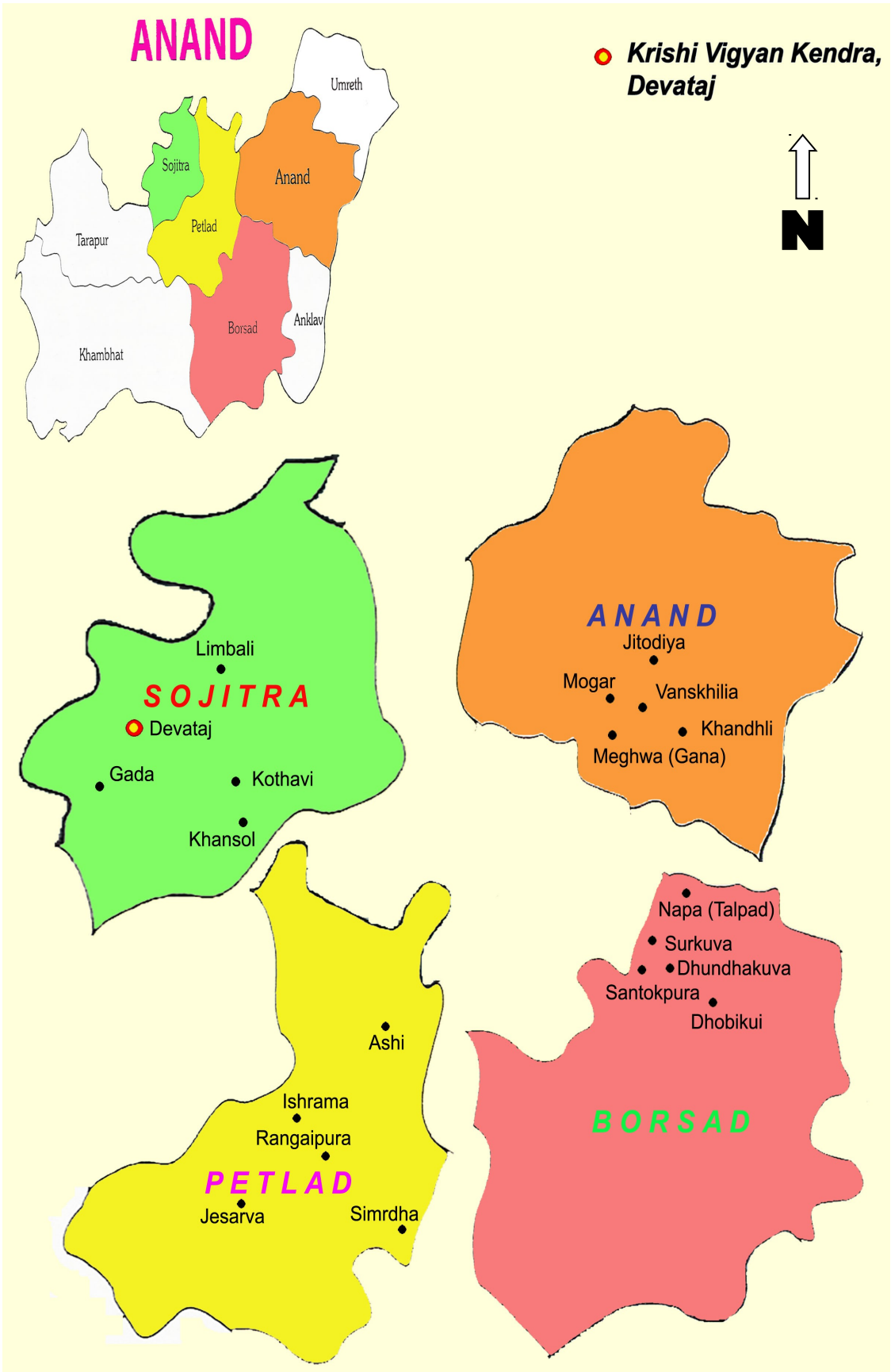
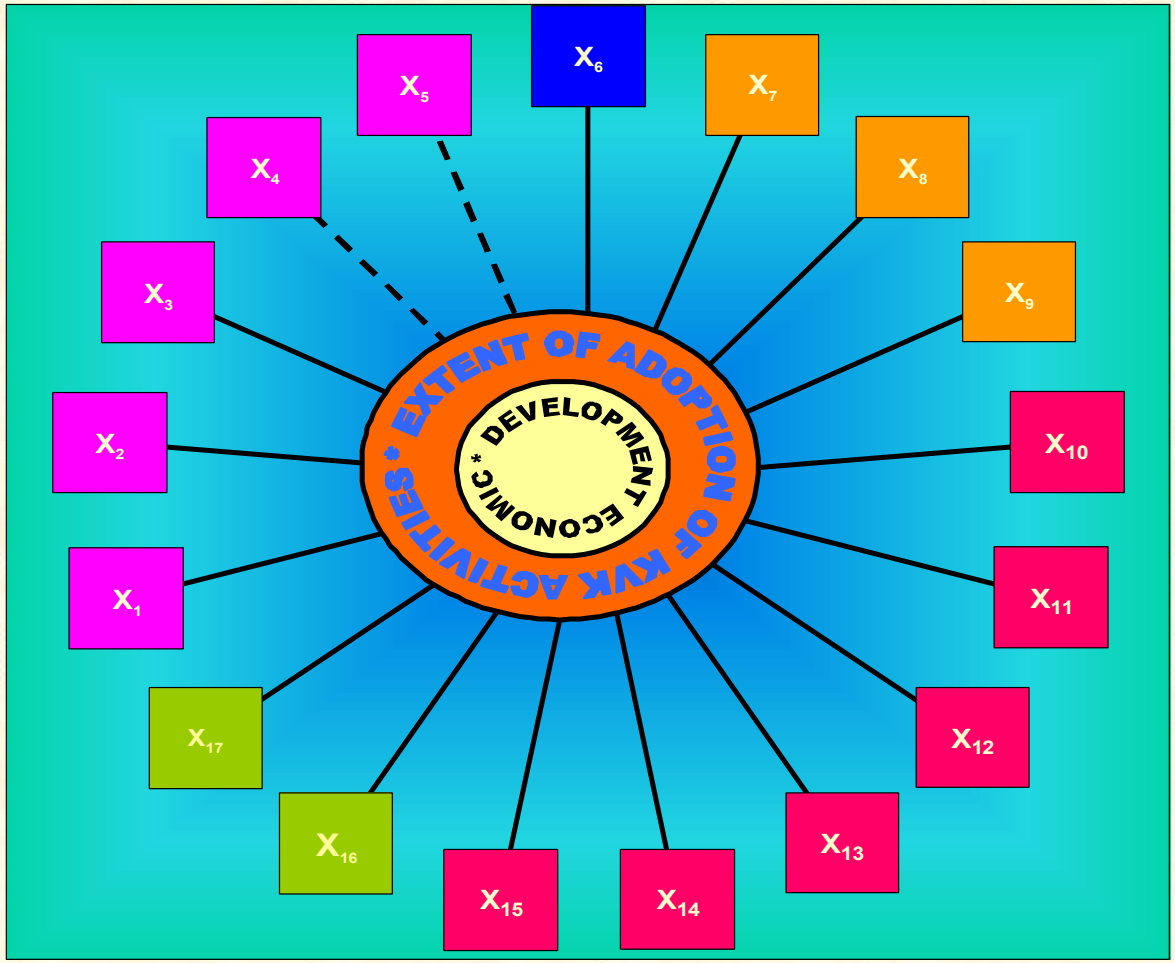


Fig. 4 Map of selected talukas showing the selected villages from Anand district



KEY TO FIGURE

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- X_1 : Age
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- X_{14} : Knowledge
- X_{15} : Attitude
- X_{16} : Cosmopolite localite
- X_{17} : Extension contact

DEPENDENT VARIABLE

Extent of adoption of KVK Activities

——— Significant relationship

– – – – Non Significant relationship

Fig. 26 Empirical model showing influence of Independent variables on dependent variable

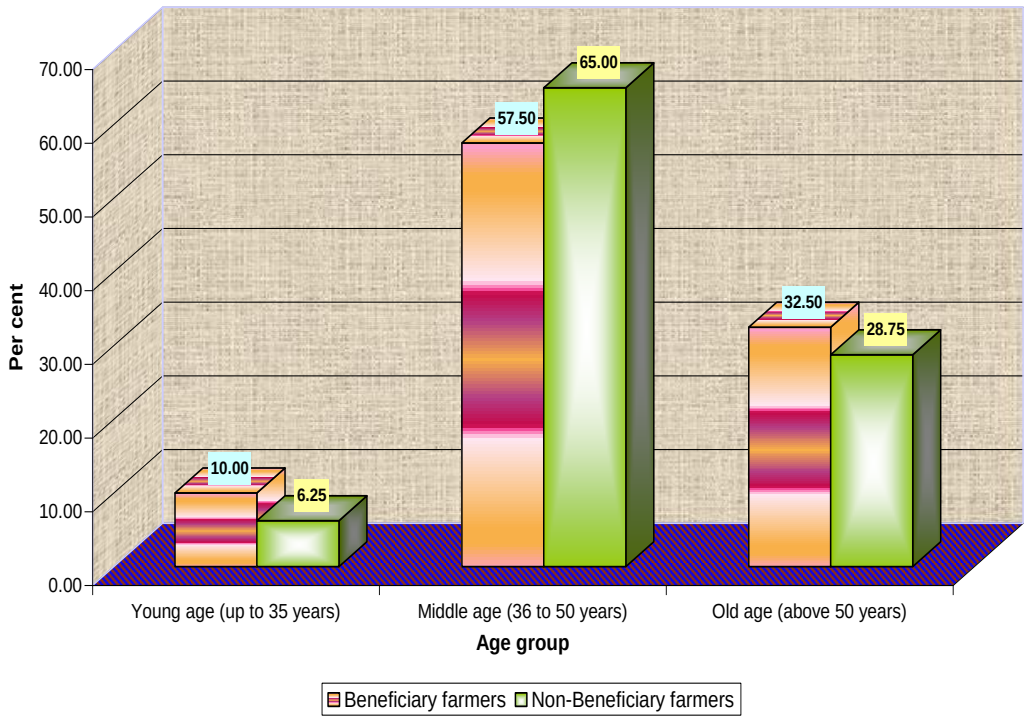

Fig. 5 Distribution of respondents according to their age

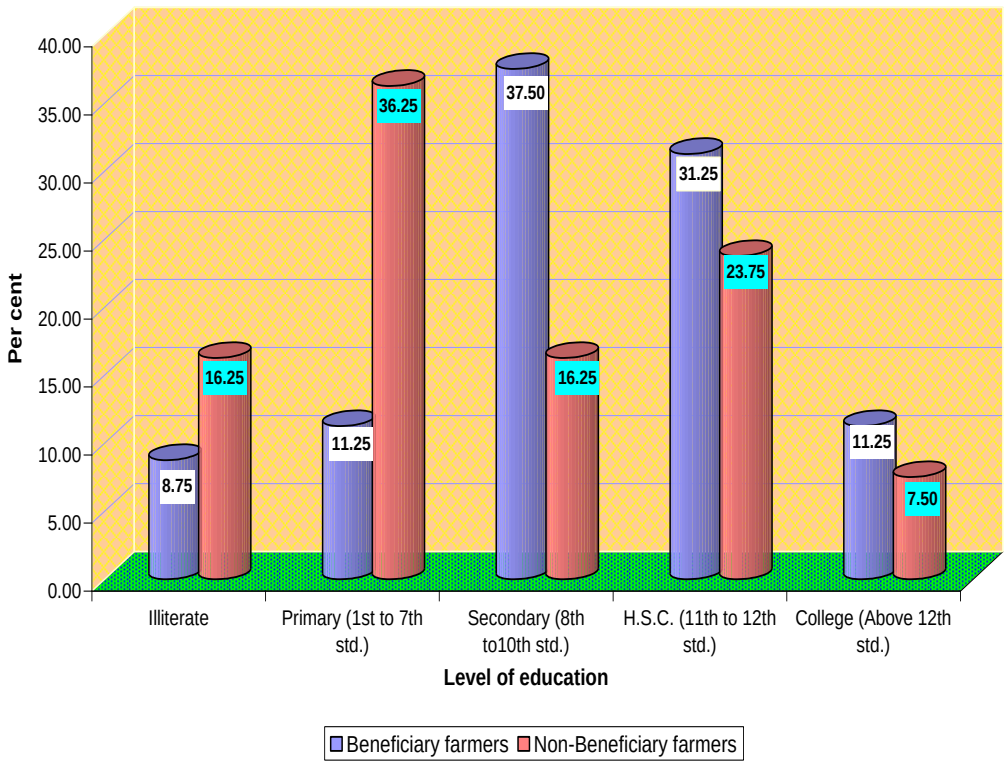

Fig. 6 Distribution of respondents according to their level of education

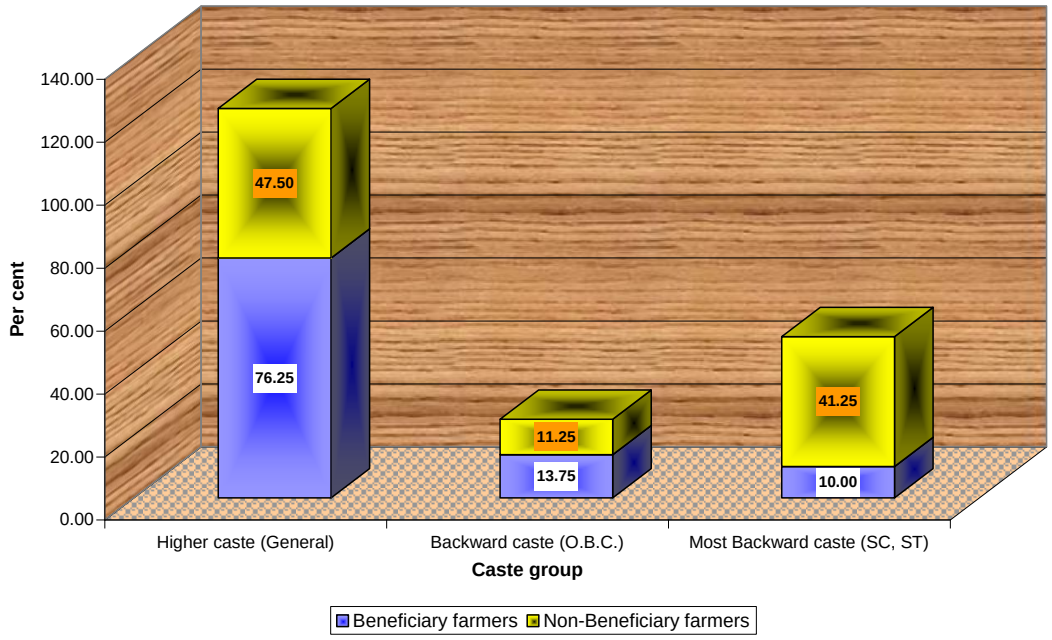

Fig. 7 Distribution of respondents according to their caste

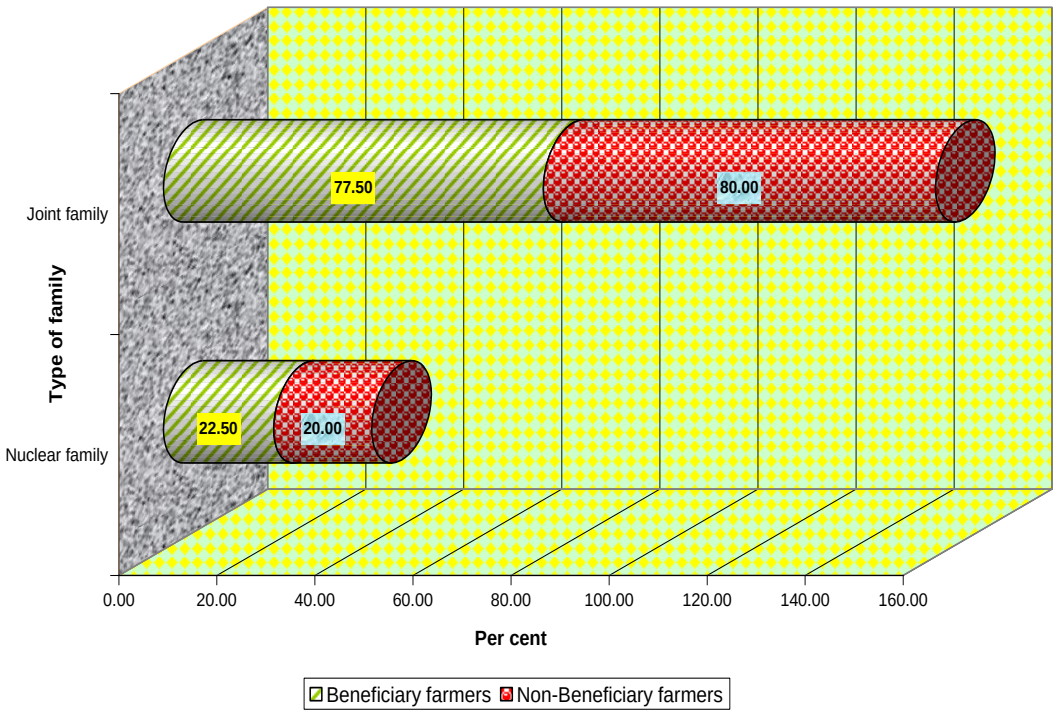

Fig. 8 Distribution of respondents according to their type of family

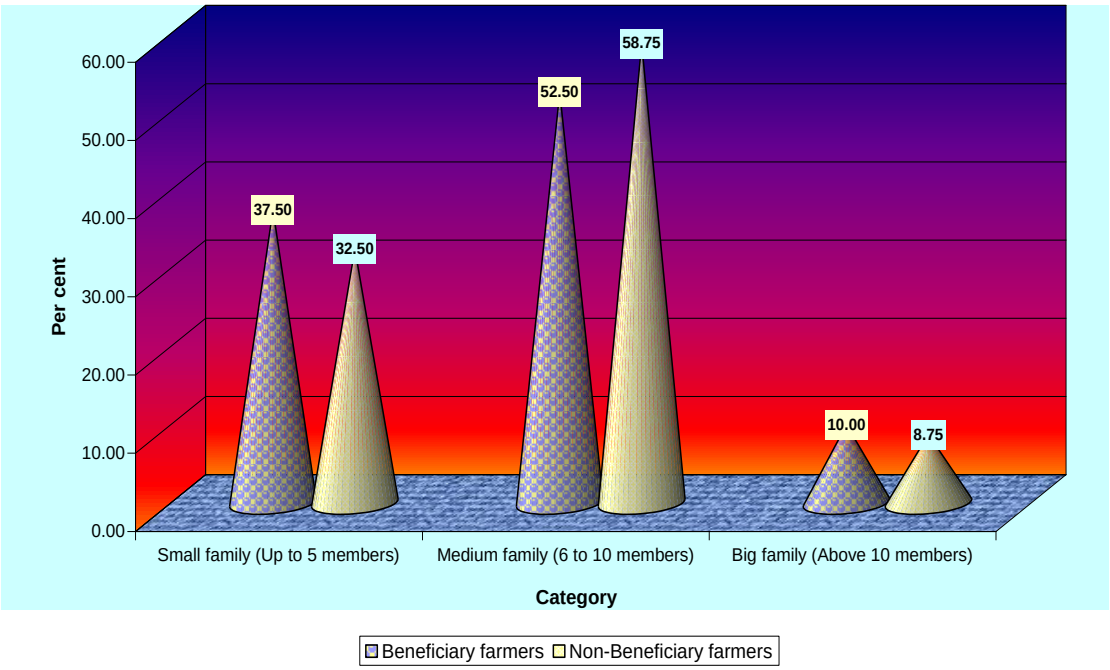

Fig. 9 Distribution of respondents according to their size of family

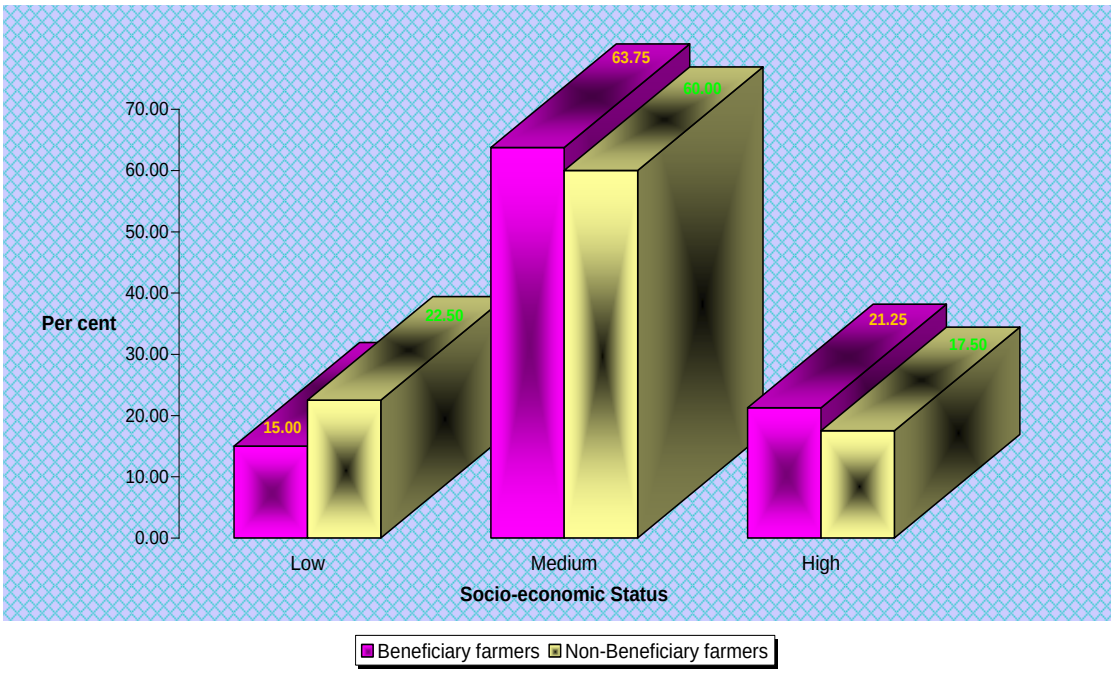

Fig. 10 Distribution of respondents according to their socio-economic status

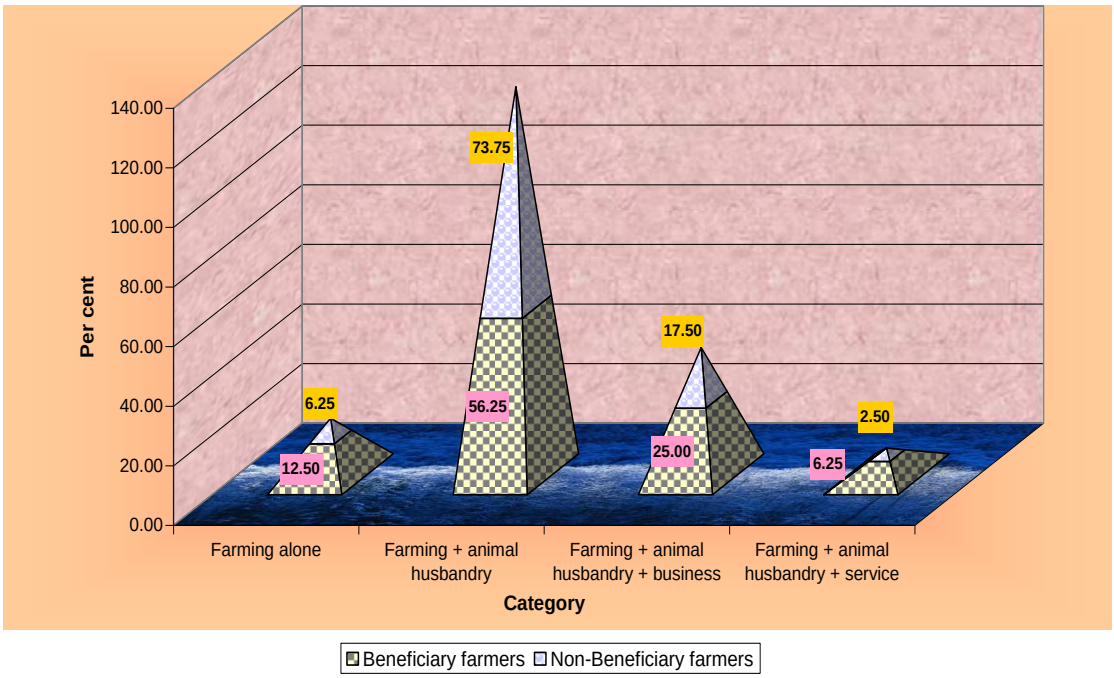

Fig. 11 Distribution of respondents according to their occupation

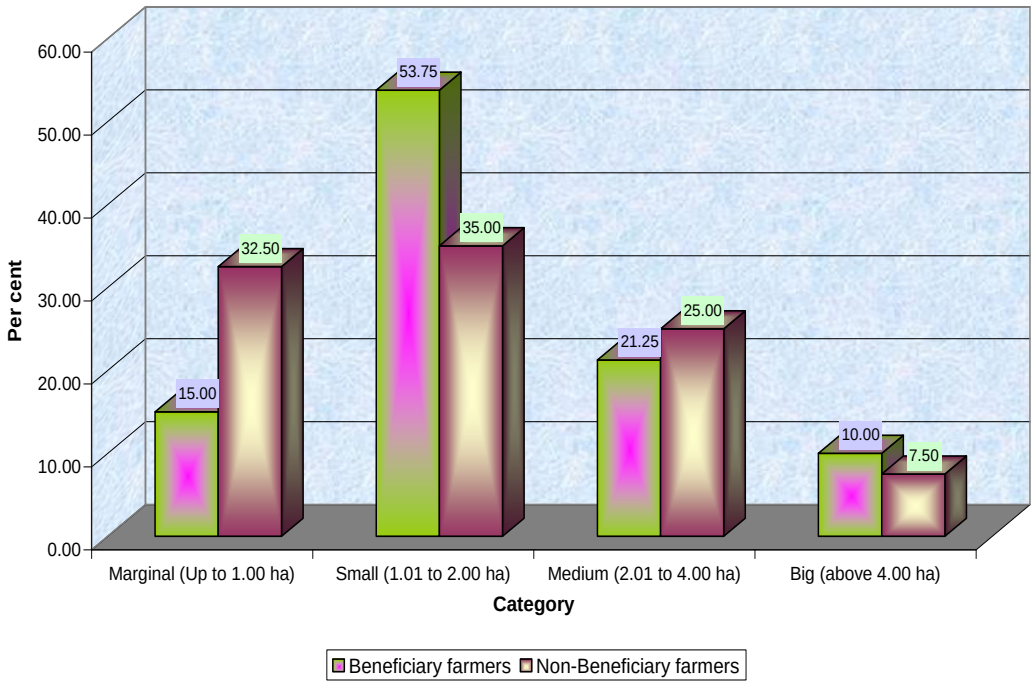

Fig. 12 Distribution of respondents according to their size of land holding

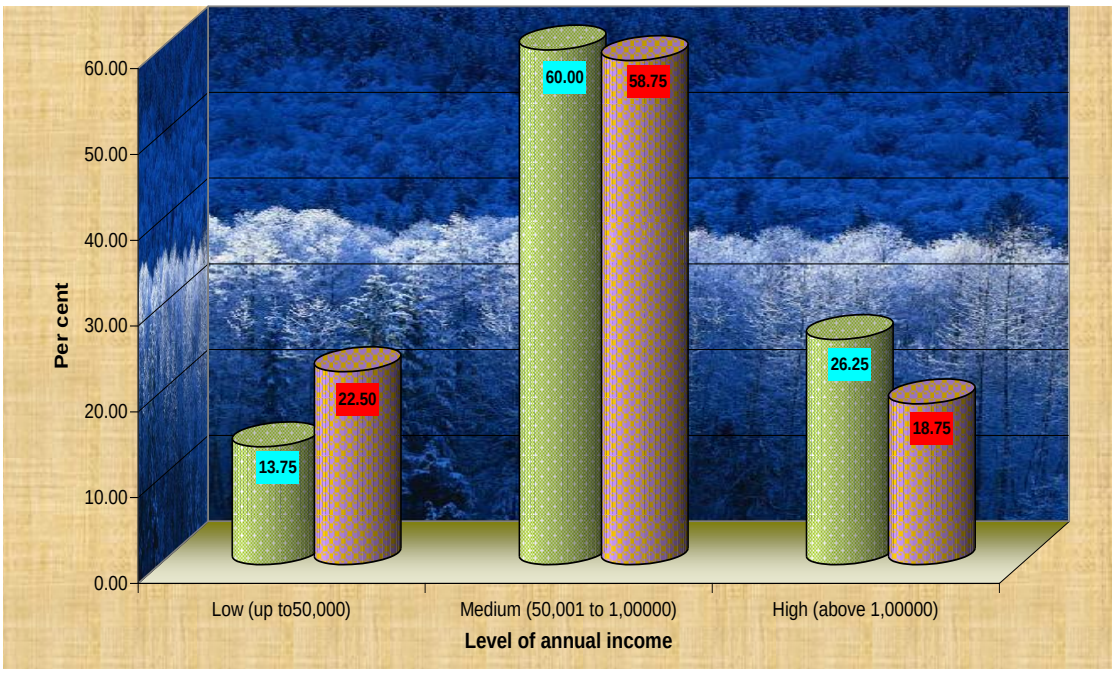

Fig. 13 Distribution of respondents according to their annual income

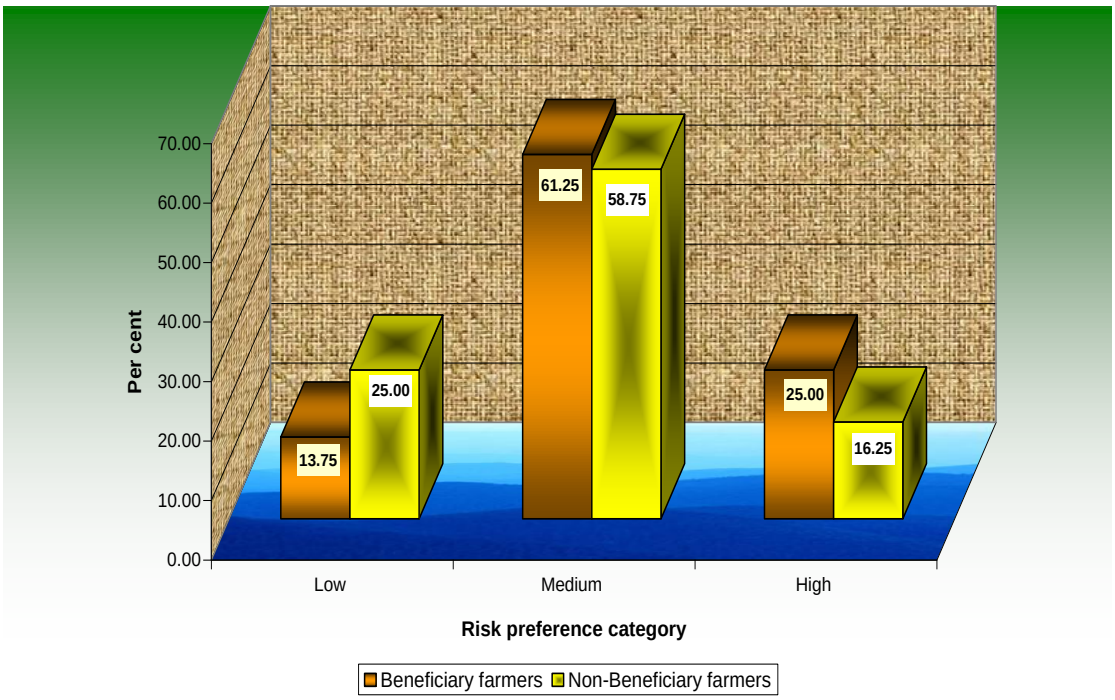

Fig. 14 Distribution of respondents according to their risk preference

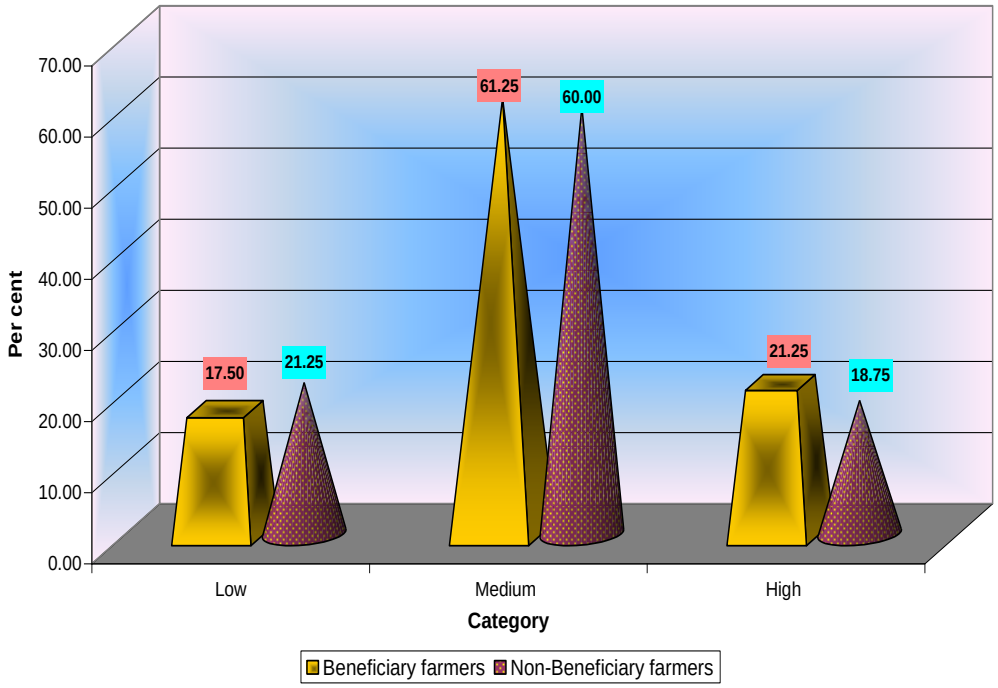

Fig. 15 Distribution of respondents according to their achievement motivation

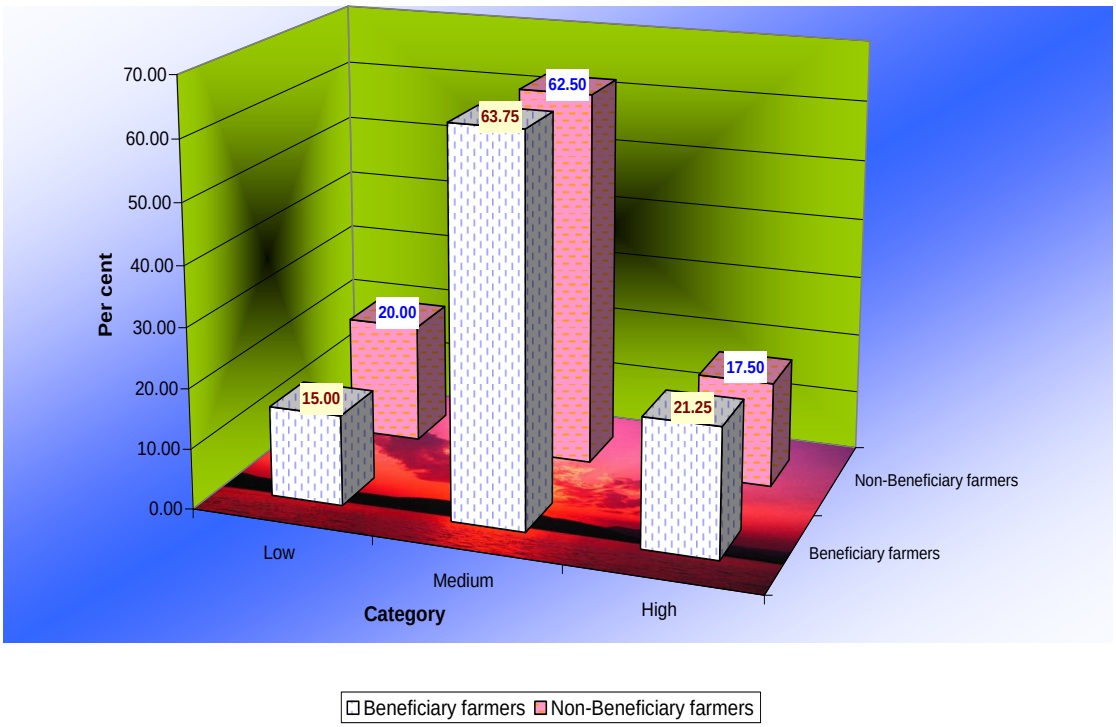

Fig. 16 Distribution of respondents according to their scientific orientation

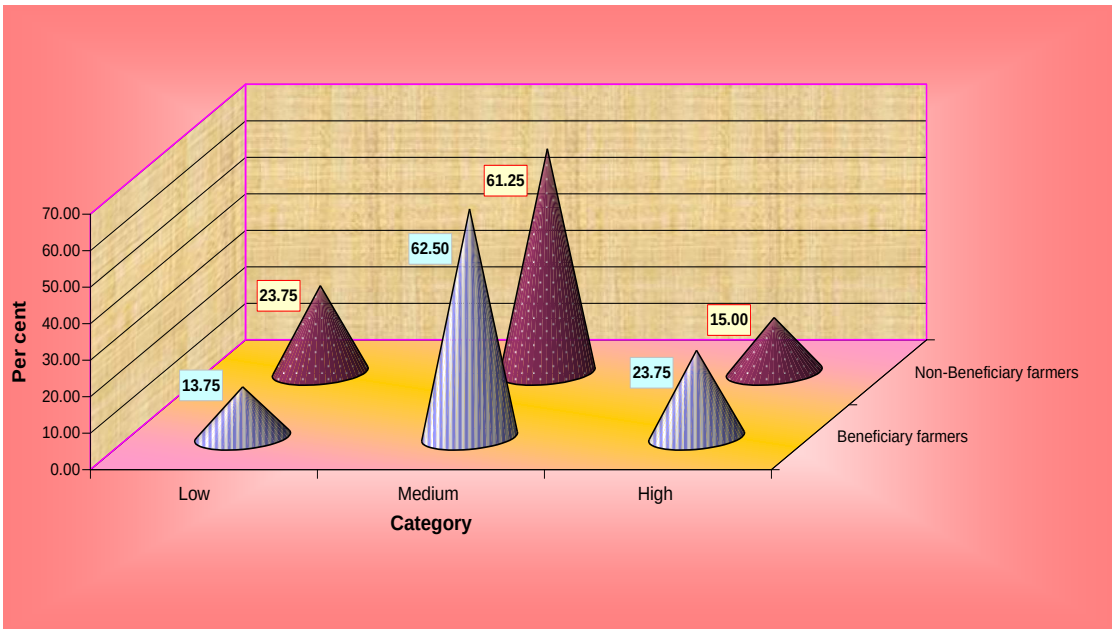

Fig. 17 Distribution of respondents according to their Innovativeness

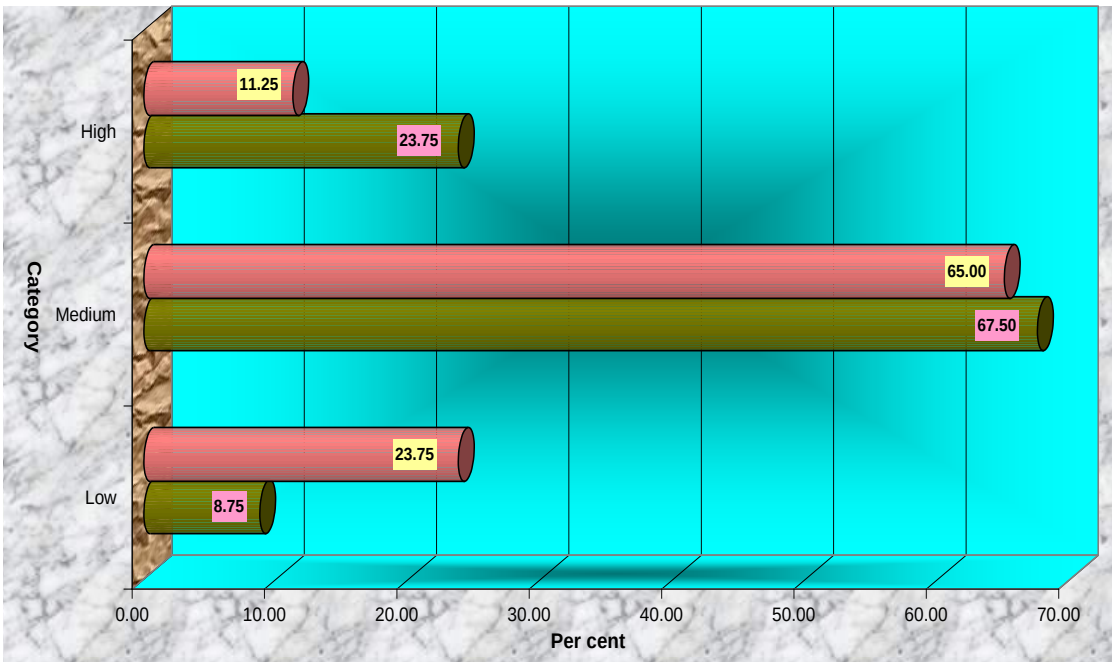

Fig. 18 Distribution of respondents according to their Cosmopolite-localiteness

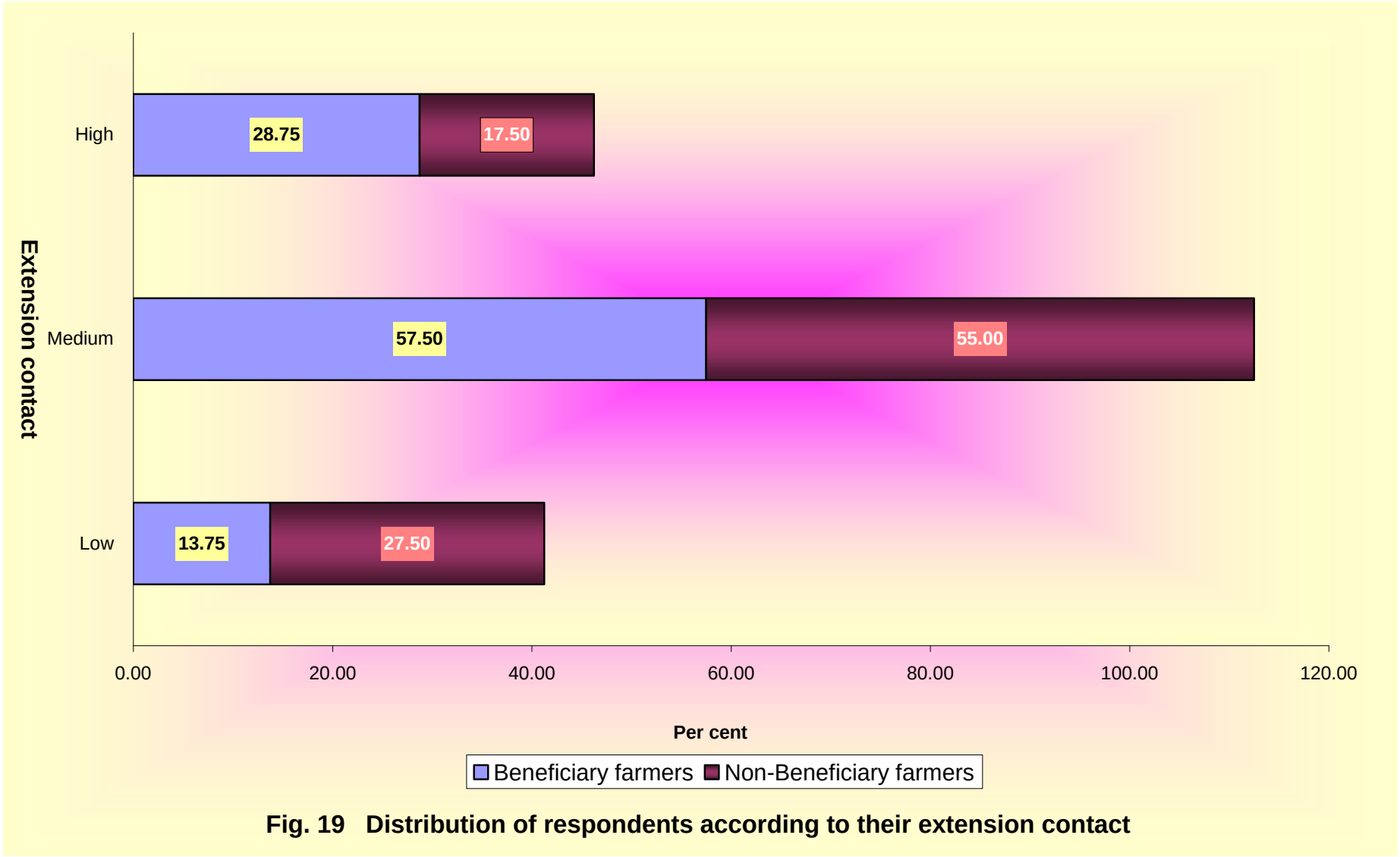

Fig. 19 Distribution of respondents according to their extension contact

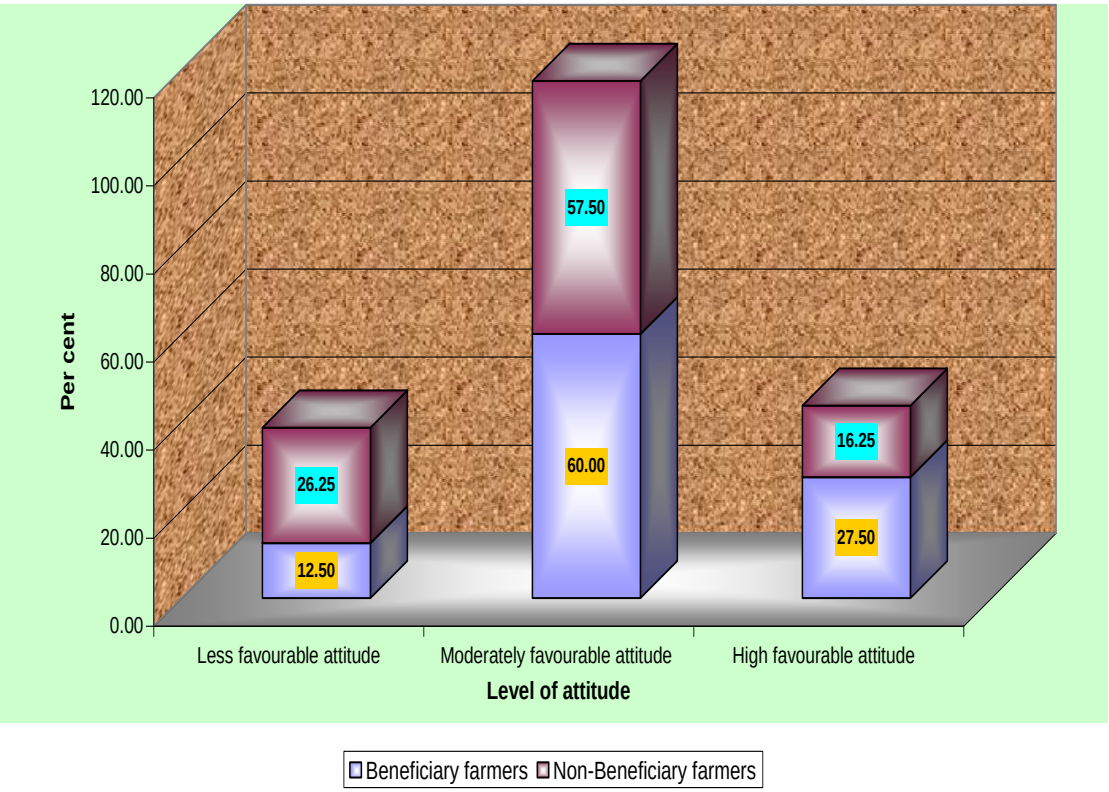

Fig. 20 Distribution of respondents according to their attitude towards various activities carried out by KVK

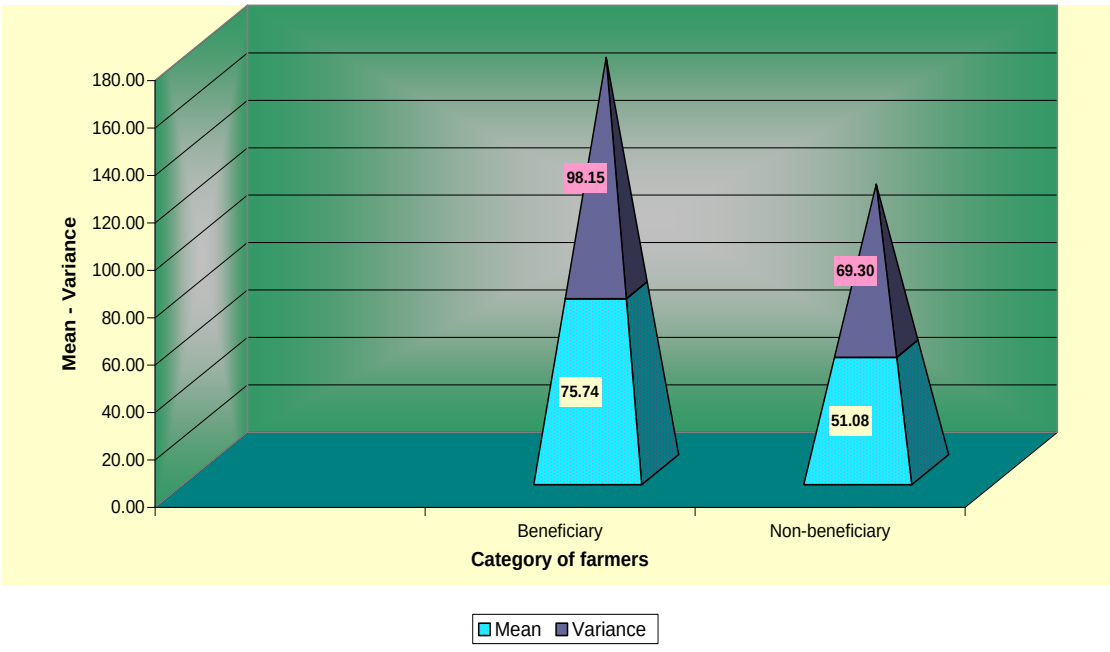

Fig. 21 Comparison between beneficiary and non-beneficiary farmers in respects of attitude regarding recommended technology transmitted by KVK

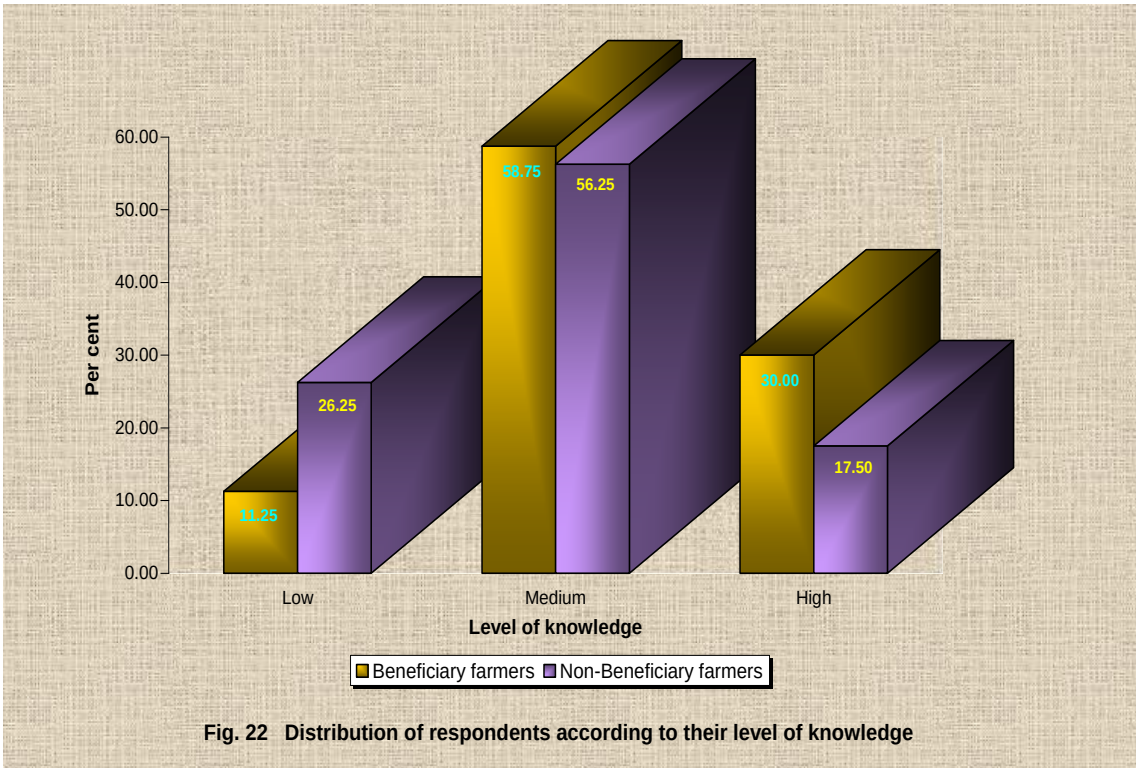

Fig. 22 Distribution of respondents according to their level of knowledge

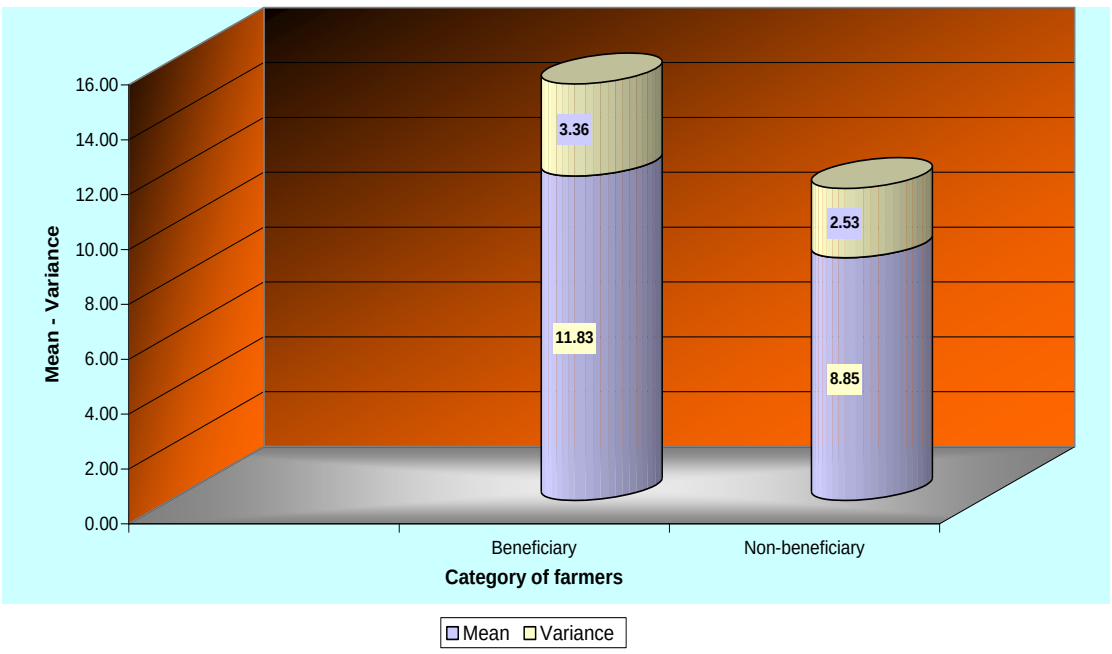

Fig. 23 Comparison between knowledge level of beneficiary and non-beneficiary farmers recommended technology transmitted by KVK

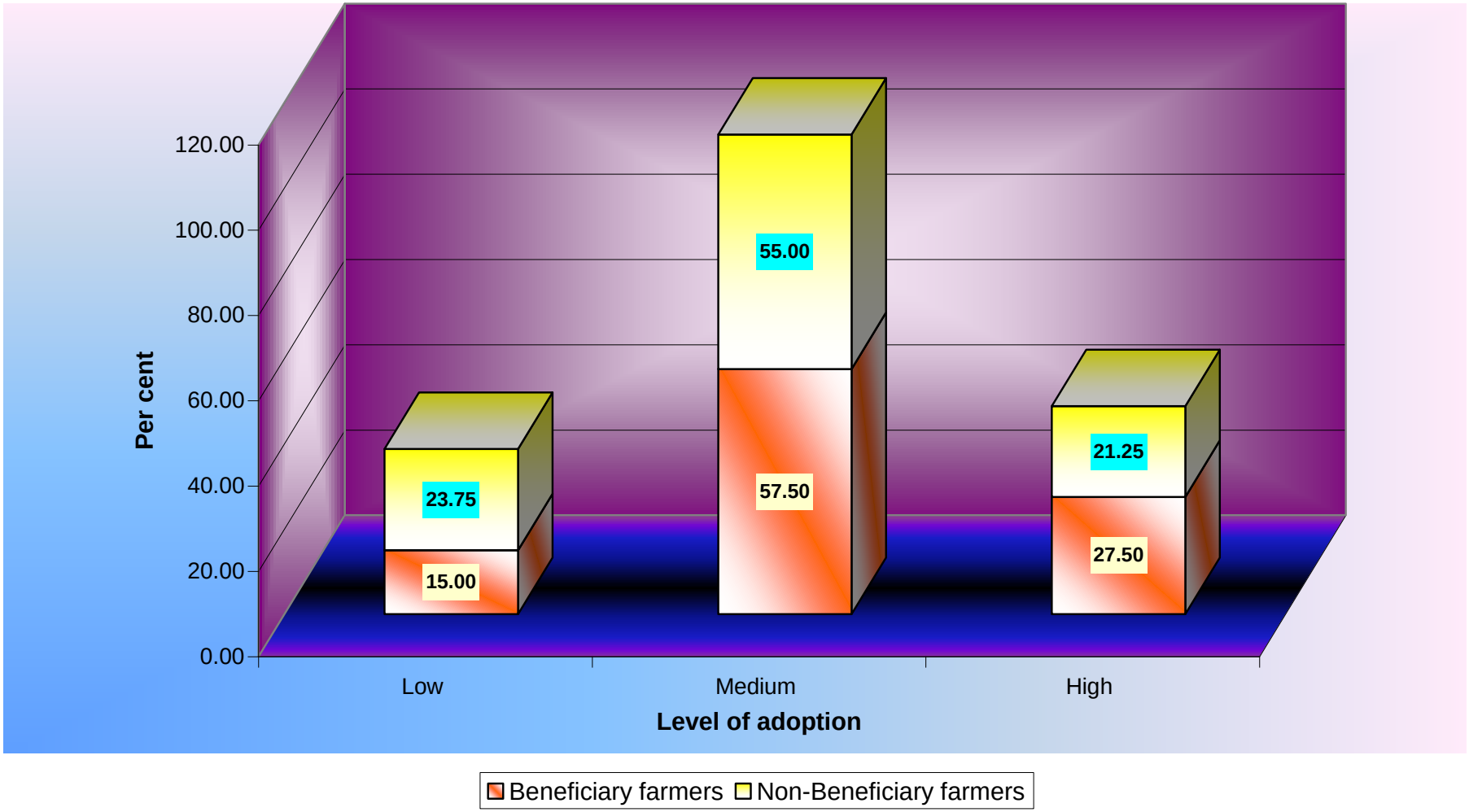

Fig. 24 Distribution of respondents according to their level of Adoption

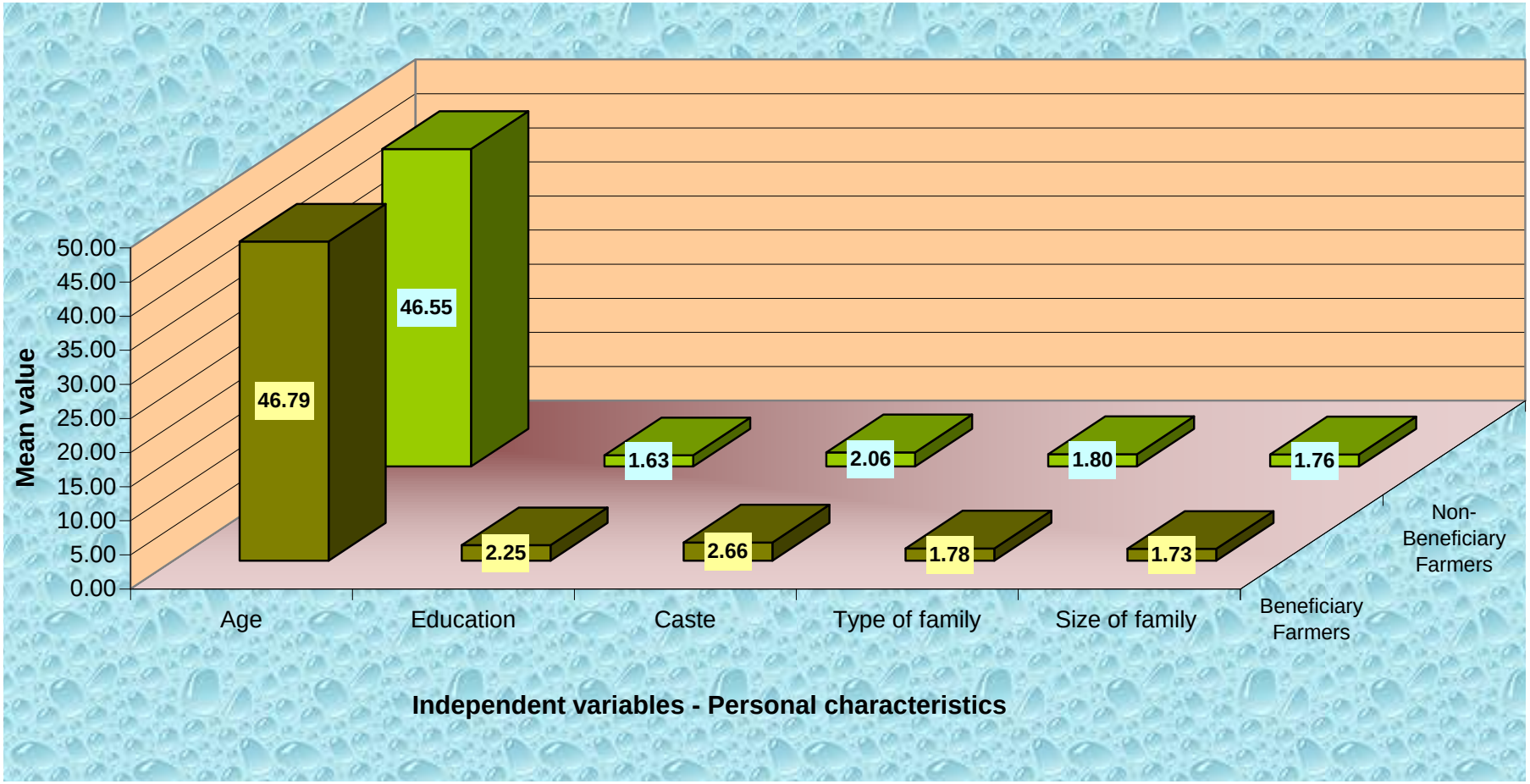

Fig. 25 (I) Impact of beneficiary and non-beneficiary farmers towards KVK activities

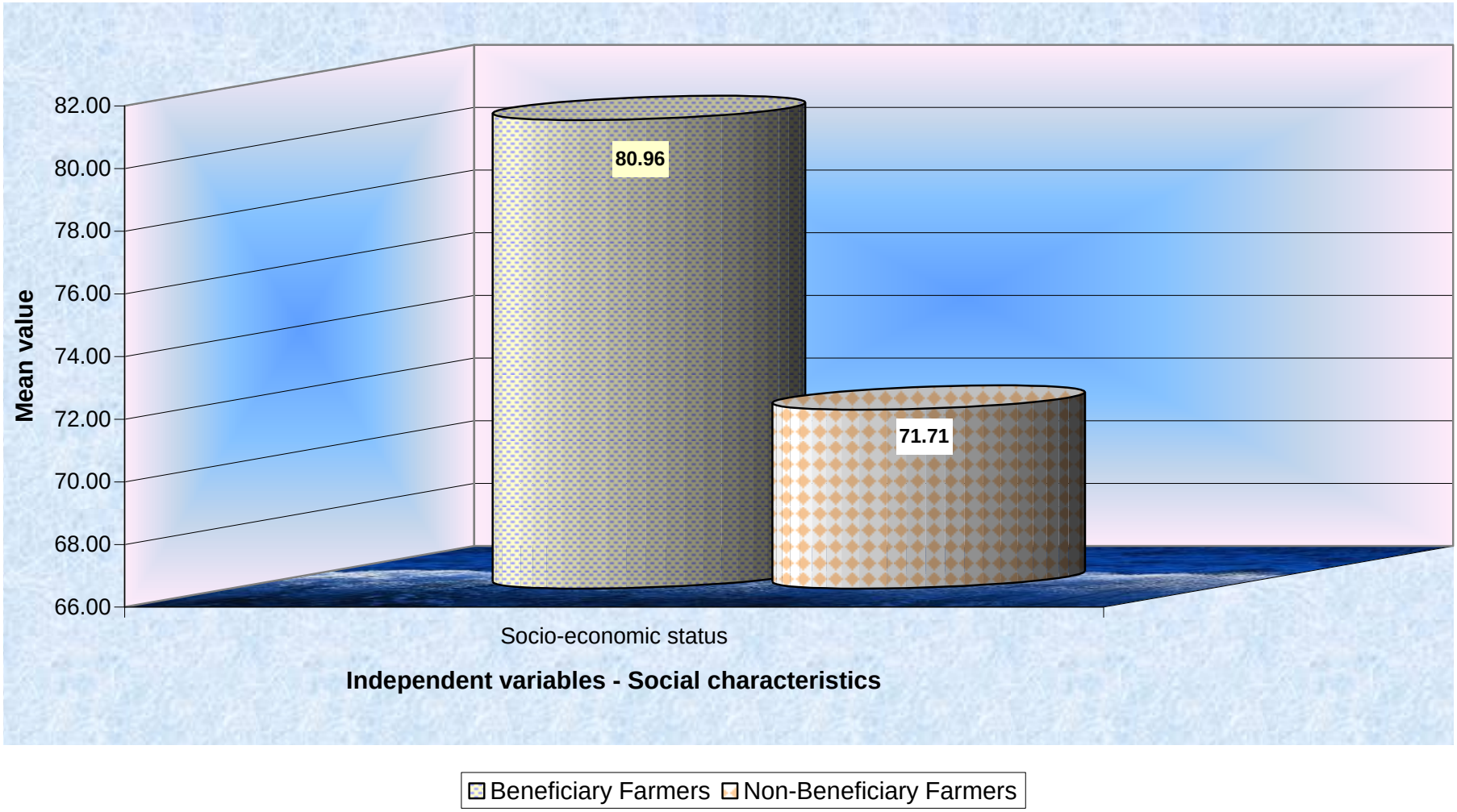

Fig. 25 (II) Impact of beneficiary and non-beneficiary farmers towards KVK activities

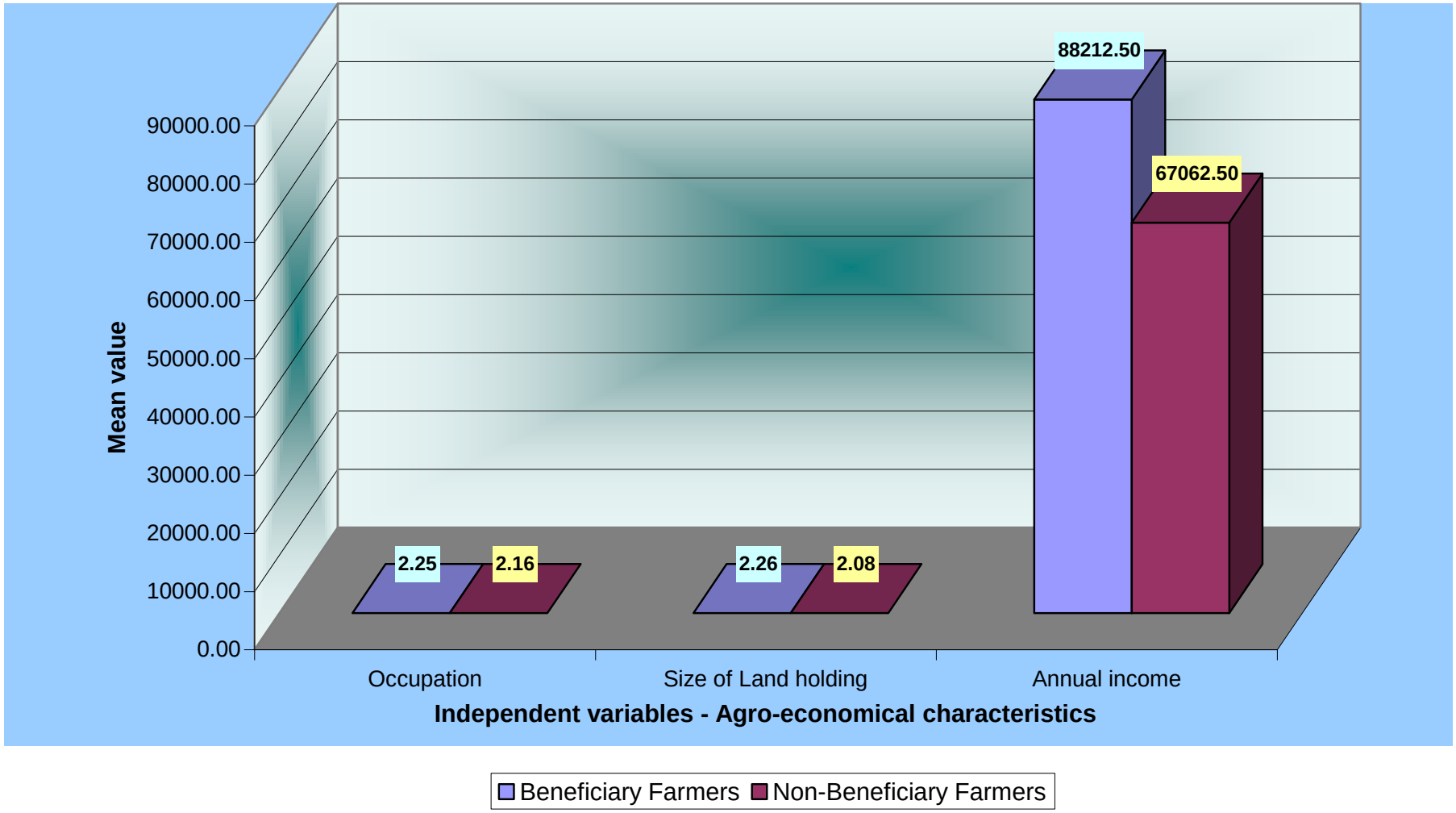

Fig. 25 (III) Impact of beneficiary and non-beneficiary farmers towards KVK activities

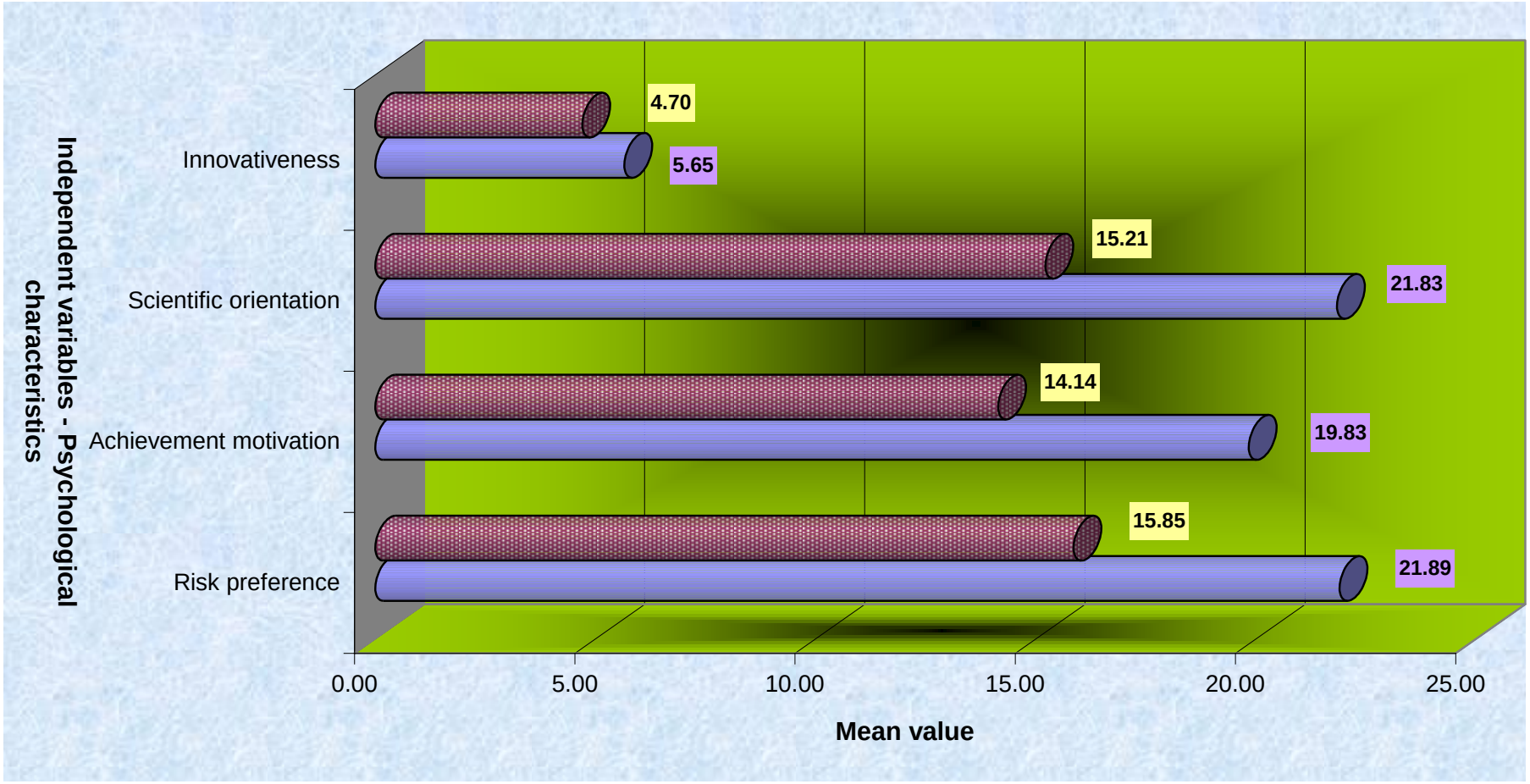

Fig. 25 (IV) Impact of beneficiary and non-beneficiary farmers towards KVK activities

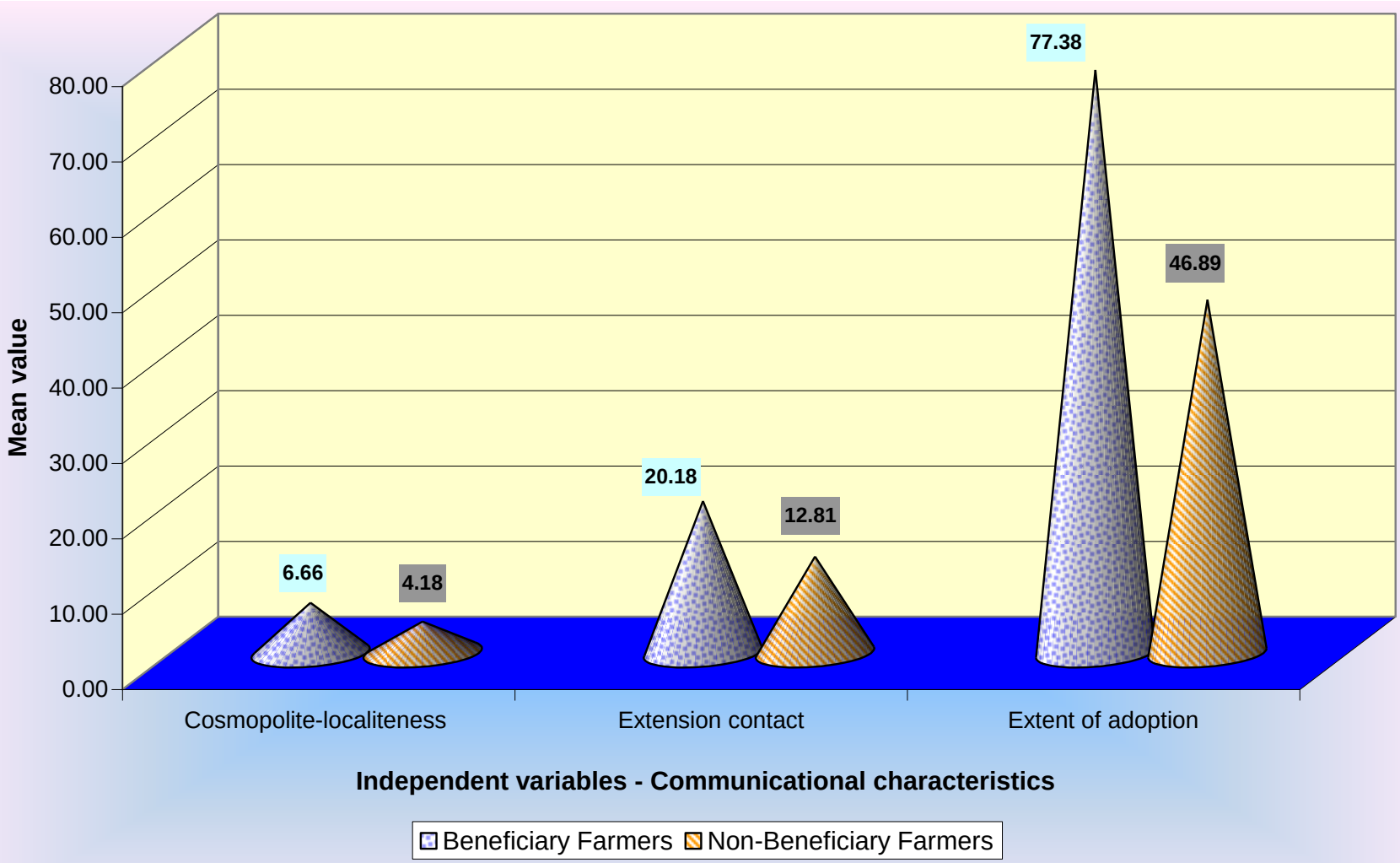

Fig. 25 (V) Impact of beneficiary and non-beneficiary farmers towards KVK activities

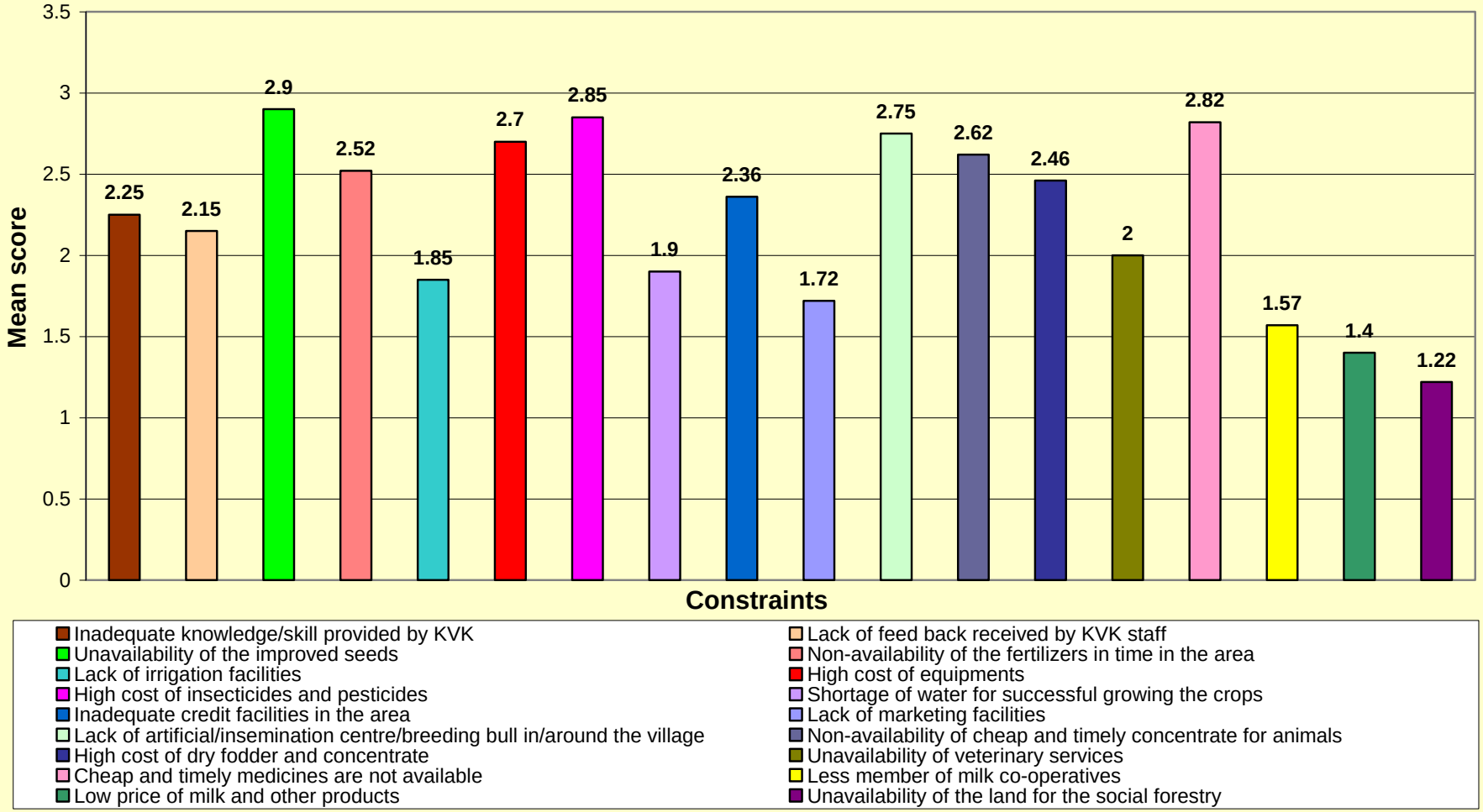

Fig. 27 Constraints as perceived by beneficiary farmers in adoption of recommended technology

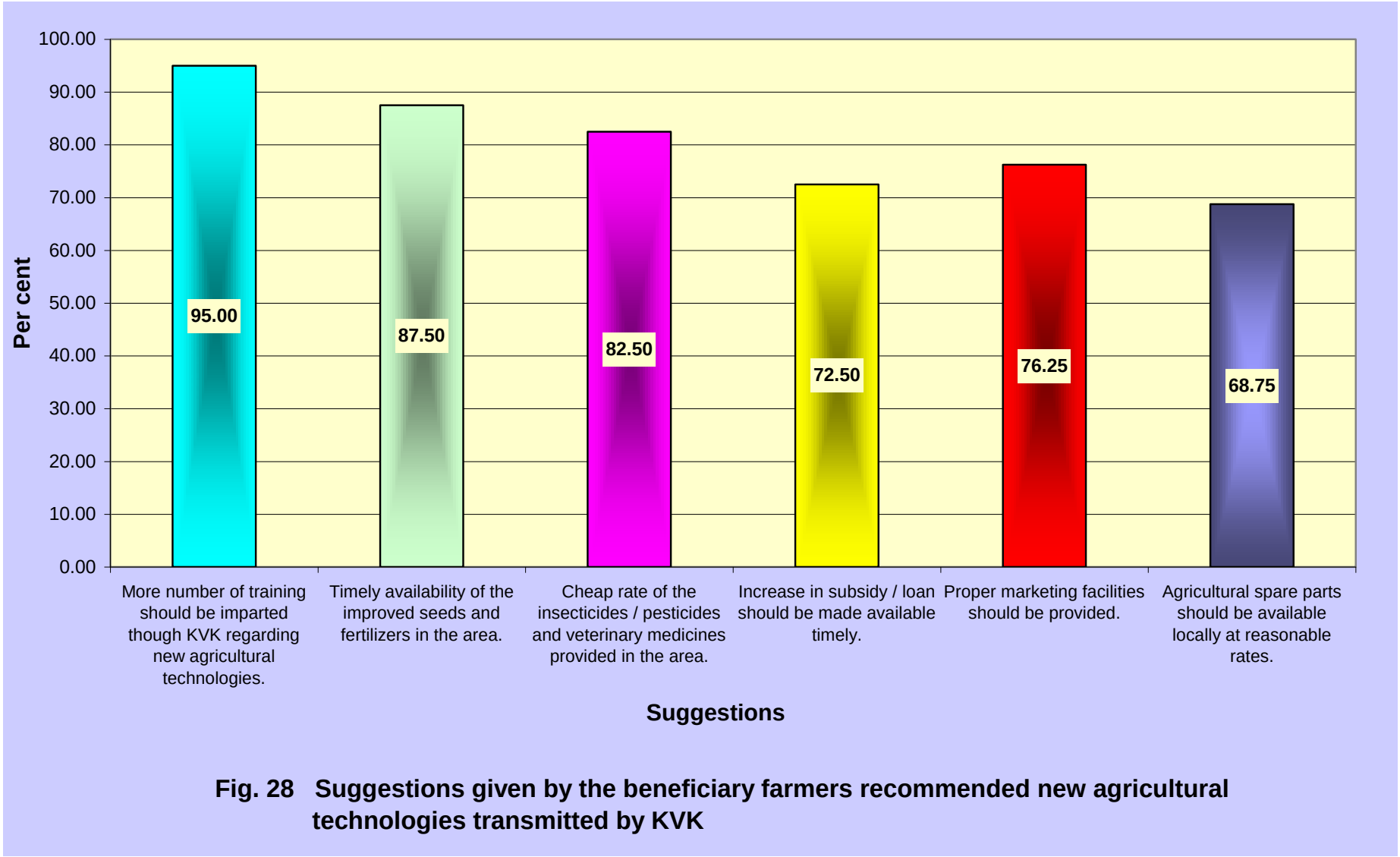

Fig. 28 Suggestions given by the beneficiary farmers recommended new agricultural technologies transmitted by KVK