A STUDY ON TECHNOLOGICAL GAP IN ADOPTION OF IMPROVED CHILLI CULTIVATION PRACTICES IN YADGIR AND RAICHUR DISTRICTS OF KARNATAKA

GANGAPPAGOUDA S BIRADAR

DEPARTMENT OF AGRICULTURAL EXTENSION EDUCATION
COLLEGE OF AGRICULTURE, RAICHUR
UNIVERSITY OF AGRICULTURAL SCIENCES,
RAICHUR – 584 102

JUNE, 2012

A STUDY ON TECHNOLOGICAL GAP IN ADOPTION OF IMPROVED CHILLI CULTIVATION PRACTICES IN YADGIR AND RAICHUR DISTRICTS OF KARNATAK

Thesis submitted to the
University of Agricultural Sciences, Raichur
In partial fulfillment of the requirement for the
Degree of

Master of Science (Agriculture)

in

AGRICULTURAL EXTENSION EDUCATION

BY

GANGAPPAGOUDA S BIRADAR

DEPARTMENT OF AGRICULTURAL EXTENSION EDUCATION
COLLEGE OF AGRICULTURE, RAICHUR
UNIVERSITY OF AGRICULTURAL SCIENCES,
RAICHUR- 584 102

JUNE-2012

CERTIFICATE

This is to certify that the thesis entitled **"A STUDY ON TECHNOLOGICAL GAP IN ADOPTION OF IMPROVED CHILLI CULTIVATION PRACTICES IN YADGIR & RAICHUR DISTRICTS OF KARNATAKA"** submitted by **Mr. GANGAPPAGOUDA BIRADAR** for the degree of **MASTER OF SCIENCE (AGRICULTURE)** in **AGRICULTURAL EXTENSION EDUCATION** *to the University of Agricultural Sciences, Raichur, is a record of research work carried out by him during the period of his study in this University, under my guidance and supervision and the thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or other similar titles.*

Place : Raichur

Date : June, 2012

_____

(D.M.CHANDARGI)

MAJOR ADVISOR

Approved by:

Chairman : _____

(D.M.CHANDARGI)

Members : 1. _____

(S. K. METI)

2. _____

(S. B. GOUDAPPA)

3. _____

(M.G.PATIL)

Affectionately Dedicated

To

Beloved Parents,

Mr. Shivanagouda, Mrs. Ganga,

Sisters and my Joint family

ACKNOWLEDGEMENT

Towards, the end of this great voyage, in the quest for knowledge and wisdom, which marks the beginning of a new horizon, it gives me an insurmountable pleasure to mention all of them who planted and nurtured the spirit of faith and hope in accomplishing this task. Any tedious task is made light and smooth by God's grace. At this moment, I would remember 'the almightily god', who has made each impossible work a reality in my life. The fruit of which, I am expressing here.

I am extremely rejoiced to express my heartfelt gratitude and sincere thanks to ***Dr. D.M.CHANDARGI****, Professor and Head, Dept. of Agricultural Extension Education, College of Agriculture, Bheemrayanagudi, and esteemed chairman of my Advisory Committee for his constant inspiration and encouragement, timely help, valuable advice and friendly attitude throughout the study period. His rays of advice and blessings remained as a primary source of inspiration in all my endeavours. I sincerely and proudly confess that it has been a great privilege for me to have been one of his students.*

It is rather difficult to express in words my sincere and heartfelt gratitude to the members of my Advisory Committee, ***Dr.S.K.Meti****, Dean (PGS) and Professor and Head, College of Agriculture, Raichur,* ***Dr.S.B.Goudappa,*** *Associate Professor of Agricultural Extension Education, AC, Raichur, Project coordinator, KVK, Raddewadagi,* ***Dr.M.G.Patil****, Professor and Head, Department of Horticulture, Raichur for their constant encouragement, valuable suggestions, sensible criticism and constructive guidance during the course of this investigation.*

I would like to thank all my department teachers ***Dr. G. N. Maraddi, Mr. Ravi. M. Sambrani****,* ***Dr.S.Kammar, Dr.Sidram, Dr. Basavaraj Hulagur,*** *Assistant Professor, office of the Directorate of extension, UAS, Raichur for their timely help extended to me in completing the task undertaken. My genuine gratitude to* ***Dr. K. M. Vishwanath****, Medical officer, UAS, Raichur and all AHO of respective areas, for their kind help at time.*

On my personal note, Floral salutations with serene tranquility and pure love may only contain towards my parents, it is an immense pleasure to express my sincere gratitude and heartfelt respects to the blessing of my family members father ***Mr. Shivanagouda,*** *mother* ***Smt. Gangabai,*** *sisters* ***Roopa, Rekha, Bhavya,*** *my grandmother* ***Smt. Basamma,*** *my grandfather* ***late Mr. Sanganagouda*** *and my best friends* ***Girish, Swaroop, Shivananda*** *and* ***Ramakrishna,*** *whose undemanding, selfless scarifies, unwearing support and love and blessings in these days*

of testing and toiling, stand in a immaculate, may I be worthy to be upto their desires and expectations.

I shall never forget the enormous and timely help rendered by friends ***Ramakrishna, Sunil Kumar Gowda, Fakeerappa, Nagaraj*** *and junior friends* ***Sidram, Sabanna, Prakash, Sanju, Vijaylaxmi, Shridevi*** *and* ***Sudha*** *for their kind help and support during the course of study.*

I share my sincere thanks and inspirations to all, whoever directly or indirectly is involved in helping me during my study.

The feelings of my friendship have always been strength for me. The encouragement and care I experienced from the very start of my study from my and all juniors namely ***Mallikarjun.K.S, Rajagopal Reddy, Mounesh, Mahesh.B.T, Rachoteshwar, Prasanna*** *and* ***Silpa*** *so many cannot be expressed in words.*

I am very thankful to non-teaching faculty of Department of Agricultural Extension Education for their kind co-operation and encouragement during my study and research. I share my sincere thanks and inspirations to all those seen and unseen hand and minds.

Finally I thank GOD for bestowing me with divine spirit, essential strength and necessary succor to find my way towards a glorious career amidst several hurdles and struggles any omission in this brief acknowledgement doesn't mean lack of gratitude.

I would like to be thankful to M/s Akki Computers, Raichur for skillful and elegant typing and neat presentation of this thesis.

I once again sincerely thanks all those who have directly/indirectly helped in achieving this endeavor.

RAICHUR

JUNE, 2012 *(G.S.BIRDAR)*

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICES

Introduction

I. INTRODUCTION

India is regarded as the home of spices and exports since 500BC. The history of Indian spices dates back to the beginning of human civilization. There are over 50 species of spices cultivated in India and many of them are indigenous viz, black pepper, cardamom, ginger and turmeric. While clove, vanilla, nutmeg and chilli are introduced from other countries.

Chilli (*Capsicum annuum* Linn) is known as the king of spices, it belongs to genus Capsicum under solanaceae family. It is an indispensable spice crop used in every Indian cuisine due to its colour (due to presence of pigment Capsanthin), pungency (due to an alkaloid 'capsaicin'), taste, appealing odours and flavours. Chilli fruits are rich source of vitamin A, C and E. In recent days, it is gaining popularity as vegetable as well as spice crop apart from its medicinal value as it prevents heart attack by dilating the blood vessels (www.ikisan.com).

Chilli is origin of Mexico and it brought by Portuguese from Brazil in 1585 in Goa. Since then it has rapidly spread throughout the country and commonly considered as red pepper.

In the world, chilli is cultivated on an area of 1.45 million hectares with an annual production of 19.50 million tonnes and having the productivity of 2,808 kg/ha (Anon., 2010). The top 10 chilli producing countries are India, China, Ethiopia, Myanmar, Mexico, Vietnam, Peru, and Pakistan. India accounted for more than 85% per cent of the world production in 2009, the lion's share is taken by India with 56% (Source: FAO).

India ranks first in chilli production followed by China in the global scenario. Our country is the largest producer, consumer and exporter of chillies in the world. Around 90 per cent of India's production is consumed within in the country. Production share of chilli under major spices in India was 22.87 per cent. Chilli stands first in production followed by garlic (19.77%), turmeric (18.56%). And export of chillies was 8.5 per cent in volume and 19.4 per cent in value in 2008 comparing 2009. Chillies contributed about 43% of the total export of the spices in the year 2010. India exports chillies mainly to Malaysia (22%), Sri Lanka (17%), Bangladesh (14%), UAE (11%), USA (8%) and Indonesia (5%) (Spices board, India)-2010

Chilli is grown all over the country under varying agro-climatic zones but area of riped dry chilli is concentrated in southern states. Country's area under chilli crop is 7.92 lakh hectares with an annual production of 12.22 lakh tonnes with productivity of 1500 kg ha (National Horticulture board, 2010). India's share in global production ranges from 50 to 60

per cent. The Indian productivity in chilli has been showing positive signs with 1544 kg /ha in 2005 to 1550 kg /ha in 2009. Production of chilli during 2009 was 1167 lakh tons (Anonymous, 2010).

In India, chilli is grown in almost all states of the country. The important states growing chilli in terms of production are Andhra Pradesh (60%) followed by Karnataka (11%), west Bengal (7%), Orissa (5%), Madhya Pradesh (3%), Maharashtra (3%) and Tamil Nadu (2.6%). Generally, chilli arrivals from all over India hits the market from Mid- October to May end.

In Karnataka, chilli is grown on an area of 2.6 lakh hectares contributing to the production of 4.60 lakh tonnes with a productivity of 1800 kg ha (National Horticulture board, 2010). The foreign exchange earned from the extraction of capsicum and oleoresin content during 2004-05 was Rs. 480 corers (www.ikisan.com). Therefore, there is a huge demand for chilli in world trade.

In the study districts of Hyderabad-Karnataka region, chilli is grown in an area of 2036 hectare with an average productivity of 1100 kg/ha in Raichur district and 3076 hectare with an average productivity of 1400kg/ha in Yadgir district (Dept. of Horticulture, GOK, 2010).

A number of chilli varieties are being cultivated in the state, however, Byadagi Kaddi, Byadagi Dabbi and Dyavanoor local are the popular varieties mainly grown in Yadgir & Raichur districts of Karnataka. Among the local varieties of the state Byadagi Kaddi variety is more popular in northern Karnataka because of its mild pungency, high coloring material and its performance under rainfed conditions besides high export potential. It is also best suited to the soils prevailing in this area and has got high market value compared to other varieties. It has gained name in the international market.

In recent years, the cultivation of chilli in Northern Karnataka has expanded too many folds to meet the domestic and export requirement. However, the productivity of crop is very low, and it may be due to both abiotic and biotic stresses. Among the biotic stresses insect pests take a lion's share. It is estimated that, a total of 51 insects have been recorded on chilli.

Agricultural technology is never completely accepted by the farmers in all respects, as such there always appears to be a gap between the recommended technology by the scientists and its modified form at the farmer's level. The technological gap is thus the major problem in the efforts of increasing agricultural production in the country. A need of the day is to reduce

the technological gap between the agricultural technology recommended by the scientists and its acceptance by the farmers on their field.

The basic input for achieving higher productivity in the assimilation of technological knowledge is one of the important components of behaviour and as such it plays a major role in covert and overt behavior of human beings. Knowledge of the innovation is the basic requirement as it gives impetus to adopt technology. The adoption of any innovations depends on the individuals acceptance of modern agricultural technology is the prime attention for increasing crop production. It is generally observed that all farmers do not adopt the recommended practices at the same rate.

It is observed from the yield of chilli, the average yield at national level is 1199.28 kg per hectare and the average yield at state level (Karnataka) is 1740 kg per hectare. Similarly, the average yield in study district that is in Yadgir (1000kg/ha) & Raichur (1920 kg/ha) districts (Dept. of Horticulture, GOK, 2010). The yield of selected Raichur district is higher than the national and state average yield and also it is higher than the potential yield that is 1800 kg per hectare. However, recent studies have shown that there is a tremendous scope to increase the chilli yield further and the fact is that all the farmers are not getting the potential yield. In the study area 50 to 60 per cent farmers are growing only in irrigated condition.

The Government of India initiated many horticultural programmes in all the states to increase spice production. Numbers of improved production technologies are recommended to get maximum benefits, yet the growers are not following all the recommended technologies and their cultivation pattern varies from farmer to farmer according to their personal characteristics, perceived training needs, availability of factors of production and the problems in the cultivation and marketing of chili.

Several studies have been conducted on food crops to know the knowledge and adoption, but very few research studies have been conducted on spice crops in this regard. Recent studies have shown that there is a tremendous scope to increase the chilli yield further and the fact is that all farmers are not getting the potential yield. With this background, the study was undertaken to know the profile of chilli growers, knowledge level and technological gap in practices of the chilli cultivation. This research study intends to focus on the deviation in technology use at farmer’s fields from the recommended levels and constrains in chilli cultivation with the following objectives:

1. To study the socio-economic profile of chilli growers
2. To know the extent of knowledge with respect to the chilli cultivation practices
3. To know the technological gap in adoption of the chilli cultivation practices, and
4. To elicit the suggestions and its constraints in improving the adoption of chilli cultivation practices

Scope of the study

Present study identifies the prevailing gaps between farmer's practices and recommended/improved practices. The analysis of personal, social and psychological factors may substantiate the presence of gaps to a considerable extent. The identified gaps and analyzed characters would help to give direction to the field level workers to manipulate the appropriate factors to increase the adoption level. Here an attempt has also been made to study the constraints faced by the chilli growers, thereby the attempts can be made to eliminate those constraints in the process of adoption of improved practices. So the results of the study are expected to be useful to the extension personnel and the administrators to know the extent of knowledge and technological gap of chilli growers so that the results could be used to fill the gap through intensive trainings and other extension activities.

Limitations of the study

Due to limitations of time and other resources, the investigation was carried out in 12 villages of 6 talukas only of Hyderabad-Karnataka region. Generalization of results may not be possible for the talukas dissimilar to the selected ones and the greater generalizations over larger areas may not be possible. Further, the findings of the study were based on the responses of the respondents and hence the objectivity is limited to the honesty and memory power of the respondents.

Review of Literature

2. REVIEW OF LITERATURE

Review of literature was undertaken keeping in view the objectives of the study. It was rather difficult to find adequate research studies exclusively relating to recommended practices of chilli cultivation. Therefore, studies related to other crops were also reviewed and presented covering all aspects of the investigation comprehensively under the following headings;

2.1 Socio-economic profile of chilli growers

2.2 Extent of knowledge with respect to the chilli cultivation practices

2.3 Technological gap in adoption of the chilli cultivation practices

2.4 Constraints expressed by the respondents and suggestions in improving the adoption of chilli cultivation practices

2.1 Profile of chilli growers

2.1.1 **Age**

Rao (2000) conducted a study on sustainability of Rice farming and attitude of farmers towards sustainable agriculture in north coastal zone of Andhra Pradesh and reported that average age of the respondents was 44.06 years. Among the three categories, marginal farmers were the youngest (42.8 years) whereas the average age of small farmers was 44.17 years and big farmers was 45.42 years.

Bheemappa (2001) in his study on the knowledge and technological gap in adoption of Paddy and Cotton cultivation practices between migrant and non-migrant farmers of TBP command area reported that 10 percent of migrant and 24.17 percent non-migrant farmers were young aged, majority (83.33% and 74.17%) of migrant and non-migrant farmers were middle aged respectively and 6.67 percent migrant and 1.66 percent non-migrant farmers belonged to old age category.

Kiran (2003) in his study a study on technological gap and constraints in adoption of recommended practices of mango growers reported that majority (71.00%) of the respondent were in the middle age group, while 16.00 per cent of the respondents were in the old age group and 13.00 per cent of them were in young age group. The average age of the respondents was 46 years.

Moulasab (2004) in his study on knowledge and adoption of improved cultivation practices by mango growers of north Karnataka reported that majority of the respondents (59.17%) were middle aged (30-35 years). The respondents below 30 years of age were 22.50 and 18.33 per cent of the respondents were from old age.

Nagesh (2006) on a study on entrepreneurial behavior of pomegranate growers in Bagalkot district of Karnataka reported that less than half of the respondents (48.33%) were under middle age category followed by 36.66 and 15.00 per cent of respondents in young and old age categories, respectively.

Raghavendra (2007) on a study on management practices of pineapple growers in Karnataka reported that, (49.37%) were middle aged while 40.00% were old and 10.63% were young. It could be inferred from the above studies that, majority of the farmers belonged to middle age group.

Gotyal (2007) in his study on backward and forward linkages of grape production in Karnataka observed that 40.50 per cent of the farmers belonged to old age category followed by middle age (39.00%) and young age (18.50%).

Sain (2008) conducted a study on socio-economic and technological constraints in adoption of SRI in Chhattisgarh, Madhya Pradesh, Uttarakhand, Punjab, Tripura, and Andhra Pradesh and reported that majority (64%) of the SRI farmers were of medium age (33-53 years) followed by 24 per cent of the farmers belonged to old age group (more than 53 years) and 12 percent of farmers were in young age group (less than 33 years).

The above studies on age conducted in different states of India namely Tamilnadu, and Karnataka during the period from 1990 to 2009 revealed that majority of the farmers belonged to medium aged category followed by young aged.

2.1.2 Education

Jayale (1992) in a study on orange growers of Parbhani district of Maharashtra observed that 15.83 per cent of the respondents were illiterate, 18.33 per cent of each were noticed in read only and read and write category, while 8.34 per cent each of the respondents were educated up to primary and middle school level. Nearly one fourth of the total respondents (22.50%) were studied up to high school and only 8.33 per cent of the respondents were graduates.

Meeran and Jayaseelan (1999) in their study in South Arcot district of Tamil Nadu state on shrimp farmers found that all the respondents were literates and had received education

beyond primary level. Among the respondents, 42.0 per cent had undergone collegiate education and the remaining respondents belonged to higher secondary (22.0%) and middle school (16.0%) levels of education.

Angadi (1999) in his study on pomegranate growers in Bagalkot district of Karnataka reported that, 30.00 per cent of the respondents studied up to middle school level and 20.62 per cent of the growers studied up to high school. While, 22.50 per cent of the pomegranate growers were illiterates. Only 3.75 per cent of the respondents received primary education. Graduation was done by nearly 12 per cent farmers.

Kadam (1999) who conducted in his study on knowledge, cultivation practices followed and marketing behavior of sweet orange growers in Nanded district reported that, 41.25 per cent of the sweet orange growers were educated up to high school level, followed by middle school (22.50%), Whereas, 20.62 per cent and 7.5 per cent of the respondents studied up to graduate and primary school respectively. It was found that 5.00 per cent of the respondents were illiterate.

Kiran (2003) A study on technological gap and constraints in adoption of recommended practices of mango growers reported that maximum number (46.00%) of the respondents had secondary education, followed by graduation (23.00%), higher secondary (15.00%), primary (10.00%) and pre primary (6.00%) education./ only 10.00 per cent of the respondents were illiterate. The average education level of the respondents was 10^{th} standard.

Moulasab (2004) in his study on mango growers in North Karnataka indicated that, more than 23 per cent of growers were educated up to primary school followed by higher secondary school (19.16%) and 14.16 per cent of the respondents were illiterates.

Nagesh (2006) in his study on entrepreneurial behavior of pomegranate growers in Bagalkot district of Karnataka reported that one fourth of the respondents had high school education (25.83%) while 22.50 per cent were illiterate. The other respondents were educated up to primary school, middle school, degree, PUC and post- graduation with 22.50, 21.66,14.16, 10.00, 4.16 and 1.66 per cent, respectively.

Raghavendra (2007) in a study on management practices of pineapple growers in Karnataka reported that 42.50 per cent of the pineapple growers were having high school education, followed by primary school19.38 per cent, while PUC 15.00 per cent, collegiate 11.88 per cent and illiterate11.24 per cent, respectively.

Atul (2008) in his study on constraints analysis of grape exporting farmers of Maharashtra state reported that, 38 per cent of respondents had completed pre- university course, followed by graduation (25%), high school (21%) and very few of them i.e., nine and seven per cent of respondents had education up to post graduation and middle school to level, respectively. It is interesting note that, almost all the respondents had education up to middle and above and none of them were illiterate.

Madhushekar (2009) revealed that 28.75 per cent of chilli growers had upper primary school education followed by functional literates (17.50%), primary school educator (16.25%) and high school (13.74%), 9.38 per cent each under intermediate illiterates degree (3.75%) and 1.25 per cent under post graduation.

The above studies on education conducted in different states of India namely Maharashtra, Tamilnadu, Karnataka during the period from 1990 to 2009 revealed that majority of the farmers had better educational level.

2.1.3 Farming experience

Ratnam (2000) reported that more than half of the respondents (59.21%) were grouped under the medium farming experience category followed by high (22.37%) and low (18.42%) categories.

Bheemappa (2001) conducted a study on knowledge and technological gap in adoption of Paddy and Cotton cultivation practices between migrant and non-migrant farmers of TBP command area and revealed that 5 percent migrant and 10 percent non-migrant farmers were illiterates followed by 32.50 percent, 24.17 percent, 31.67 percent of migrant farmers had a education level of primary school, middle school, high school and pre university, respectively as against the 52.50 percent, 23.33 percent and 5.00 percent of non-migrant farmers.

Chandra (2001) conducted a study on rate of adoption and consequences of hybrid Paddy in Cauveri command area and revealed that nearly 50.00 percent of hybrid Paddy growers had low education followed by medium (28.7%) and high (25.4%) education level.

Natikar (2001) in his study found that majority of the respondents belonged to medium farming experience (48%) followed by high (45%) and low (7%) farming experience respectively.

Vani (2002) found that equal number (40.00%) of respondents had low and medium farming experience followed by 20.00 per cent high farming experience.

Kiran (2003) in a study on technological gap and constraints in adoption of recommended practices of mango growers reported that nearly half (49.00%)of the respondents had medium experience in mango cultivation while remaining 26.00 per cent and 25.00 per cent of the respondents had low and high experience in the mango cultivation respectively. On an average the respondents had 19.28 years of experience in mango cultivation.

Kishorbabu (2004) indicated that 40.00 per cent of vegetable growers had medium experience followed by low (36.67%) and high experience (23.33%) in vegetable cultivation.

Navasakthi (2005) observed that 45.00 per cent of the coconut cultivators had medium experience followed by low (37.50%) and high (17.50%) experience.

Raghavendra (2007) A study on management practices of pineapple growers in Karnataka reported that the majority (70.00%) of the respondents belonged to medium experience category (6.25-18.65) while 17.50% of respondents had low experience (<6.24years) and 12.5% had (>18.66 years) high farming experience.

Madhushekar (2009) reported that 41.25 per cent of the chilli growers had medium experience followed by low experience (37.50%) and high experience (21.25%) in chilli cultivations.

The above studies on conducted farming experience in different states of India namely Maharashtra, Tamilnadu, and Karnataka during the period from 1990 to 2009 revealed that majority of the farmers belonged to high farming experience category.

2.1.4 Land holding

Karpagam (2000) conducted a study on Turmeric growers in Erode district of Tamil Nadu and reported that, 40.83 per cent of the respondents had a land holding of 10.1 to 25 acres (medium farmers), followed by 31.66 per cent with land holdings of 5.1 to 10 acres (semi medium farmers) and 16.67 per cent with land holding of above 25 acres (large farmers); whereas 9.17 per cent of the respondent families had a land holding of 2.5 to 5 acres (small farmers) and 1.67 per cent of the respondents families had a land holding up to 2.5 acres (marginal farmers) .

Sunilkumar (2004) conducted a study on farmers knowledge and adoption of production and post harvest technology in Tomato crop of Belgaum district in Karnataka and reported that 40.00 per cent of the respondents had big lands, nearly an equal per cent of the respondents belonged to medium (25.83%) and small land holding (24.16%) categories followed by 10.00 per cent of them belonged to marginal land holding category.

Gowda (2005) investigated on cultivation and marketing pattern of selected cut flowers in Belgaum district and revealed that 31.50 per cent of the respondents were medium farmers followed by semi medium (28.12%), small (20.30%) and big farmers (14.06%).

Raut (2006) conducted a study in Nagpur district of Maharashtra and inferred that majority (72.22%) of the orange growers were small farmers followed by medium farmers (20.00%) and big farmers (7.78%).

Gotyal (2007) noticed that 39.50 per cent of grape growers belonged to small land holding category followed by 31.00 per cent to medium and 24.50 per cent to big land holdings.

Singh and Mankar (2007) in their study conducted on mango growers of Ratnagiri district found that maximum (70.90%) respondents were having medium (1.01 to 4.00 ha) area under Alphanso mango followed by equal (14.55%) percentage of respondents having small and big area under Alphanso mango, respectively.

Patil (2008) revealed that more than one third (36.00%) of the grape exporting farmers belonged to small land holding category and equal (25.00%) percentage of respondents belonged to semi-medium and medium category. Very few respondents belonged to large (11.00%) and marginal (3.00%) land holding categories, respectively.

Sureshkumar (2009) in a study on technological gap in recommended soybean cultivation practices reported that, 45.33 per cent of farmers belonged to medium land holding category (10.01-25.00 ac), followed by 22.67 per cent of them belonged to semi-medium land holding category (5.01-10.00 ac), 16.67 per cent of them were small farmers (2.51-5.00 ac) and 4.66 per cent were big land holding farmers.

The above studies on land holding conducted in different states of India namely Maharashtra, Tamilnadu, and Karnataka during the period from 1990 to 2009 revealed that majority of the farmers belonged to medium land holding category followed by small land holding category.

2.1.5 Annual income

Bheemappa (2001) revealed that 20 per cent of migrant and 11.67 per cent of non-migrant farmers belonged to high family income, 65.83 per cent migrant farmers and 76.06 per cent non-migrant farmers constituted medium income category and 11.17 per cent of migrant farmers and 11.67 per cent of non-migrant farmers belonged to low family income category.

Misal (2002) in this study on adoption of paclobutrazol technology by mango growers in Sindhudurg district found that majority 961.00%) of the respondents were having medium annual income, while 23.00% and 16.00%of the respondents had low and high annual income, respectively.

Kiran (2003) in his study on technological gap and constraints in adoption of recommended practices of mango growers reported that more than half (57.00%) of the respondents had low annual income while 24.00 per cent respondents had high annual income and 19.00 per cent respondents had medium annual income. The average annual income of the respondents was Rs.1, 26,010.

Deepak (2003) conducted a Study on perception of beneficiaries and non beneficiaries towards WYTEP programme in Dharwad district and revealed that 36.00 per cent of the beneficiaries and non beneficiaries belonged to semi medium income group, respectively.

Nilkanthrao and Rajput (2003) reported that were earning an income of Rs. 25,000 to Rs. 50,000 annually.

Shashidhar (2003) in his study revealed that 42.44 per cent of respondents belonged to medium level of income (Rs. 1-2 lakhs) and in low income category, 30 per cent of respondents were noticed, whereas 27.70 per cent of the farmers belonged to high income group.

Sunil Kumar (2004) reported that majority of the respondents belonged to the medium income category (48.33%).

Suresh (2004) reported that most of the respondents were in medium income group with 80.33% followed by high and low income group *i.e.* 15.00 and 4.17 per cent, respectively.

Nagesh (2006) in a study on entrepreneurial behavior of pomegranate growers in Bagalkot district of Karnataka reported that nearly three fourth of the respondents (73.33%) were in medium income group followed by high and low income groups with18.33 and8.33 per cent, respectively.

Raghavendra (2007) in a study on management practices of pineapple growers in Karnataka reported that (46.24%) of the respondents belonged to high annual income (Rs. >51000) followed by medium annual income25.63 per cent (Rs.34001-Rs.51000), semi medium 17.50 per cent (Rs.17001-Rs.34000) and 10.63 per cent (Rs. up to 17000) of the respondents belonged to low income category.

Madhushekar (2009) observed that 40.62 per cent of chilli growers had medium economic status followed by low (33.75%) and high economic status (25.63%) groups.

The above studies on annual income conducted in different states of India namely Maharashtra, Tamilnadu, and Karnataka, Kerala during the period from 1990 to 2009 inferred that majority of the farmers belonged to medium income category followed by low income category.

2.1.6 Material possession

Gangappa (1975) conducted a study of adoption behavior, consultancy pattern and information source credibility of small farmers in Mysore district of Karnataka and reported that small farmers lacked the most important implements, which were required for satisfactory level of production he also identified that material possession was positively and significantly associated with adoption level of small and marginal farmers. It was also reported by kittur (1976).

Shanmukappa (1978) conducted a study on the adoption behaviour and value orientation of arecanut grower of Shimoga district in Karnataka State and found that there was significant relationship between material possession and adoption of improved practices in areca nut cultivation.

Dwarakanth (1987) conducted a study titled an analysis of intermediate technology adopted by small farmers in Tumkur district of Karnataka and found that there was no significant relationship between material possession and adoption of intermediate technology.

2.1.7 Extension contact

Ramanna *et al.* (2000) revealed that 70 per cent of the respondents had medium level extension agency contact and 30 per cent of the respondents had high level extension agency contact.

Sriram and Palaniswamy (2000) in their study found that majority of the respondents (84.35%) had medium level of extension agency contact, followed by 5.45 per cent and 10.20 per cent of the respondents who had low and high level of extension agency contact, respectively.

Dhamodaran and Vasantha Kumar (2001) in their study revealed that majority of the respondents (52.50%) had low level of extension agency contact, followed by 47.50 per cent of the respondents who had medium level of extension agency contact.

Sophiasatyavathy (2001) revealed that all the sugarcane farmers were aware of the cane officers, among them 97.5 per cent contacted them regularly, 73.75 per cent of cotton farmers are aware of Agriculture Development Officer.

Raju (2002) asserted that nearly two third (63.33%) of the respondents had medium extension contact followed by high (19.17%) and low extension contact (17.50%) contact.

Sivasubramaniam (2003) observed that majority (60.84%) of the respondents had medium level of extension contact followed by low (30.83%) and high (68.33%) contact.

Kishorbabu (2004) found that 46.67 per cent of vegetable growers had medium extension contact followed by low (42.22%) and high (11.11%) contact.

Ravishankar (2005) reported that majority (51.67%) of the respondents had medium extension contact, followed by high (34.44%) and low (13.89%) contact.

Aghazia (2008) found that 61.48 per cent of onion farmers had low extension contact followed by medium (29.64%) and high level of extension contact (8.68%).

Madhushekar (2009) inferred that 45.63 per cent had low extension contact, followed by medium extension contact (42.50%) and high extension contact (11.87%).

The above studies revealed that there was variation in extension contact of the respondents with respect to different extension activities.

2.1.8 Extension participation

Ramanna *et al.* (2000) conducted a study on Motivation factors and constraints of hybrid sunflower seed growers and revealed that 70.00 per cent of the respondents had medium level extension agency contact and 30.00% of the respondents had high level extension agency contact.

Bheemappa (2001) while studying the knowledge and technological gap in adoption of paddy and cotton cultivation practices between migrant and non-migrant farmers of TBP command area concluded that 100.00 per cent migrant and 99.17 per cent non-migrant were aware of Agricultural assistants of which 3.36 per cent non-migrant farmers were only found to

contact Agricultural Assistants once in a week and 74.17 per cent migrant and 74.49 per cent non-migrant farmers contacted once in a month.

Sophia (2001) based on the study knowledge and adoption of sustainable cultivation practices in sugarcane and cotton by farmers in Cuddlore district of Tamil Nadu revealed that all the sugarcane farmers were aware of the sugarcane officers, among them 97.50% contacted them regularly, 73.75% of cotton farmers are aware of agricultural development officer.

Gandhi (2002) in his study on knowledge level and adoption behaviour of vegetable growers with respect to integrated pest management of tomato crop in Kolar district revealed that, 73.33 per cent of the respondents contacted agricultural officers whenever they had a problem, followed by 4.67 per cent of the respondents once in a week, ADA was contacted by 8.67 per cent of the respondents whenever they had a problem.

Nilkanthrao and Rajput (2003) concluded that majority of the respondents were belonged to moderate extension contact.

Kanavi (2000) conducted a study on the knowledge and adoption behaviour of Sugarcane growers in Belgaum district of Karnataka. He revealed that, none of the respondents participated regularly in training and demonstrations. Nearly one third (31.33%) of respondents participated in Krishimela. Whereas, very less number of respondents participated in extension activities like farm visits (1.33%), group discussion (2.66%) and study tour (4.00%).

Mamatha and Hiremath (2000) reported that small, medium and Artisan category of farm women participated in trainings demonstrations and other extension activities in varied levels ranging from 4.5 to 17.5 per cent.

Venkataramalu (2003) conducted a study on the knowledge level adoption and marketing behavior of chilli growers in Guntur district of Andhra Pradesh indicated that, majority of the farmers participated in discussion with village extension workers (70.00%), Krishimela (62.50%) and some exhibitions on agriculture (61.67%).

Raghavendra (2004) conducted a study on knowledge and adoption of post harvest technologies by Red gram cultivators in Gulbarga district of Karnataka and found that 24.66 per cent of the respondents participated regularly in agricultural exhibitions and 22.67 per cent in demonstrations conducted in their village.

Thiranjanagowda (2005) observed that 73.43 per cent of the cut flower growers had extension participation regarding demonstration occasionally while 26.43 per cent participated regularly.

Nagesh (2006) in his study on entrepreneurial behavior of pomegranate growers in Bagalkot district of Karnataka and reported that more than half of the respondents (54.16%) belonged to medium extension contact category, whereas, 28.33 and 17.50 per cent of respondents belonged to high and low extension contact categories, respectively.

Raghavendra (2007) on a study on management practices of pineapple growers in Karnataka reported that less than forty per cent, (39.38%) of respondents participated occasionally in-group discussion meetings, whereas 34.38 per cent never participated and 26.24 per cent of respondents participated regularly. It is clear from the result that, the majority (53.13%) of respondents participated occasionally in training programmes, whereas 35.63 per cent of respondents never participated and 11.24 per cent of respondents participated regularly. Further it was observed that, the (41.88%) of the respondents occasionally participated whereas 33.74 per cent and 24.38 per cent never and regularly participated respectively. Regarding field days it was observed that, (69.38%) of the respondent's never participated, whereas 30.00% had occasionally participated and 00.62 per cent had regularly participated. In case of exhibitions, majority (54.38%) of the respondent's occasionally visited, whereas (30.62%) never visited and (15.00%) regularly visited. Regarding Krishimela it was observed that (36.25%) of the respondents visited regularly, whereas (32.50%) were visited occasionally and (31.25%) never try to go in Krishimela. In case of field visits, the majority (66.88%) of the respondents never participated in field visits, while 26.88 per cent participated occasionally and 6.24 percent of them regularly visited. Regarding meetings it was observed that the majority (71.25%) of the respondents never participated, while 25.00 per cent were participating occasionally and 3.75 per cent were regularly participated in meetings. The majority (85.00%) of the respondents had never attended the lecture, While 14.38 per cent occasionally and 00.62 per cent was attending regularly.

Atul (2008) in his study on constraints analysis of grape exporting farmers of Maharashtra state reported that, majority (70%) of the respondents were from medium extension participation category, followed by low (19%) and high extension categories (11%), respectively.

The above studies on extension participation conducted in different states of India namely Maharashtra, Tamilnadu, and Karnataka during the period from 1991 to 2008 revealed that the majority of the farmers belonged to medium level of extension participation.

2.1.9 Mass media participation

Ramanna *et al.* (2000) revealed that 48 per cent of the hybrid sunflower growers had medium level of mass media exposure while 12.00 and 40.00 per cent of respondents had low and high level of mass media exposure.

Bheemappa (2001) in his study conducted in TBP command area reported that 35.83 per cent of migrant and 10.83 per cent of non-migrant farmers who were subscribing to the news papers; were having regular reading habit to the extent of 86.05 per cent and 100.00 per cent. The subscription of agricultural magazines was found with 46.67 per cent of migrant farmers of which 36.67 per cent and 47.50 per cent respectively exhibited regular and occasional reading. About 98.33 per cent migrant farmers possessed radios with 93.22 per cent of them are occasional listeners, 81.67 per cent non-migrant farmers possessed radio with 96.94 per cent of them were occasional listeners. The TV was possessed by 72.50 per cent migrant and 21.67 per cent non-migrant farmers of which 43.68 per cent of migrant farmers were regular viewer of agricultural programmes.

Dhamodaran and Vasantha Kumar (2001) noticed that above half (53.33%) of the respondents had medium level of mass media exposure, followed by 40.00 per cent of the respondents with high level of mass media exposure.

Moulasab (2004) in his study on knowledge and adoption of improved cultivation practices by Mango growers of north Karnataka found that 74.17 per cent of the respondents possessed television followed by 32.50 and 6.6 per cent of the respondents who were the subscribers of farm magazine and newspapers, respectively. Among these 43.33 per cent of the respondents were occasional viewers of television.

Patil (2005) conducted a study on knowledge, extent of participation and benefits derived by participant farmers of the watershed development programme in Raichur district and revealed that 80 per cent of the respondents possessed radio and 54 per cent television, while 40.61 per cent of them subscribed newspaper. Further, in case of radio it is reported that 22 per cent of them listened to agricultural programme regularly; in case of television 25.34 per cent of respondents' farmer viewed the agricultural programme regularly.

Nagadev and Venkataramaiah (2007) while studying the characteristics of integrated pest management (IPM) trained dry paddy farmers in Maharashtra state revealed that majority (74.00%) of respondents had medium media utilization, followed by low (16.00%) and high (10.00%) respectively.

Hinge (2009) reported that, a higher proportion of the wine grapes growers (38.75%) had medium mass media participation and nearly one third of them (32.50%) belonged to low mass media participation category. Whereas, 28.75 per cent of them belonged to high mass media participation category.

The above studies on mass media participation conducted in different states of India namely Karnataka, Maharashtra during the period from 1990 to 2009 revealed that majority of the respondents possessed television and radio as important sources of mass media.

2.1.10 Risk bearing ability

Srinivasareddy (1995) in his study on mango growers of Kolar district in Karnataka revealed that 43.00 per cent of the respondents were in high risk orientation followed by low (31%) and medium (26%) risk orientation category.

Saravanakumar (1996) in his study in Krishnagiri taluk of Dharmapuri district in Tamil Nadu observed that, majority of the mango growers (70.83%) belonged to medium level of risk orientation followed by low (15.0%) and high (19.17%) level of risk orientation, respectively.

Chandran (1997) in her study reported that 31.67 per cent of the respondents belonged to the low risk orientation category, while 30.00 per cent and 38.33 percent of them were found to have medium and high risk orientation, respectively.

Birajdar (1999) in his study on impact of income generating activities on sustainable rural livelihoods of kawad project beneficiaries reported that majority of the grape growers belonged to medium risk orientation category followed by high category (86.3%) and low category (13.7%), respectively.

Kadam (1999) in his study on knowledge, cultivation practices followed and marketing behavior of sweet orange growers in Nanded district reported that,68.12 per cent had medium risk orientation. While 24.38 per cent and 7.50 per cent of the respondents' belonged to high and low category of risk orientation.

Vijaykumar (2001) conducted a study on entrepreneurial behavior of floriculture farmers in Ranga Reddy district of Andhra Pradesh and indicated that majority (33.34%) of the respondents fell under low risk taking ability, followed by 35 per cent and 26.66 per cent of them were in the categories of medium and high level of risk taking ability, respectively.

Venkataramulu (2003) reported that majority of the chilli growers had medium level of risk bearing capacity (73.33%) in Guntur district of Andhra Pradesh.

Shashidhar (2004) revealed that majority of the farmers (70.83%) had medium level of risk bearing ability and low (15%) level of risk orientation.

Chandramouli (2005) in his study on entrepreneurial behaviour of farmers in Raichur district of Karnataka revealed that 40.83 per cent of the respondents had low risk taking ability, followed by high (35.00%) and medium (24.17%) risk taking ability, respectively.

Nagesh (2006) in his study on entrepreneurial behavior of pomegranate growers in Bagalkot district of Karnataka reported that most (85.84%) of the respondents had medium risk orientation followed by 10.00 and 4.16 per cent of the respondents having low and high risk orientation, respectively.

Maraddi (2006) carried out an analysis of sustainable cultivation practices followed by Sugarcane growers in Karnataka and observed that high level of risk orientation was noticed in 18.89 per cent of the Sugarcane growers, whereas medium level of risk orientation was possessed by 48.89 per cent and remaining 32.22 per cent of growers had low risk orientation.

Raghavendra (2007) in a study on management practices of pineapple growers in Karnataka reported that 50.00 per cent (6.11-9.73) of the pineapple growers had medium risk bearing ability whereas, 32.50 per cent (<6.11) and 17.50% (9.73) of them had low and high level of risk bearing ability respectively.

Sushma (2007) in her study on analysis of entrepreneurship development in women through EDP trainings revealed that majority of the trained women entrepreneurs (61.55%) had medium level of risk bearing ability while 10.76 per cent and 27.69 per cent of them had high and low level of risk taking ability, respectively.

Atul (2008) in his study on constraints analysis of grape exporting farmers of Maharashtra state reported that, majority (77%) of the respondents belonged to medium risk

orientation category, followed by high (12%) and low risk orientation categories (11%), respectively.

Chidananda (2008) revealed that majority (65.83%) of respondents farmers have medium risk taking ability followed by high (20.00%) and low (14.17%) risk taking abilities respectively.

Madhushekar (2009) found that 53.12 per cent of respondents had medium risk taking ability followed by high risk taking ability (26.25%) and low risk taking ability (20.63%).

Hinge (2009) revealed that, nearly an equal percentage of the wine grape growers had low (36.25%) and medium (35.62%) risk orientation and the remaining 28.12 per cent of the respondents had high risk orientation.

The above studies conducted on risk taking ability in different states of India namely Maharashtra, Tamilnadu, and Karnataka Andhra Pradesh, during the period from 1995 to 2009 revealed that majority of the farmers had medium risk bearing capacity.

2.1.11 Cropping intensity

Kanavi (2000) conducted study on knowledge and adoption behaviour of sugarcane growers in Belgaum district of Karnataka and reported that 58.00 per cent of sugarcane growers were under low category of cropping intensity and 42.00 per cent of farmers under high category.

Nagaraja (2002) reported that 90 per cent of the sugarcane growers were found in low category of cropping intensity and (10.0%) were found in high category.

Maraddi (2006) in his study on analysis of sustainable cultivation practices followed by Sugarcane growers in Karnataka reported that incidence of medium level of cropping intensity was seen with 47.22 per cent of farmers followed by low cropping intensity with 27.22 per cent of farmers and only 25.56 per cent of famers had high cropping intensity.

The above studies conducted on cropping intensity in different states of India namely Maharashtra, Tamilnadu, and Karnataka Andhra Pradesh, during the period from 1990 to 2006 revealed that majority of the farmers belonged to low cropping intensity category.

2.1.12 Scientific orientation

Sakharkar (1995) observed that majority (65.00%) of the soybean farmers of Nagpur district belonged to medium category of scientific orientation, 17.33 per cent each of the farmers belonged to low and high scientific orientation categories.

Karpagam (2000) reported that majority of the respondents (75.00%) were in medium category followed by low category (13.33%) and high category (11.67%) with respect to scientific orientation.

Sriram and Palaniswamy (2001) observed in their study on modernization characteristics of sugarcane growers that, 70.75 per cent of respondents belonged to medium level of scientific orientation category, whereas 17.01 and 12.24 per cent of respondents belonged to high and low level of scientific orientation category, respectively.

Nagaraja (2002) in his study stated that, majority (67.08%) of the respondents had medium level of scientific orientation respect of improved package of practices. the high level scientific orientation was seen in 22.08 per cent of the respondents. Whereas, only 10.83 per cent of the respondents had low level of scientific orientation.

Maraddi (2006) in his study on analysis of sustainable cultivation practices followed by Sugarcane growers in Karnataka reported that incidence of medium level of scientific orientation was seen with 46.11 per cent of farmers followed by low scientific orientation with 35.56 per cent of farmers and only 18.33 per cent of famers had high scientific orientation.

The above studies conducted on scientific orientation in different states of India namely Maharashtra, Tamilnadu, and Karnataka Andhra Pradesh, during the period from 1995 to 2009 revealed that majority of the farmers belonged to medium scientific orientation followed by low scientific orientation.

2.1.13 Management orientation

Sakharkar (1995) noticed that two third of the respondents belonged to medium category to management orientation. However an equal number of respondents had low and high level of management orientation.

Vijayakumar and Narayanagouda (1999) in their study on rose flowers in Bangalore district of Karnataka found that 14 per cent of the growers had obtained the lowest management

orientation scores ranging between 36 to 45, while 28 per cent of the farmers had obtained management orientation scores in between 46 to 55. A majority (54%) of the farmers received management orientation scores varying from 56 to 65 and only 4 per cent of the growers were received highest management orientation scores varying from 66 to 75.

Gaikwad and Gunjal (2000) revealed that medium level management orientation of the beneficiaries from KVKS Thane and Jalgone was found more than 73 per cent. Whereas, low management orientation of the beneficiaries from KUK Wardha and Aurangabad.

The above studies conducted on management orientation in different states of India namely Maharashtra, and Karnataka during the period from 1995 to 2000 revealed that majority of the farmers belonged to medium management orientation.

2.2 Knowledge level of chilli growers about recommended cultivation practices

Kumar (1998) in his study on knowledge level of banana growers in Channapatna and Doddaballapur taluks of Bangalore rural district and improved practices revealed that 45 per cent of banana growers had medium overall knowledge level followed by lesser percentage under low (26%) and high (29%) groups of knowledge level.

Kadam (1999) in his study on knowledge, cultivation practices followed and marketing behavior of sweet orange growers in Nanded district reported that, 68.13 per cent of the respondents had medium level knowledge . Only 11.87 per cent and 20.00 per cent of sweet orange growers belonged to high and low knowledge level categories.

Kanavi (2000) carried a study on knowledge and adoption behaviour of Sugarcane growers in Belgaum district of Karnataka and reported that 68.00 per cent of the respondents belonged to medium level of knowledge followed by 18.66 per cent and 13.33 per cent belonged to high and low level of knowledge, respectively.

Bheemappa (2001) conducted a study on comparative analysis of knowledge and technological gap in adoption of Paddy and Cotton cultivation practices between migrant and non-migrant farmers of TBP command area in Karnataka and reported that majority of the migrant (71.67%) and non-migrant farmers (66.67%) had the medium knowledge of Cotton cultivation. High knowledge was exhibited by 15 per cent of migrant farmers as against 11.66 per cent of non migrant farmers and 21.67 per cent of non-migrant farmers and 13.33 per cent of migrant farmers were in low knowledge category.

Sophia (2001) in her study on knowledge and adoption of sustainable cultivation practices in Sugarcane and Cotton by farmers in Cuddlore district of Tamil Nadu reported that 66.25 per cent of the farmers had medium knowledge level followed by 17.50 per cent with high knowledge level and 16.25 per cent with low level about sustainable cultivation practices in Cotton.

Partha Sarathi and Santha Govind (2002) in their study conducted in Thiruvannamalai district of Kerala reported that majority rice growing farmers possessed the knowledge of IPM practices (78.6 %) among the IPM components competitively more number of farmers have knowledge of cultural methods (42.37%) , followed by chemical methods (31.24%), Biological methods and physical methods (11.67%) in the cultivation of rice crop.

Maraddi and Verma (2003) in their study on knowledge of farmers on Cotton production technologies in Malaprabha command area revealed that 69 per cent of the respondents had medium level of knowledge of Cotton production technologies followed by 17 per cent of the respondents possessed high knowledge, where as 14 per cent of respondents had low level of knowledge.

Raghavendra (2007) A study on management practices of pineapple growers in Karnataka reported that (43.14%) of pineapple growers were belonged to medium level of knowledge. Whereas (33.14%) and (23.74%) of the respondents belonged to low and high knowledge category, respectively.

Jadhav (2009) reported that 47.50 per cent of papaya growers were belonged to medium knowledge level about recommended practices in papaya cultivation. Regarding technological gap in adoption of recommended papaya cultivation 39.17 per cent of the respondents belonged to medium technological gap category. A very high percentage of the papaya growers had correct knowledge about the cultivation practices like harvesting time (97.50%).

Suresh kumar (2009) study reported that Majority of the respondents 86.67 per cent had knowledge about selection of the soybean varieties and 93.33 per cent of them adopted it followed by sowing time wherein 94.67 per cent knowledge and 86.67 per cent adopted and in respect of 89.33 per cent knowledge and 80.67 per cent adopted.

Hinge (2009) found that, 45.00 per cent of the wine grape growers belonged to medium level of knowledge about recommended practices of wine grape cultivation. While, 40.62 and

14.37 per cent of the wine grape growers belonged to high and low knowledge levels with mean knowledge scores of 27.7 and 23.91, respectively.

The above studies conducted on knowledge level in different states of India namely Maharashtra, Tamilnadu, and Karnataka Andhra Pradesh, Kerala, Madhya Pradesh during the period from 1995 to 2010 revealed that majority of the farmers had medium level of knowledge.

Rai and Singh (2010) carried out study on extent of knowledge and constrains in cotton production technology in Madhya Pradesh and found that majority of the respondents (61%) were observed in medium category of knowledge followed by high (20%) and low (19%) levels of knowledge, respectively.

2.3 Technological gap in chilli growers

Chitnis and Bhilegaonker (1985) in their study on technological gap in dry farming system an analysis reported that major (78.32%) technological gap was found in plant protection measures. A considerable technological gap was also observed by them in inter cropping (71.99%), use of fertilizers (36.35%) and sowing technique (33.87%). The least technological gap was also observed in varietal recommendation (8.70%).

Ingle and Wayazade (1989) reported that the majority of the respondents (94.77%) had adopted HYV and timely sowing. Fertilizer application and inter cropping were adopted by 90.19 and 83.66 per cent, respectively plant protection and contour cultivation were adopted by relatively less proportion of respondents i.e. 28.10 and 9.15 per cent, respectively.

Vijay (1990) in his study on A critical analysis of technological gap and constraints in the adoption of improved rice cultivation practices in kokana region, Maharashtra state revealed that 69.50 per cent of the respondents were in the category of medium overall technological gap, while, 15.50 per cent and 15.00 per cent of the respondents were found in low and high overall technological gap categories, respectively.

Reddy and Ratnakar (1993) in their study on adoption of mango technology reported that 83.33% of the farmers were selecting suitable soil for mango cultivation, majority (73.33%) of the farmers were planting grafts in recommended months and recommended size of pit (1m x 1m x 1m)was found to be used by majority (71.67%) of the farmers. Less than one fifth (19.17%) of the farmers were using the plants as per recommendation. Application of organic manures was fully adopted by 37.50% farmers whereas, others were either partially adopted or

not at all adopted the manuring .more than one third (37.50%) of the farmers were using the fertilizers as per recommendation.

Shaik *et al.* (1993) in their study on adoption of custard apple technology by the growers reported that that almost all the growers were adopting the technology of soil requirement, spacing and filling of pits, while 50.00% farmer were adopting the recommended doses of fertilizers. One fourth (25.00%) of the growers were adopting the technology of disease and pest control, transplanting of seedlings by july august and irrigation practices. Only 11.67% growers were adopting the improved varieties while none of the grower was using seed treatment.

Bhapkar (1994) in his study of cashew growers to assess the technological gap and causes of non-adoption of recommended practices in Sindhudurg districts revealed that maximum (54.40%) technological gap was observed in use of recommended variety. It was noticed that three fifth (60.00%) of the respondents were in the category of medium technological gap , while 23.33% and 16.67% respondents were observed in low and high technological gap categories, respectively. the average technological gap was found to be 49.14 % which indicated medium gap.

Kiran (2003) on a study on technological gap and constraints in adoption of recommended practices of mango growers reported that maximum (83.80%) technological gap was found in plant protection measures. The least (11.33%) technological gap was observed in irrigation further 63.25 per cent ,41.00 per cent, 25.40 per cent and 12.0 per cent technological gap was found in the major practices namely use of paclobutrazol, use of recommended varieties, use of manures and fertilizer, harvesting and land preparation respectively. Overall technological gap was 58.77 per cent.

Santosh (2006) in his study on a study on technological gap and constraints in adoption of bidi tobacco cultivation in Belgaum district of Karnataka state reported that, majority of the respondents (48.34%) were in the category of medium overall technological gap, followed by similar number of respondents 25.85 per cent in both low and high overall technological gap categories, respectively.

Jadhav (2009) revealed that the important findings of the study were; majority of the respondents were possessed medium level of knowledge (39.33%) and almost equal per cent of respondents belongs to high (34.67%) and low (34.00%) overall technological gap.

Basanayak (2009) reported that The major Suggestions to reduce technological gap in papaya cultivation that majority of respondents (98.33%) suggested development virus resistant variety and supplies all the recommended varieties (97.50%) will certainly help to reduce technological gap in papaya cultivation.

Madhu (2010) Fourty four per cent of the respondents belonged to medium technological gap category. Regarding use of recommended varieties and sowing time, no technological gap was observed. As high as 85.00 per cent of technological gap was observed regarding use of recommended seed treatment practices. Education, experience in turmeric cultivation, extension contact, mass media participation, innovative proneness and risk orientation were found to be significantly associated with technological gap in turmeric cultivation. Majority of the turmeric growers (97.86%) marketed their produce in the regulated market. Majority of the respondents (97.86%) gathered information on market price by personally visiting the nearest market. The major problems perceived by the turmeric growers were irregular and insufficient supply of electricity for irrigation (88.57%) and non availability of labour in time (73.57%).

The above studies conducted on technological gap in different states of India namely Maharashtra, Tamilnadu, and Karnataka during the period from 1985 to 2010 revealed that majority of the farmers belonged to medium technological gap.

2.4 Constraints and suggestions expressed by the chilli growers

Lokhande and Wangikar (1991) conducted a study in Omerga taluk of Osmanabad district in Maharashtra and reported that majority of the grape growers (79.16 per cent) were not able to get improved varietal cuttings, 70.83 per cent of them expressed the problem of less resistance to pest and diseases and 75.00 per cent expressed non-availability of loans from bank in time.

Jayale (1992) in his study on horticulture crop growers observed that opinion of the majority of the respondents (79.16%) was that filling of pit with manure and fertilizers is costly and laborites while, 66.66 per cent of respondents expressed the problem of digging standard size pit and that process was expensive. Forty five per cent of the respondents expressed that getting seedlings was difficult.

Kadam and Borse (1993) revealed that, the problems of banana growers in Jalgaon district were; lack of cultural and marginal requirement of the crop in relation to variety of soil climate, problem of availability of rhizomes, perish ability of banana fruit, disease and pest control in the field and marketing of banana fruits.

Bhogal (1994) conducted a study in Nainital district of Uttar Pradesh and reported that 66.66 per cent of the apple growers were facing problems of non availability of cold storage facilities, 61,0 per cent of the apple growers were facing problem of high marketing cost and 51.39 per cent were facing the problem of lack of transport facilities.

Sreenivasreddy (1995) conducted a study in Kolar district of Karnataka and reported that, the problems faced by the mango growers were the incidence of pests and diseases, high cost of fertilizers and plant protection chemicals, heavy rains during fruit development stage, flower and fruit drop and non-availability of labor for various cultural operations.

Jairath (1997) in his study on operational efficiency in fruits and vegetable market in Jaipur examined the effect of operational efficiency on marketing. The study revealed that the followed system of sale was open auction, yet a very small portion of produce was sold by this method. This was mainly because of non-participation of sufficient number of traders in the auction and lack of adequate space for display and handling of produce.

Chikhale et al. (1998) in his study on adoption of improved cultivation practices by orange growers in Maharashtra reported that cent per cent of the respondents suggested to extend the facility of crop insurance for the orange orchard so that the risk of failure can be covered; and to provide subsidy for chemical fertilizers and pesticides. Imparting training about preparation of vermicompost, organizing visits of orange growers to the ideal orchards were the important suggestions given by the orange cultivating farmers.

Kumar (1998) in his study on banana growers in Bangalore district reported that, the farmers faced the problems of lack of technical guidance, pests and diseases, high investment, low price for the fruits, fluctuation in the prices and exploitation by the middleman.

Saravanakumar (1996) conducted a study on mango growers in Dharmapuri district of Tamil Nadu and reported that majority of the respondents faced the problems like lack of technical guidance (82.50 per cent), inadequate irrigation facilities (70.00 per cent), no availability of labour (61.67 per cent) and low price for the produce (60.83 per cent).

Sharma (1997) conducted a study on mango growers and reported that one fourth of the respondents (25.00 per cent) each were facing problem of high cost of fertilizer and weedicides, high cost of nursery plants (24.00 per cent) and lack of technical knowledge in application of fertilizer (22.50 per cent).

Kumar (1998) in his study on banana growers in Bangalore district reported that, the farmers faced the problems of lack of technical guidance, pests and diseases, high investment, low price for the fruits, fluctuation in the prices and exploitation by the middleman.

Nirmaladevi and Manoharan (1998) reported that farmers were facing many problems in adoption of guava production such as soil and water problem (76.17 per cent), lack of technological guidance (53.15 per cent), high cost of fertilizers (51.09 per cent, lack of training facilities (50.15 per cent) and high cost of pesticides (46.77 per cent).

Gowda (2002) in his study on sustainable grape cultivation reported the important constraints in grape marketing as, no fixed price, low price, lack of regulated markets, exploitation by middle men, lack of cold storage facility, no guidance on marketing aspects and lack of transportation facilities. Further, constraints perceived by them in availing credit were non availability of credit in time and inadequate quantity of credit

Misal (2002) in his study observed that majority (80.00%) of the respondents suggested that cost of paclobutazol should be reduced 60.00% of the respondents suggested that control measures should be suggested for fruit drop by the researcher. Technical information should be given through method demonstration of paclobtrazol application at village level was suggested by 53.00% respondents. Fertilizer prices should be reduced or minimize and quality insecticides and fungicides should be made available in the market was the suggestions given by 44.00% each of the respondents. However 35.00% of the respondents suggested that problem of suggested staggered (repeated) flowering should be solved by the researches while 33.00%of the respondents suggested that problem of spongy tissue in the fruits should be solved.

Nagesh (2006) in his study on pomegranate reported the constraints faced by pomegranate growers as lack of storage facility, high incidence of pest and diseases, non availability of skilled labour for pruning, expensiveness of pruning operations, costly chemicals and fertilizers and lack of processing units were the major constraints.

Raghavendra (2007) A study on management practices of pineapple growers in Karnataka reported that constraints in production and marketing of pineapple crop. It was found that cent per cent of the respondents were facing the problem of lack of regulated markets, where as high majority of the farmers facing problem were low market price for the produce (97.50%), followed by micronutrient deficiency in soil (92.50%), lack of storage facility (88.12%), lack of technical guidance (85.63%), lack of processing units (80.00%), non availability and high labour charges (70.63%). Further less than sixty per cent of respondents

expressed problems were, exploitation from pre-harvest contractors and middle men (57.50%) and non availability of required quantity of fertilizers in time (33.12%).

Basanayak (2009) reported that the problems faced by majority (83.33%) of the respondents expressed heavy occurrence of virus diseases and do not know fertilizer calculation (78.33%) followed by adverse climatic efforts (75.00%) as the main constraints in adoption of recommended papaya cultivation practices.

Basanayak (2009) reported that the major Suggestions to reduce technological gap in papaya cultivation that majority of respondents (98.33%) suggested development virus resistant variety and supplies all the recommended varieties (97.50%) will certainly help to reduce technological gap in papaya cultivation.

Wondangbeni (2010) revealed that high cost of chemicals and fertilizers (96.67%) and price fluctuation (86.67%) were the major constraints in adoption of recommended cultivation practices of groundnut. Recommended varieties (97.50%) will certainly help to reduce technological gap in papaya cultivation.

It is evident from the above reviews that most important problems faced by the respondents were lack of technical guidance lack of transport facilities and wide price fluctuation.

Methodology

III. METHODOLOGY

In this chapter, description of the research methods and procedures adopted in the present investigation are explained under the following major heads.

3.1 Research design

3.2 Locale of the study

3.3 Brief description of study area

3.4 Selection of talukas

3.5 Selection of villages

3.6 Selection of respondents

3.7 Selection of variables

3.8 Measurement of variables

3.9 Data collection

3.10 Statistical tools used in the study.

3.1 Research design

The Ex-post-facto-research design was used for the study. This design was considered appropriate because the phenomenon has already occurred. It is a systematic empherical study in which the researcher does not have direct control over independent variables because their manifestations have already occurred.

3.2 Locale of the study

The study was conducted in Raichur& Yadgir districts of Karnataka during the year 2011-12. These districts were purposively selected because of convenience and familiarity of the student with the districts. Among the spice crops, chilli is the one of major crop grown by the farmers of these districts.

3.3 Brief description of the study area

Raichur

Location

Raichur district is situated in the North Eastern part of the Karnataka state between $15^0$09' and $16^0$34' North latitude and $75^0$46' and $76^0$35' East longitude. The average altitude

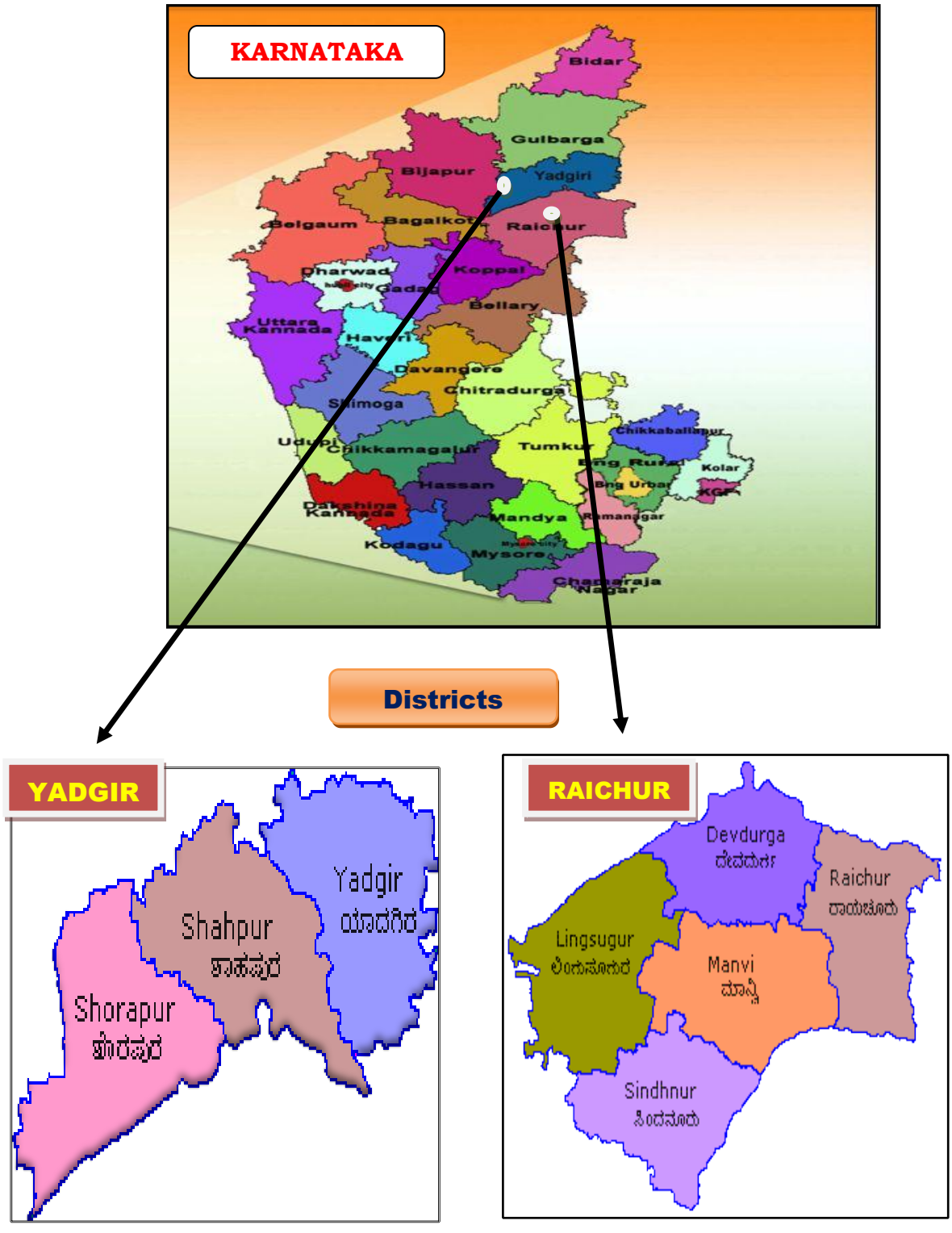

Fig. 1. Map showing the study area

above mean sea level is 393.3 meters. On either side of the district, two major rivers, Krishna (to North) and Tungabhadra (to South) flows. The district is bound on the north-east by Mahaboobanagar district of Hyderabad, on the north by Yadgir district. The district comprises of five talukas namely Raichur, Deodurga, Lingsugur, Sindhanur and Manavi.

Demographic features

Raichur district has a population of 13, 51,800 of which includes 6, 83,220 and 6, 68,600 male and female population, respectively. The district comprises of 878 villages under 168 gram panchayats, 7 municipal limits and 37 hobalies.

Literacy rate

According to 2001 census, the literacy rate of Raichur district was 49.54 per cent with male literacy at 62.02 per cent and female literacy at 36.84 per cent.

Topography

The district is bestowed with varied soil resources comprising 57.6 per cent black and 42.4 per cent red soils. Within the black soils, 44.2 per cent is deep black soils followed by 41.6 per cent medium black and 14.2 per cent shallow soils. Among the red soils, 48.9 per cent area is constituted by loamy soils while remaining 51.1 per cent comprises of sandy soils. The soils are poor in nitrogen, phosphorous, zinc and iron but rich in potassium.

Raichur district has the advantage of growing a variety of field and horticultural crops owing to its varied soil and climatic conditions. Traditionally crops like green gram, red gram, groundnut, sunflower, bajra *etc.* are grown under rainfed situation in *kharif* season while under irrigated situation, the district is known for intensive cultivation of paddy and cotton. During rabi season, crops like jowar, chickpea, safflower, sunflower, chilli *etc.* are grown extensively while chilly grown under irrigated conditions.

The climate of the district is characterized by dry weather for major part of the year and a very hot summer. The year may be broadly divided into four seasons. The hot summer season beginning by about middle of the February and extending upto the end of May. The Southwest monsoon period stretches from June to end of September. The post-monsoon period extends from October to November. The period from December to middle of February is comparatively cool. With regard to soil type, the district had relatively larger area under mixed red and black soil (constituting about 40 per cent of the area) followed by deep black and medium black soils.

The total geographical area of the district is 7, 95,762 ha, out of this, total cultivable area is 6, 22,853 ha, which constitute 78.27 per cent of the total geographical area. The major

crops of the district are paddy, cotton, jowar, sunflower and groundnut and chilli among spice crops.

Yadgir

This district transferred from Hyderabad State to Karnataka state at the time of re-organization of the state in 1956. It is also known as new baby district after 2010 December 30. Yadgir is a town and the administrative headquarters of the newly created Yadagiri district in the Indian state of Karnataka. On 10 April 2010, it was officially declared as 30th district of Karnataka State. It is also the administrative headquarters of Yadgir taluk, one of the three taluks of the district.

The It is located in the Northern part of the state and lies between North latitude and east longitude 16°46′N 77°08′E16.77°N 77.13°E. This District has 5.6 square kilometres area and 58,802 (2001) of population. It is bounded on the west by Bijapur district of Karnataka and on the west by Bijapur district of Andhra Pradesh and on the south by Richur district of Karnataka. They are three talukas viz, Shahapur, Shorapur and yadagir.

Brief history

The District was under the rule of Nijam's of Hyderabad before independence. The district has a rich background of knowledge and culture. However, due to erratic rainfall and continuous occurrence of droughts in the 19th century the life of the people was never smooth and secure. Further during the Nizam's period, the district could not develop due to the negligence and inefficient administration. The distance was also a factor contributing to it. Thus it was one of the most backward districts when it joined the old Mysore State (Fact Finding Committee 1954). This position has not changed even after five decades.

Weather

The climate of the district is generally dry and healthy with temperature ranging from 20ºc in the winter to 40ºc in the summer, and an annual rainfall of about 750 mm.

Topography and vegetation

The entire district is situated in Deccan Plateau and the general elevation ranges from 300 to 750 meters above mean sea level. Black and red soil is predominant soil type in the district. The Upper Krishna Project is major irrigation venture in the district. Bajra, toor, sugarcane, groundnut, sunflower, sesame, castor bean, black gram, jowar, wheat, cotton, ragi, bengal gram, and linseed are grown in this district.

Industry

It is a is an industrially backward district, but is presently showing signs of growth in place of full natural resource like Water (Mainly Two river flows Krishna and Bhima). And there is lots of scope for Industrializations in future. One Sugar and fuel industry "Core Green" also established near Hiretumkur village. Recently Rich uranium deposits have been found in the Gogi belt covering the villages of Gogi, Ukkinal, Darshanapur in Shahapur taluk, and Thinthini and other places in Surapur taluk. Uranium processed here will be used for defence and power generation purpose.

3.4 Selection of talukas

The study was conducted in selected taluka of Raichur and Yadgir districts of Karnataka. Manavi & Deodurga from Raichur district and Shahapur & Shorapur from Yadgir district were selected based on highest area under chilli cultivation.

3.5 Selection of villages

From each of the selected talukas, three villages selected based on highest area of chilli under irrigation condition. Thus, totally 12 villages were selected for the study.

District	Taluks	Villages	Number of respondents
Raichur	Deodurga	Gabbur,	10
		K.Irabgera	10
		Sasvigera	10
	Manavi	Gorkal	10
		Niramanavi	10
		Siravar	10
Yadgir	Shahapur	Doranahalli	10
		Gogi	10
		Sagar	10
	Sorapur	Devargonahal,	10
		Machagondal,	10
		Satyampeth	10
		Total	120

3.6 Selection of respondents

A list of chilli growing farmers was prepared for each of the selected villages with the help of Assistant Horticulture Officer of the respective area. From each of the selected villages, 10 chilli respondents under irrigated condition were selected by random sampling method. Thus, in this study 120 farmers from 12 villages' was the sample size.

3.7 Selection of variables for the study

The dependent and independent variables for the study were selected based on the available literature and the objectives of the study. The variables selected for the study along with their empirical measurement are presented here under.

a) Dependent variables:

1. Knowledge
2. Technological gap

b) Independent variables:

1) Age
2) Education
3) Farming experience
4) Size of land holding
5) Annual Income
6) Material possession
7) Extension contact
8) Extension participation
9) Mass Media Participation
10) Risk taking ability
11) Cropping intensity
12) Scientific orientation
13) Management orientation

Variables and their empirical measurement

SL.NO	VARIABLES	MEASUREMENT TOOL
	Dependent variables	
1.	Knowledge level	Teacher made test developed for the study
2.	Technological gap	Scale developed by Ray *et.al.*, (1995) with suitable modification
	Independent variables	
3.	Age	Procedure followed by Binkadkatti (2008)
4.	Education	Procedure followed by Shashidhara (2003).
5.	Farming experience	Procedure followed by Binkadkatti (2008)
6.	Size of land holding	Government of Karnataka (1992-93), procedure followed by Mangala (2008)
7.	Annual Income	Procedure followed by Government of India, 1992 and as followed by Deepak (2003).
8.	Material possession	Procedure followed by Hiremath (2000) with slight modifications.
9.	Extension contact	Procedure followed by Sakkarkar (1995).
10.	Extension participation	Procedure followed by Natikar (2001) with light modification.
11.	Mass Media Participation	Procedure followed by Binkadakatti (2008).
12.	Risk taking ability	Procedure followed by Nagaraja (1989).
13.	Cropping intensity	Procedure followed by Sinha and Kolte (1974).
14.	Scientific orientation	Procedure followed Supe (1969), with slight modifications made and used by Nagaraj (1989).
15.	Management orientation	Procedure followed by Samanta (1977)

3.8 Measurement of variables

3.8.1 Dependent variables

3.8.1.1 Knowledge

English and English (1958) defined knowledge as a body of understood information possessed by an individual.

Knowledge was defined as the things known to an individual and represented cognitive domain. Knowledge level was operationalised in this study as the equation of scientific information known to the respondents about the chilli cultivation.

Construction of teacher made knowledge test

A teacher made knowledge test was developed to measure the knowledge level of farmers about improved cultural practices of chilli.

The knowledge test questions and answers were carefully framed mainly on the basis of the recommended package of practices of chilli, which was jointly given by the UAS, Raichur and Department of Horticulture and also in consultation with field level extension workers on various aspects of chilli cultivation.

Further, the minimum knowledge that farmer should possess to cultivate chilli in scientific lines was also thought of. Accordingly, considering the package of practices recommended for chilli cultivation a set of knowledge items were converted into questions with Yes/No type, open end questions wherever felt appropriate were also included.

The knowledge items were pre-tested with 20 respondents in non-sampling area of the study. Based on the results of pre-test, the knowledge items were modified; ambiguous items were deleted and finalized.

The knowledge test developed was administered to the respondents. Quantification of the knowledge item answers were made by giving one score and zero score for correct and incorrect answers, respectively. The score of the entire individual item were summed to get the knowledge score of respondents. The maximum score that one could get was 34 and minimum was zero.

Based on the total score, the respondents were classified into three categories namely, low, medium and high, using mean and standard deviation as a measure of check.

Category	Range
Low	Less than (mean - 0.425 SD)
Medium	In between (mean ± 0.425 SD)
High	More than (mean + 0.425 SD)

3.8.1.2 Technological gap

Technological gap has been defined as the proportion of gap in the adoption of practices recommended and it is expressed in percentage (Ray *et al.*, 1995).

In the present study, technological gap was operationalised as the proportion of gap in the adoption of 14 recommended chilli cultivation practices by the farmers and expressed in percentage. Extent of technological gap was the dependent variable. Technological gap was conceived as the difference between the packages of practices of chilli cultivation recommended by University of Agricultural Sciences, Raichur and the extent of adoption of these recommended practices at farmer's level. This package included the recommendations on following fourteen major cultivation practices such as;

1. Land preparation
2. Use of improved Varieties
3. Seed treatment
4. Transplanting
5. Seedbed preparation
6. Seedlings per hill
7. Sowing time
8. Spacing
9. Irrigation
10. Use of manures and fertilizers
11. Use of growth regulators like Plano fix
12. Use of weedicides
13. Weeding & Intercultivation
14. Plant protection measure

The per cent technological gap for each selected major practice was worked with the help of following formula:

$$\text{Technological gap (Respondents wise)} = \frac{\text{No. recommended practices - No. adopted practices}}{\text{No. recommended practices}} \times 100$$

$$\text{Technological gap (Practice wise)} = \frac{\text{Standard score - Actual score}}{\text{Actual score}} \times 100$$

Here S= Standard score (Total number of respondents), A=Actual score (No of respondents adopted that particular practice)

On the basis of overall technological gap, the respondents were grouped into three categories viz. low, medium and high considering the mean and standard deviation as measure of check.

Category	**Range**
Low	Less than (mean - 0.425 SD)
Medium	In between (mean ± 0.425 SD)
High	More than (mean + 0.425 SD)

3.8.2 Independent variables

3.8.2.1 Age

It refers to the chronological age of the respondent at the time of investigation. The age of the respondents was recorded as mentioned by them in completed years. The respondents were categorized in to three age groups based on the procedure followed by Binkadkatti (2008).

Category	**Age (in years)**
Young	Less than 30
Middle	Between 31 to 49
Old	50 and Above

3.8.2.2 Education

Education is operationalised as the number of years of formal education the person has undergone. For each year of schooling, a score of one was given. The respondents were categorized in to three age groups based on the procedure followed by Shashidhar (2003).

Category	**Education**	**Scores**
Illiterate	Cannot read and write	0
Primary school	1 to 4th standard	1
Middle school	5 to 7th standard	2
High school	8 to 10th standard	3
Pre-university	11 to 12th standard	4
Graduate	Above 12th standard	5

3.8.2.3 Farming experience

It refers to total number of years of farming experience of the farmers. The experience of the farmer in completed years at the time of investigation was considered. The respondents were categorized in to three age groups based on the procedure followed by Binkadkatti (2008).

Category	**Farming experience (years)**
Low	Less than (mean - 0.425 SD)
Medium	In between (mean ± 0.425 SD)
High	More than (mean + 0.425 SD)

3.8.2.4 Land holding

The operationalization of land holding of the respondents was done by considering the size of the land owned and cultivated by the respondents. The land holdings of the respondents were of different kinds namely wet, dry and garden. Hence, they were converted into standard acres, according to Karnataka land reforms act 38 of 1966; one acre of garden/wetland was equated to three acres of dry land. The same procedure was followed in the study to calculate

the total land holding of the farmer. The government of Karnataka (1992-93) has prescribed norms for the categorization of landholdings and the procedure as followed by Mangala (2008) was made use.

Category	**Land holding**
Marginal farmers	Up to 1ha
Small farmers	1 to 2 ha
Medium farmers	2 to 4 ha
Big farmers	Above 4 ha

3.8.2.5 Annual income

It was operationalised as the total income earned by the respondents from agriculture and allied enterprises and expressed in rupees. Based on this, the respondents were grouped into four categories as per the norms suggested by ministry of rural development, Government of India, 1992 and as followed by Deepak (2003).

Category	**Income Rs/annum**
Low income group	Upto Rs 17,000
Semi-medium income group	Rs 17,000 – 34,000
Medium income group	Rs 34,000 – 51,000
High income group	Above Rs 51,000

3.8.2.6 Material possession

It refers to agricultural implements and materials possessed by the families of farmers. Frequencies and percentages were calculated for each of the implements.

A. Electronic & home appliances

Items	Radio	TV	Two wheeler	Four wheeler	Mixer	Cooler	Refrigerator	Bio gas	LPG
Score	1	2	1	4	2	2	4	2	2

B. Agricultural implements and machinery

Items	MB plough	Wooden plough	cultivator	Tractor	Pump set	Oil engine	Sprayer	Harrow
Score	1	1	2	4	1	1	1	1

The producer followed by Hiremath (2000) was used in this study with slight modifications.

3.8.2.7 Extension Contact

It as operationalised as the awareness of the respondents about various extension agencies and their frequency of contact with them to acquire information or seek advice related to farming. This variable was quantified by adopting the procedure followed by Sakharkar (1995).

The score for individual respondents extension contact was the summation of the scores for all the extension personnel contacted by him. The higher score reveals higher contacts with extension personnel by the respondent. Then respondents were categorized into 3 categories viz., low, medium and high based on mean and standard deviation.

Frequency of contact	**Score**
Contacted once a week	3
Contacted once in fortnight	2
Whenever problem arises	1
Never contacted	0

3.8.2.8 Extension participation

Extension participation refers to the extent of participation of farmers in different extension activities conducted during the last one year prior to the time of interview. Training programmes, demonstrations, field days, field visits, group meetings, agricultural exhibitions, krishimela and educational tours were the activities included for the study. Extent of

participation was ascertained as regular, occasional and never with a scores of 2, 1 and 0, respectively, as followed by Natikar (2001) with slight modification.

The responses obtained were expressed in frequency and percentage.

3.8.2.9 Mass media participation

Mass media participation referred to the degree to which the respondents utilized them in terms of listening to farm broadcast, viewing telecast, reading newspaper and magazine. In the present research, mass media participation of respondents was studied according to their possession and extent of utilization. Mass media possession was measured on two point continuum such as, possessed/subscribed and not possessed/not subscribed. Extent of utilization, however, was measured on three point continuum i.e., regular, occasional and never. The scores of 2, 1 and 0 were assigned for regular, occasional and never, respectively.

The data has been presented in frequency and percentage. This procedure was adopted by Binkadakatti (2008).

3.8.2.10 Risk orientation

It is the degree to which a farmer is oriented towards risk and uncertainty in agriculture and has the courage to face the various risks involved in agricultural aspects.

Nagaraja (1989) developed a scale for measuring risk orientation of farmers. The scale contained six statements. The same scale was used by Deepak (2003). First and fifth statements were negatively keyed and all other were positively keyed. In case of positive statements a score of one was assigned for the positive response (agree) and zero score for negative (disagree) response. This was reversed in the case of negative statements. The scores were added to get total score of the respondents. Minimum and maximum score one can get is 0 and 6, respectively. Later the respondents were grouped into the three categories based on total risk orientation scores using mean and standard deviation.

Category	**Score**
Low	Less than (Mean – 0.425 SD)
Medium	Between (Mean ± 0.425 SD)
High	More than (Mean + 0.425 SD)

3.8.2.11 Cropping intensity

It refers to the degree to which an individual puts land into use by cultivating number of crops during the year. This variable was empirically measured by computing cropping intensity index based on the formula suggested by Sinha and Kolte (1974).

$$\text{Cropping intensity index} = \frac{\text{Gross cropped area in a year}}{\text{Size of holding}} \times 100$$

The farmer was asked to indicate single cropped, double cropped and triple cropped area of land cultivated by him. Total cropped area per year was obtained by summation of single cropped area, twice the double cropped area and thrice the triple cropped area in hectare. Later the respondents were categorized into three groups based on mean and standard deviation of the distribution.

Category	**Score**
Low	Less than (Mean – 0.425 SD)
Medium	Between (Mean ± 0.425 SD)
High	More than (Mean + 0.425 SD)

3.8.2.12 Scientific orientation

It is defined as the degree to which a farmer is oriented to the use of scientific methods in agriculture. The variable was quantified by using the scientific orientation scale of Supe (1969), with slight modifications made by Nagaraj (1989). The scale has six statements with three response categories as ‘Agree’, ‘Undecided’ and ‘Disagree’, for five statements (except statement No. 2) a score of two was assigned to ‘Agree’ response, a score of one for undecided and zero score for ‘Disagree’ response. The scoring procedure was reverse in the case of second statement.

The summation of the score obtained by a farmer for all the six statements indicates his scientific orientation. The total score ranged from 0 to 12. The level of scientific orientation was categorized as indicated below using the mean and standard deviation as a measure of check.

Category	Score
Low	Less than (Mean – 0.425 SD)
Medium	Between (Mean ± 0.425 SD)
High	More than (Mean + 0.425 SD)

3.8.2.12. Management orientation

In order to know the respondents management orientation the scale developed by Samanta (1977) was used. The scale consists of 18 statements each for planning, production and marketing aspects. In each group, positive and negative statements were mixed retaining more or less a psychological order of statements.

The mean scores of the management orientation of the respondents were used for all purpose of grouping the respondents into low, medium and high management orientation.

3.9 Data collection

A draft interview schedule against set objectives for measuring the variables of the study was first prepared and pre-tested with 20 farmers in the non-sample area. In the light of pre-testing, necessary changes were incorporated in the interview schedule and were standardized. The standardized structured schedule was used to collect the data through personal interview technique.

3.10 Statistical tools and tests used

The data thus collected for the purpose of the study were quantified, categorized and tabulated. The following statistical tools were made use of in the study to analyze the data.

Mean:

The arithmetic mean is the sum of the scores divided by their number. This measure was used to categorize the dependent and independent variables into low, medium and high categories.

Frequency:

This measure was used to know the distribution pattern of respondents, variable wise and to categorize the problems perceived by wine grape growers in order of importance.

Percentage:

This measure was used for simple comparisons and to know the extent of adoption of chilli growers.

Standard deviation:

This measure was used to categorize the dependent and independent variables into low, medium and high categories.

Results

IV. RESULTS

Findings of the present investigation on technological gap in adoption of recommended chilli cultivation practices are presented under the following headings.

4.1 Socio-economic profile of chilli growers

4.2 Knowledge level with respect to chilli cultivation practices

4.3 Technological gap in adoption of chilli cultivation practices

4.4 Constraints expressed by the respondents and suggestions for improving the adoption of chilli cultivation practices

4.1 Socio-economic profile of chilli growers

The data in Table 1 depicted the results with respect to the profile of chilli growers namely; age, education status, farming experience, land holding, annual income, material possession, risk orientation, cropping intensity, scientific orientation, and management orientation. Similarly data in Table 2 depicted results of extension contact, Table 3 extension participation and Table 4 mass media participation. The individual result of the each profile characteristics is presented as under.

4.1.1 Age

The result in Table 1 indicated that majority (68.33%) of the respondents were middle aged followed by young age farmers (24.17%). The old age group constituted only 7.50 per cent of the respondents.

4.1.2 Educational status

Table 1 shows that one fourth (25.83%) of the respondents were illiterate and 21.67 per cent had high school education, followed by middle school (17.50%), PUC (12.50%), primary education (10.83%) and graduation and above (11.67%).

4.1.3 Farming experience

A perusal of the Table indicated that majority of the chilli growers (51.67%) had high farming experience followed by medium (30.83%) and low (17.50%) farming experience.

4.1.4 Land holding

With respect to land holding, over one third (34.17%) of the chilli growers belonged to the category of small farmers followed by big farmers (30.83%), medium farmers (14.00%) and very negligible per cent (5.00%) of them belonged to marginal farmers.

4.1.5 Annual income

The data presented in Table 1 indicated that a majority of the chilli growers (73.33%) belonged to high annual income (> Rs. 51,000) category followed by 12.50 per cent in medium annual income of Rs. 34,000.00 to 51,000.00, only 11.66 per cent were in semi medium category of Rs. 17,001.00 to Rs. 34,000.00 and very negligible percentage of respondents (2.50%) belonged to low income category i.e. up to Rs.17, 000.00.

4.1.6 Material possession

It was evident from Table 1 that a majority (52.50%) of the respondents belonged to medium category of material possession followed by low (27.50%), high (20.00%) material possession category.

4.1.7 Extension contact

The contents in Table 2 clearly indicated that, over half (55.83%) of the respondents contacted local progressive farmers and 41.67 per cent of respondents contacted scientists of UAS whenever problem aroused, respectively, followed by nearly one fourth (21.67%) contacted horticulture assistant and less than one fourth (18.33%) contacted Assistant horticulture officer.

4.1.8 Extension participation

The results in Table 3 indicated that a majority of chilli growers (78.33%) participated in krishimela, out of that regular participation was 43.33 per cent and over one third (36.66%) of the respondents participated occasionally. Over one fifth (28.33%) and very few (8.33%) of the respondents regularly participated in agriculture exhibition and field days, whereas, 19.66 per cent and 7.50 per cent of the respondents occasionally participated, respectively. In case of training only 6.66 per cent of the respondents participated regularly, whereas, 2.50 per cent of the respondents participated occasionally. Very few percentage (0.83%) of the respondents participated regularly in field days whereas, 7.50 per cent participated occasionally.

4.1.9 Mass media participation

It was revealed from Table 4 that among the different mass media studied, a large majority (91.67%) of the respondents possessed television, whereas, over half (58.33%) of the respondents possessed mobile followed by 48.33 per cent who subscribed to newspaper, only 5.00 per cent of the respondents possessed radio and very negligible per cent (3.33%) of respondents subscribed to magazines.

The data pertaining to frequency of use of mass media sources revealed that most of the chilli growers (91.67%) who possessed television. regular watching behavior of the respondents it was found that 64.17 per cent and 65.83 per cent of the respondents watched agricultural and general programmes, whereas 27.50 per cent and 25.83 per cent of the respondents watched the television occasionally for agriculture and general programmes, respectively.

Over half (58.33%) of the farmers were possessed mobile. Nearly half (45.00%) and (38.33%) of the respondents each used mobile regularly for the purpose of agricultural and general programmes, whereas, 15.00 per cent and 10.00 per cent of farmers were occasional users.

Majority of the chilli growers (48.33%) subscribed news paper. Out of total that more than one fourth (29.00%) and nearly one third (30.00%) of the respondents were regularly reading agricultural and general programmes, respectively, whereas, 12.50 per cent and 16.00 per cent of the respondents were occasional readers.

Radio was possessed by very few (5.00%) of the respondents and subscription of magazine was also too low per cent (3.33%) by the chilli growers.

4.1.10 Risk taking ability

In the present study, it was found that a little over half (50.83%) of the respondents had low risk taking ability, followed by 35.83 per cent with medium and 13.33 per cent with high risk taking ability categories. (Table 1)

4.1.11 Cropping intensity

It was evident from Table 1 that medium cropping intensity was exhibited by 38.83 per cent of chilli growers, followed by low cropping intensity (36.66%) and high cropping intensity (25.00%).

4.1.12 Scientific orientation

The data in Table 1 revealed that, majority (41.66%) of the chilli growers had medium scientific orientation whereas, 30.83 per cent and 17.50 per cent of them had high and low level of scientific orientation respectively.

4.1.13 Management orientation

It could be observed from Table 1 that over one third (35.00%) of the respondents belonged to high management orientation category followed by one third (33.33%) with low and near one third (31.67%) with medium management oriented.

4.2 Knowledge level with respect to chilli cultivation practices

4.2.1 Overall knowledge level of respondents about recommended chilli cultivation practices

The data presented in Table 5.a revealed that over one third (35.00%) of the chilli growers had high knowledge level about recommended practices of chilli cultivation with a mean score of 15.88 whereas, 33.33 per cent and 31.67 per cent of respondents had medium and low knowledge levels with mean knowledge scores of 14.38 and 12.95, respectively.

4.2.2 Knowledge level of the respondents regarding specific recommended practices of chilli cultivation

The data in table 6 depicted the results with respect of specific recommended practices of chilli cultivation. The individual result of each practice is presented as under.

Nursery management

The data presented in table 6 indicated that most (93.33%) of the respondents had knowledge regarding land preparation followed by plant protection measures (80.00%), irrigation (71.66%), FYM application (44.16%), seed bed preparation (40.00%), fertilizer application (38.33%) and over one fifth (26.66%) of the respondents had correct knowledge.

The data in the Table 5.(b) nearly one fifth (17.00%) of the farmers were following the nursery management on their field for raising seedlings, this may due to lack of correct knowledge and lack of technical guidance regarding nursery management. Remaining over half (56.67%) of the farmers brought seedlings from the other nursery, followed by direct sowing (23.33%), and dibbling (9.17%).

Main field cultivation

Land preparation, Spacing

Majority (98.33%) of chilli growers had correct knowledge regarding land preparation and nearly one third (29.67%) of the respondents had correct knowledge about recommended spacing.

Recommended Varieties, seed rate

From the Table it can be inferred that a majority (89.17%) of the chilli growers had correct knowledge about recommended varieties. whereas less than half (46.66%) of the chilli growers knew about recommended seed rate and very few farmers (10.00%) had knowledge about recommended sowing time.

Transplanting

The data presented in the table indicated that as high as (93.33%) of respondents had correct knowledge about number of seedlings required per hill followed by method of transplanting (87.50%), time of transplanting (59.17%), age of seedlings for transplanting (58.33%), depth of transplanting (55.00%) and number of seedlings required per acre (46.66%).

Irrigation and crops suitable for intercropping

It was clear from the table that most (81.97%) of the farmers had correct knowledge about irrigation at critical stages followed by time of irrigation (59.17%), frequency of irrigation (58.33%). Whereas, nearly one fourth (18.33%) of chilli growers were aware of crops suitable for intercropping.

Fertilizer and Manures application

The contents in the Table clearly indicated that as high as 96.67 per cent of the chilli growers had knowledge about FYM application.

It was observed from table that majority (93.33%) of the respondents had correct knowledge regarding quantity of fertilizer per acre followed by time of fertilizer applied (77.50%), application of ‘N’ fertilizer (73.33%),use of micronutrients (55.00%), application of ‘P’ fertilizer (51.66%), application of ‘K’ fertilizer (46.66%).

Use of growth regulators

It was revealed from the Table that majority (88.33%) of chilli growers were aware of growth regulators as recommended for preventing flower and fruit drop i.e. 50ppm, NAA @ flowering stage, it is also known as planofix.

Plant protection measures

It was evident from the Table that large majority (85.00%) of the respondents was aware of major diseases and their control measures and majority (81.67%) of the chilli growers had correct knowledge about frequent occurrence of major pests and their control measures.

It was clearly known from the table that majority (80.00%) of the farmers were aware of thrips and control measure of 1.7ml thiometeate 30EC or 1gm acephate 75 SP/ lit of water followed by 2.5ml dicofol for mites (85.00%), NPV (250LE) or 5% neem seed kernel extract oil for pod borers (73.33%).

A large majority (95.00%) farmers were also aware of murda complex and their control measures - confider or admire 2.5ml/ liter followed by for powdery mildew 1gm carbendazem 400ltr/ha (88.33%) and near one fifth (18.33%) of them had knowledge about wilt and their control measures.

Harvesting, drying, yield and cost & returns per hectare

It was clearly known from the Table that cent per cent of the chilli growers had complete knowledge about right time to harvest, drying under sunshine and yield per hectare.

During survey observed that total average input cost in chilli cultivation worked out to Rs. 63350.00 cost per hectare of cultivation. The expenditure on seeds, manures and manuring and plant protection measures were Rs. 8,850.00, Rs. 6,650.00 and Rs. 19,000.00, respectively.

The total labour charge per hectare was Rs. 28,850.00 accounted for operational cost. The gross returns realised by the respondents from cultivation of one hectare of chilli crop was Rs. 1, 20,959.00.

The per hectare net returns (profit) at operational cost in chilli cultivation was Rs. 53,609.00.

4.3 Technological gap in adoption of recommended chilli cultivation practices

4.3.1 Overall technological gap in adoption of recommended chilli cultivation practices

The results presented in Table 7 revealed that over one third (35.83%) of the chilli growers belonged to high technological gap category followed by exact one third (33.33%) of respondents who belonged to medium technological gap categories with mean technological gap scores of 30.90 and 21.42, respectively. While, 30.83 per cent of them belonged to low technological gap category, with mean technological score of 13.75.

4.3.2 Technological gap with respect to selected recommended package of practices

The information with respect to the technological gap for different practices of chilli cultivation is presented in Table 8:

Land preparation

Regarding land preparation, there was no gap observed. It means cent per cent of the farmers adopted all those basic necessary practices such as practices like summer deep ploughing and harrowing.

Recommended varieties

It could be seen from the Table that nearly one fourth (20.63%) of gap was observed in the recommended varieties. It means nearly (80.00%) of the respondents adopted the recommended varieties namely, byadagi and guntur.

Sowing time, seed rate and seed treatment

A further look at the data in the Table revealed that the highest percentage (95.83%) of technological gap found in the sowing time, followed by 82.50 per cent of technological gap observed in the recommended seed rate and more than half (50.83%) of the gap observed in the seed treatment.

Spacing

Further it was observed from the table that a relatively higher technological gap (67.50%) was observed with respect to recommended spacing.

Seed bed preparation, transplanting, seedlings per hill

It was observed from Table 8 that more than half of the gap (50.83%) was observed in the seed bed preparation, followed by method of transplanting (35.83%), use of seedlings per hill (35.00%).

Use of organic manures and fertilizer application

There was large technological gap (80.83%) was observed regarding in the use of recommended chemical fertilizers with respect to time and doses, and 42.08 per cent gap found regarding use of organic manures.

Use of growth regulator and weedicides

It could be observed from the Table that only one fourth (25.83%) of technological gap observed with respect to use of Planofix to induce flowering and prevent flower & fruit dropping. and relatively higher (85.00%) technological gap observed in the use of weedicides.

Plant protection measures

More than half (41.78%) of technological gap was observed in use of plant protection measures to control pests and diseases.

4.4 Constraints expressed by the respondents and suggestions for improving the adoption of chilli cultivation practices

A bird's eye view of Table 9 reflected various constraints expressed by the chilli growers

4.4.1 Input constraints

The major input constraints, encountered by the chilli growers were non availability of labours at critical stages & high wages (62.50%) followed by non availability of good quality inputs at proper price at right time (59.17%) and non availability of credit (27.50%).

4.4.2 Management constraints

With respect to management constraints, majority (51.66%) of the respondents quoted inadequate irrigation facility followed by high incidence of pests and diseases (45.00%).

4.4.3 Technical constraints

With respect to technical constraints, over half (78.33%) of the respondents expressed problem of price fluctuation, whereas, very few (8.33%) of the respondents was quoted lack of technical guidance.

4.4.4 Marketing constraints

Regarding marketing, over half (55.83%) of the chilli growers were expressed distance of market and high transportation cost, followed by 24.16 per cent and 19.17 per cent

of middlemen's threat in the market center and no proper storage structures nearby taluka places, respectively.

A further look at Table 10 reflected that suggestion given by the chilli growers for improving the adoption of chilly cultivation. The farmers suffering from social and economic problems in study area, to overcome these problems; some necessity measures are suggested as below.

It could be observed from the table that majority (86.67%) of the respondents suggested that minimum support price should be fixed for chilli followed by reduce labour problem by providing mechanized Agril. equipments (65.83%), supply good quality of inputs at right time (54.16%), provide Storage facility i.e. cold storages at hobli level (50.83%), provide technical guidance at right time (45.00%), establish rural markets at hobli / rural area (40.83%), reduce the middlemen's interference in marketing of chilli (35.83%), provide disease resistance varieties (30.83%), provide credit at low rate of interest (23.33%).

Table.1 Distribution of respondents according to their personal, socio-economic characteristics

n = 120

Category	Frequency	Percentage
1. Age		
Young (Less than 30)	29	24.17
Middle (Between 30-49)	73	68.33
Old (More than 50)	09	07.50
2. Education level		
Illiterate	31	25.83
Primary	13	10.83
Middle school	21	17.50
High school	26	21.67
Pre-university	15	12.50
Degree and above	14	11.67
3. Farming Experience		
Low (up to 8 years)	21	17.50
Medium (9-16 years)	37	30.83
High (17 and above)	62	51.67
4. Land holding		
Marginal farmers (up to 1 ha)	6	5.00
Small farmers (1 to 2 ha)	41	34.17
Medium farmers (2 to 4 ha)	36	30.00
Big farmers (>4 ha)	37	30.83
5. Annual income		
Low (Up to Rs 17,000)	3	2.50
Semi medium (Rs 17,000-Rs 34,000)	14	11.66
Medium (Rs 34,000- Rs 51,000)	15	12.5
High (Above Rs 51,000)	88	73.33

6. Material possession		
Low (Mean - 0.425*SD)	33	27.50
Medium (Mean ± 0.425*SD)	63	52.50
High (Mean + 0.425*SD)	24	20.00
Mean = 9.12		SD =8.68
7. Risk orientation		
Low (Mean - 0.425*SD)	61	50.83
Medium (Mean ± 0.425*SD)	43	35.83
High (Mean + 0.425*SD)	16	13.33
Mean = 3.53		SD =1.00
8. Cropping intensity		
Low	44	36.66
Medium	46	38.33
High	30	25.00
Mean = 45.02		SD = 27.72
9. Scientific orientation		
Low (<6.88)	33	27.50
Medium (6.88-8.72)	50	41.66
High (>8.72)	37	30.83
Mean = 8.47		SD = 1.92
10. Management orientation		
Low	40	33.33
Medium	38	31.67
High	42	35.00
Mean = 66.83		SD = 7.04

Table .2: Distribution of respondents according to their extension contact

n=120

Sl.No.	Extension contacts	When problem arises		Never	
		F	%	F	%
1	Farm facilitator	16	13.33	104	86.67
2	Horticulture assistant	26	21.67	94	78.33
3	Assistant Horticulture Officer	22	18.33	92	81.67
4	Scientists of Agri university or KVK	50	41.67	70	58.33
5	Private Agril. Extension Officer	10	8.33	110	91.67
6	Others (Progressive farmer)	67	55.83	53	44.17

Table.3: Distribution of respondents according to their extension participation

n =120

Sl.No.	Extension Activities	Participation		Extent of participation					
		Yes		Regularly		Occasionally		Never	
		F	%	F	%	F	%	F	%
1	Training	9	7.50	4	3.33	3	2.50	113	94.16
2	Demonstration	8	6.66	1	0.83	7	5.83	112	93.33
3	Field days	10	8.33	1	0.83	9	7.50	110	91.66
4	Field visit	6	5.00	1	0.83	5	4.16	114	95.00
5	Group meting	4	3.33	-	-	4	3.33	116	96.66
6	Agril exhibition	34	28.33	11	9.16	23	19.66	86	71.66
7	Krishi mela	94	78.33	52	43.33	44	36.66	26	21.66
8	Educational tours	7	5.83	3	2.5	4	3.33	113	94.16

Table .4: Distribution of respondents according to their mass media participation

n = 120

Sl. No.	Sources	Subscribed/ Possessed		Programmes	Frequency of use					
					Regular		Occasionally		Never	
		F	%		F	%	F	%	F	%
1	Radio	6	5.00	Agriculture	1	0.98	5	4.17	114	95.00
				General	3	2.50	5	4.17	112	93.33
2	TV	110	91.67	Agriculture	77	64.17	33	27.50	10	8.33
				General	79	65.83	31	25.83	10	8.33
3	News paper	58	48.33	Agriculture	35	29.17	15	12.50	70	58.33
				General	35	29.17	15	12.50	70	58.33
4	Magazine	4	3.33	Agriculture	1	0.83	3	2.50	116	96.67
				General	1	0.83	3	2.50	116	96.67
5	Mobile	70	58.33	Agriculture	54	45.00	12	10.00	54	45.00
				General	56	46.67	18	15.00	46	38.33

Table .5(a): Distribution of respondents according to their overall knowledge level about recommended chilli cultivation practices

n=120

Sl. No.	Categories	Frequency	Percentage	Mean score
1	Low (Less than mean – 0.425 SD)	38	31.67	12.95
2	Medium (Between mean ± 0.425*SD)	40	33.33	14.38
3	High (More than mean + 0.425 SD)	42	35.00	15.88
Mean = 14.41				SD=1.31

Table 5(b): Distribution of respondents according to the seedlings from the nursery management

n=120

Sl.No.	Seedlings from the nursery	Frequency	Percentage
	A. Use of Seedlings		
1	Seedlings from their own nursery	21	17.00
2	Bring seedlings from others nursery	68	56.67
	B. Direct sowing		
1	Dibbling	11	9.17
2	Sowing	28	23.33

Table 6: Distribution of respondents according to their practice-wise knowledge of chilli cultivation

n=120

Sl.No.	PRACTICES	Knowledge level	
		F	%
	A. Nursery management:		
1	Land preparation	112	93.33
2	Seed bed preparation	48	40.00
3	Seed rate	32	26.66
4	FYM application	53	44.16
5	Fertilizer application	46	38.33
6	Irrigation	86	71.66
7	Plant protection measures	96	80.00
	B. Main field cultivation:		
8	Land preparation ; Summer plough	118	98.33
9	Use of variety	107	89.17
10	Spacing	32	26.67
11	Sowing time	12	10.00
12	Seed rate	56	46.66
13	Transplanting	105	87.50
	a. Time of transplanting	71	59.17
	b. Age of seedlings	70	58.33
	c. Number of seedlings per hill	112	93.33
	d. Number of seedlings per acre	56	46.66
	e. Depth of transplanting	66	55.00

14	Intercropping	22	18.33
15	Irrigation	98	81.67
	a. Time of irrigation	71	59.17
	b. Frequency of irrigation	70	58.33
16	Fertilizer application		
	a. FYM	116	96.67
	b. Chemical fertilizer		
	N	88	73.33
	P	62	51.66
	K	56	46.66
	Time of fertilizer applied	93	77.50
	Quantity of fertilizer applied	112	93.33
	Use of micro nutrients	66	55.00
17	Use of growth regulators	116	96.67
18	Plant protection measures		
	a. Pests		
	Pod borer	88	73.33
	Thrips	96	80.00
	Mites	102	85.00
	b. Diseases		
	Murda complex	114	95.00
	Powdery mildew	106	88.33
	Wilt	22	18.33
19	Yield	120	100.00

Table 7: Overall technological gap about chilli cultivation practices

n=120

Sl. No.	Categories	Frequency	Percentage	Mean score
1	Low (Up to 19.10)	43	30.83	13.75
2	Medium (Between 19.11 to 24.56)	37	33.33	21.42
3	High (More than 24.56)	40	35.83	30.90
Mean = 21.43			SD=6.41	

Table 8: Distribution of respondents according to their practices-wise technological gap about chilli cultivation practices

n=120

Sl.No.	PRACTICES	TECHNOLOGICAL GAP
1	Land preparation	0.00
2	Recommended varieties	20.63
3	Sowing time	95.83
4	Use of Organic manure	42.08
5	Seed rate	82.50
6	Seed treatment	50.83
7	Spacing	67.50
8	Seedbed preparation	80.83
9	Seedlings per hill	35.00
10	Transplanting	35.83
11	Use of chemical fertilizers	80.83
12	Use of planofix	20.00
13	Use of weedicides	85.00
14	Plant protection measures	41.78

Table 9: Constraints faced by respondents in adoption of recommended practices in chilli cultivation

n=120

Sl.No.	Constraints	Frequency	Percentage
	A. Input constraints		
1	Non-availability of credit	33	27.50
2	High wages & non-availability labourers	75	62.50
3	Non-availability of good quality of inputs at affordable price	71	59.17
	B. Management constraints		
4	Inadequate irrigation facility	62	51.66
5	High incidence of pests and diseases & High cost of insecticides and pesticides	54	45.00
	C. Technical constraints		
6	Price fluctuation	94	78.33
7	Lack of technical guidance	10	8.33
	D. Marketing constraints		
8	Long distance of market	67	55.83
9	Middleman's threat at the market center	29	24.16
10	No proper storage structures nearby taluka places	23	19.17

Table 10: Suggestions given by respondents

n=120

Sl.No.	Suggestions	Frequency	Percentage
1	Minimum support price should be fixed	104	86.67
2	Provide Storage facility i.e. cold storages at hobli level	61	50.83
3	Water facility should provide throughout the year	58	48.33
4	Supply of good quality of inputs at right time	65	54.16
5	Reduce labour problem by providing mechanized Agril. equipments	79	65.83
6	Provide technical guidance at right time	54	45.00
7	Reduce the middlemen's interference in marketing of chilli	43	35.83
8	Establish rural markets at hobli / rural area	49	40.83
9	Provide credit at low rate of interest	28	23.33
10	Provide disease resistance varieties	37	30.83

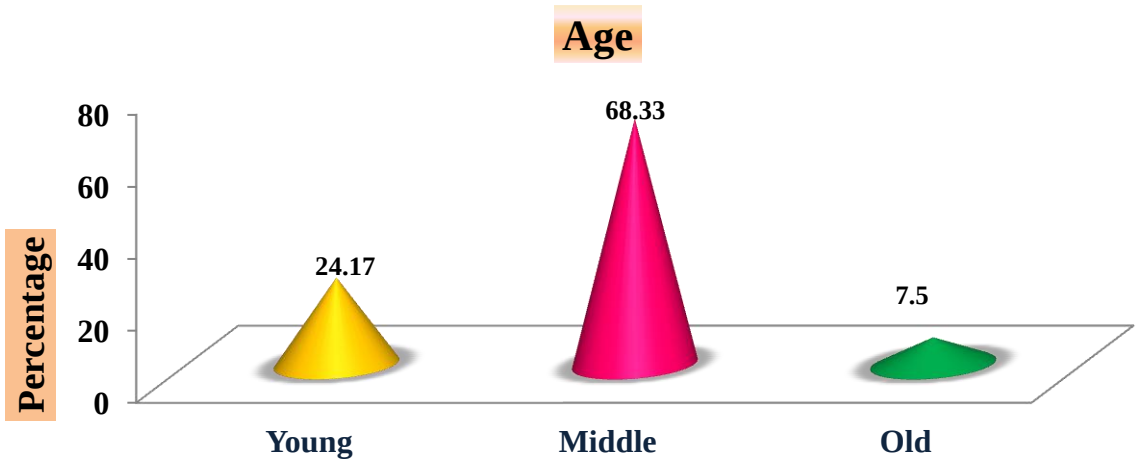

Fig. 2. Distribution of respondents according to their age

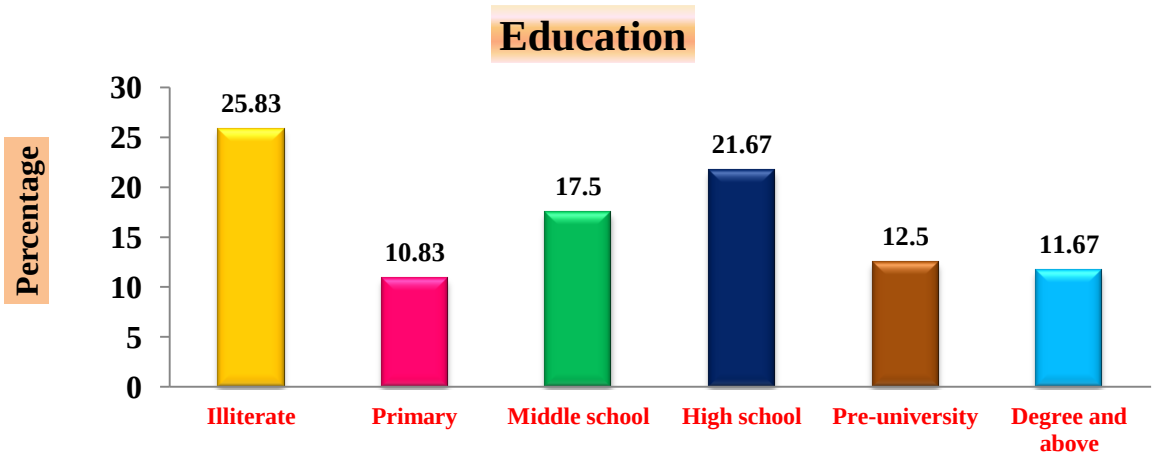

Fig. 3. Distribution of respondents according to their education

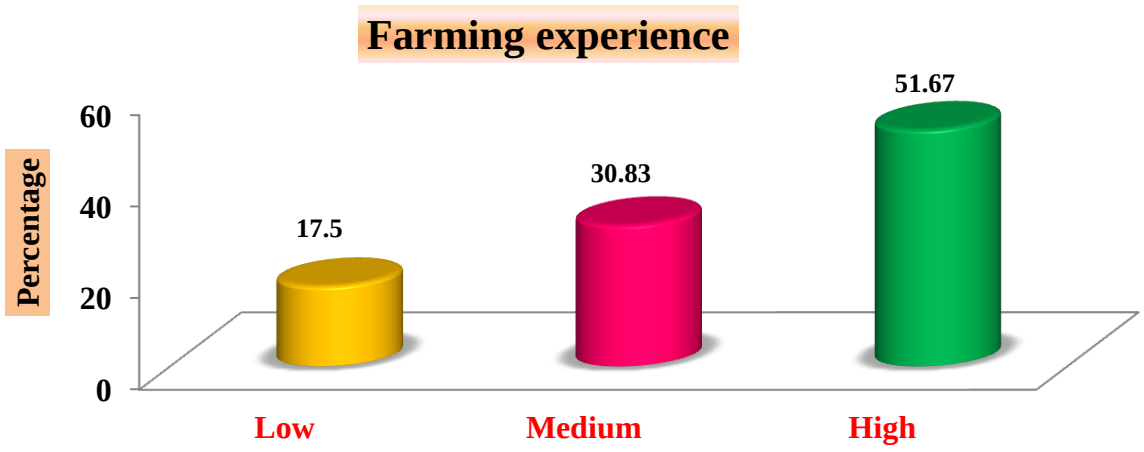

Fig. 4. Distribution of respondents according to their farming experience

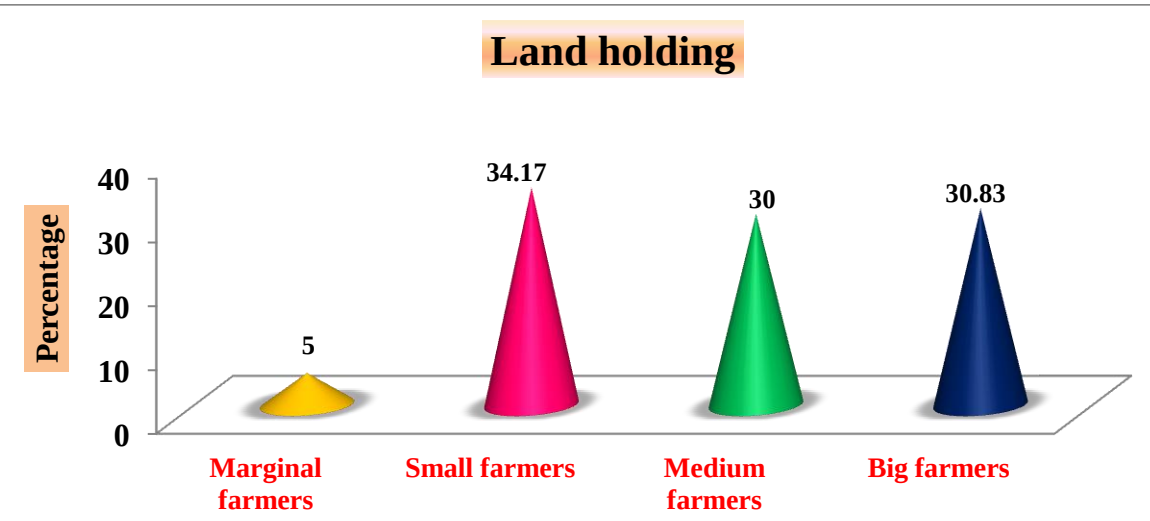

Fig. 5. Distribution of respondents according to their land holdings

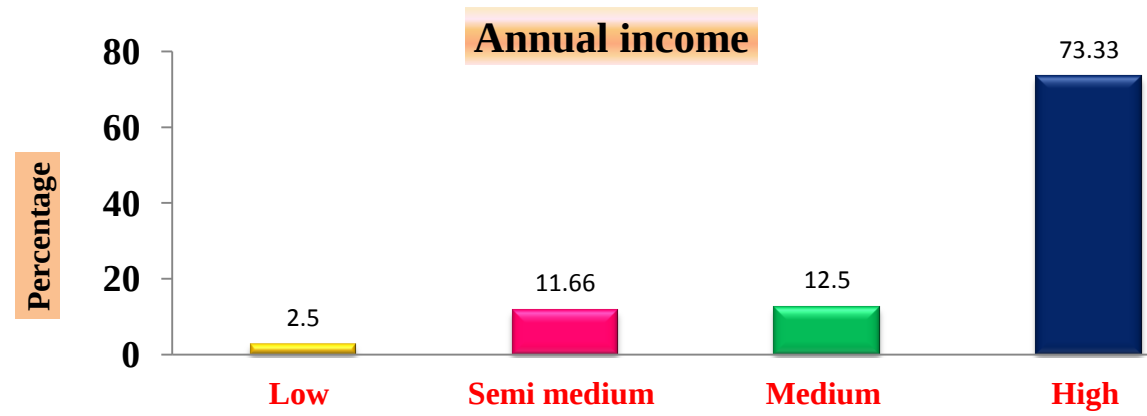

Fig. 6. Distribution of respondents according to their annual income

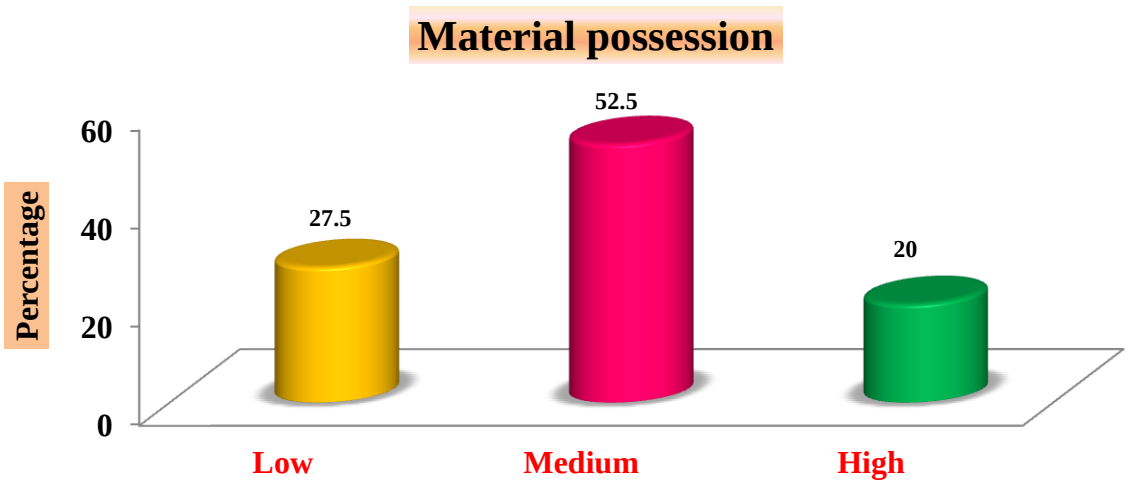

Fig. 7. Distribution of respondents according to their material possession

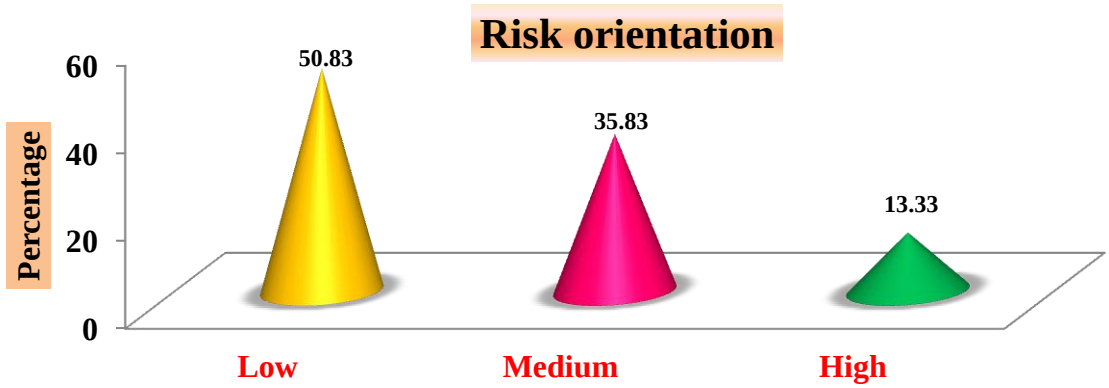

Fig. 8. Distribution of respondents according to their risk orientation

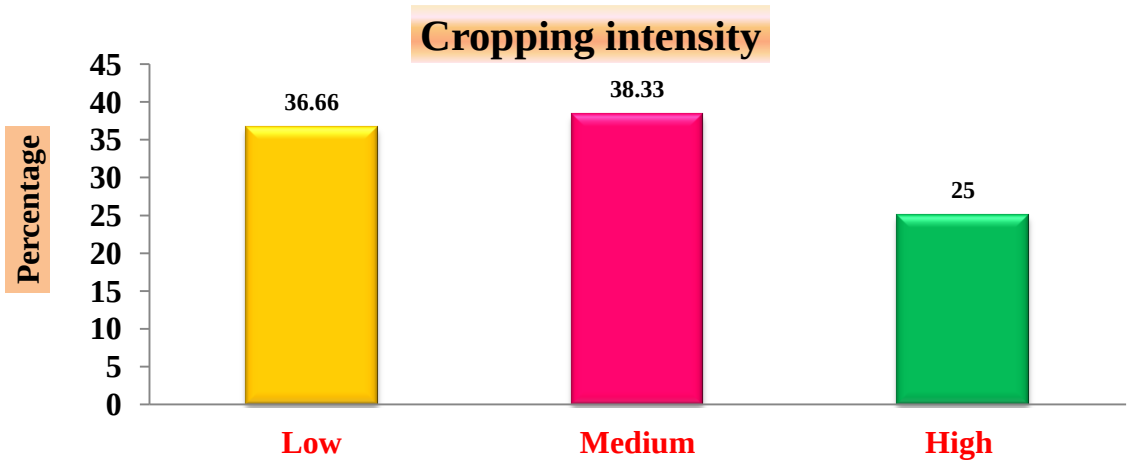

Fig. 9. Distribution of respondents according to their cropping intensity

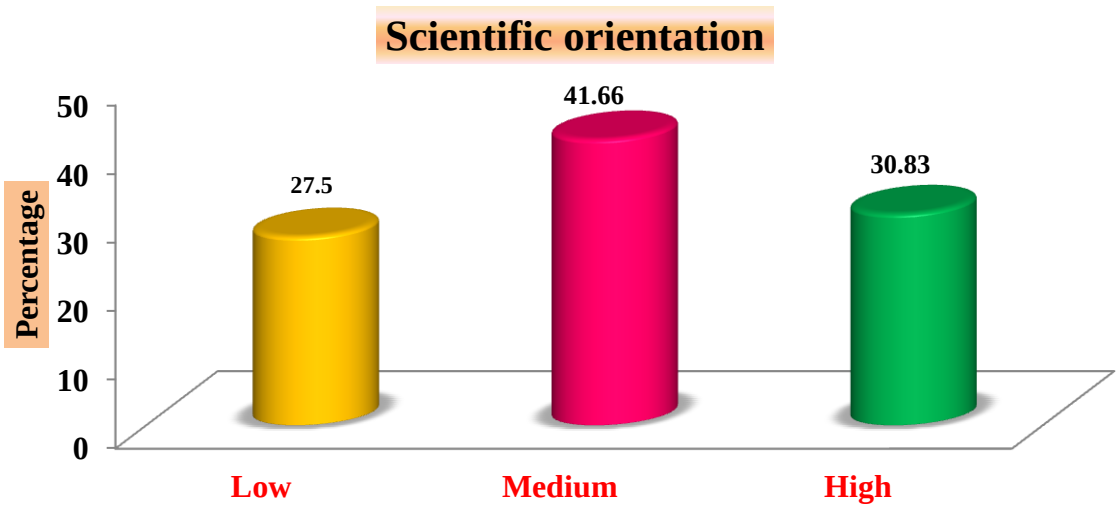

Fig. 10. Distribution of respondents according to their scientific orientation

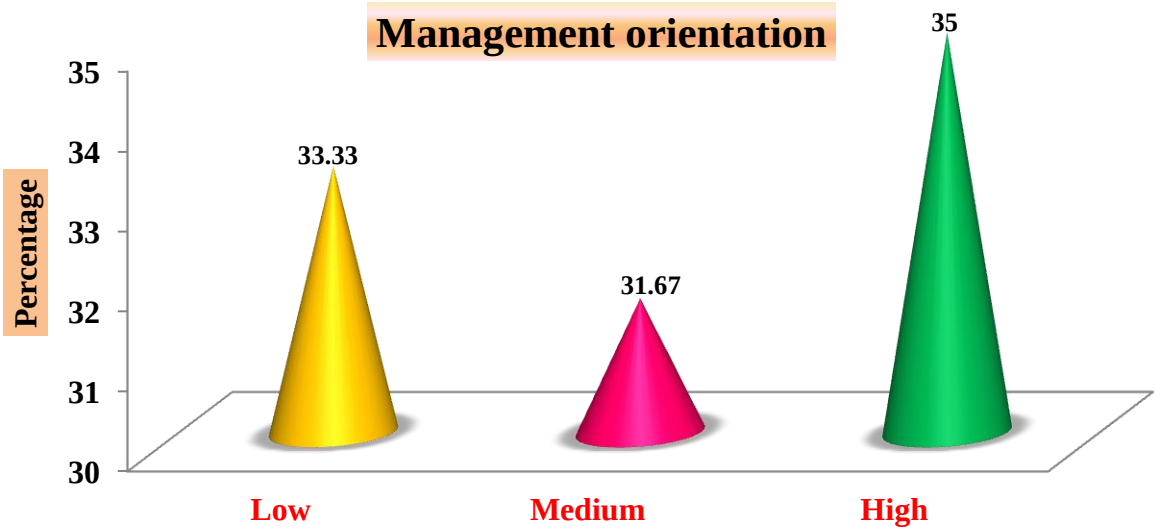

Fig. 11. Distribution of respondents according to their management orientation

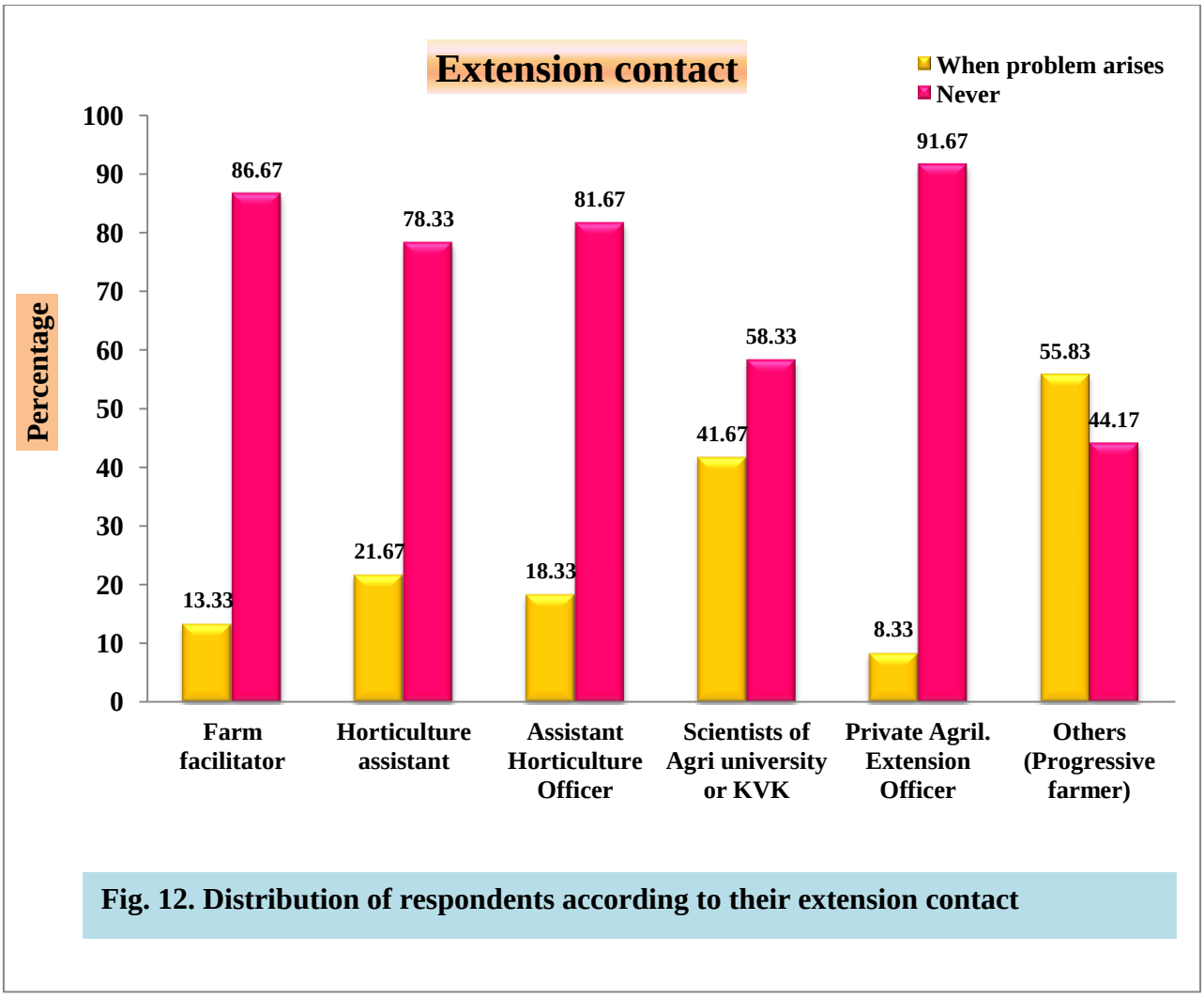

Fig. 12. Distribution of respondents according to their extension contact

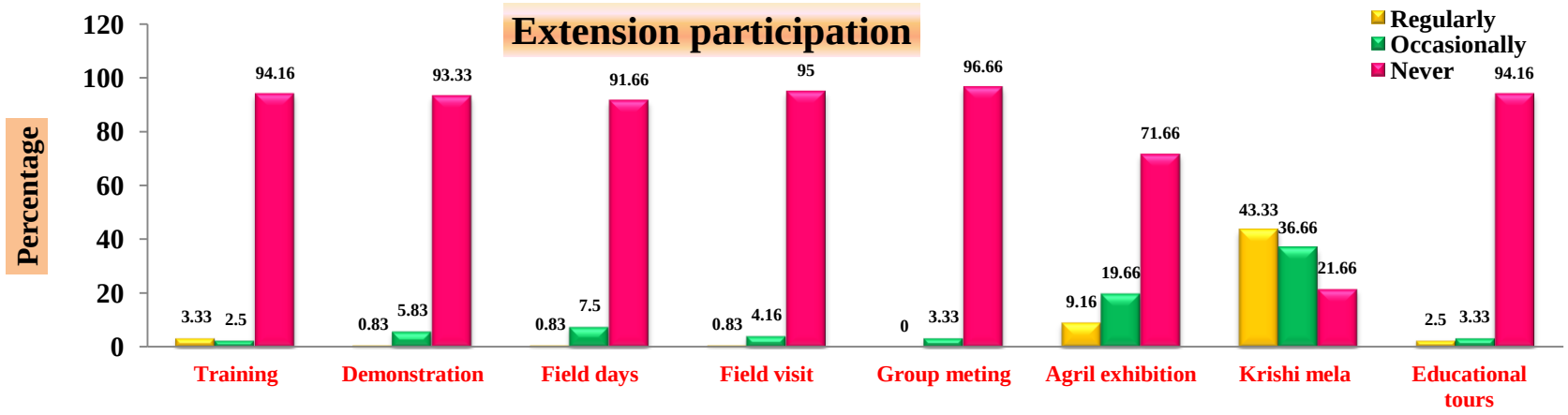

Fig. 13. Distribution of respondents according to their extension participation

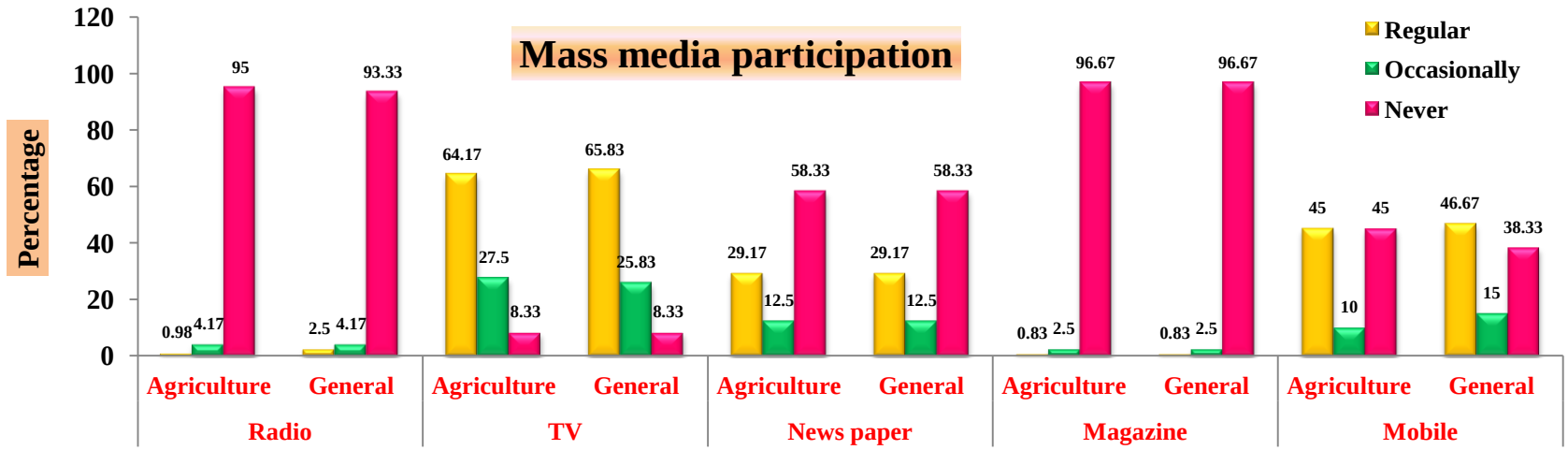

Fig. 14. Distribution of respondents according to their mass media participation

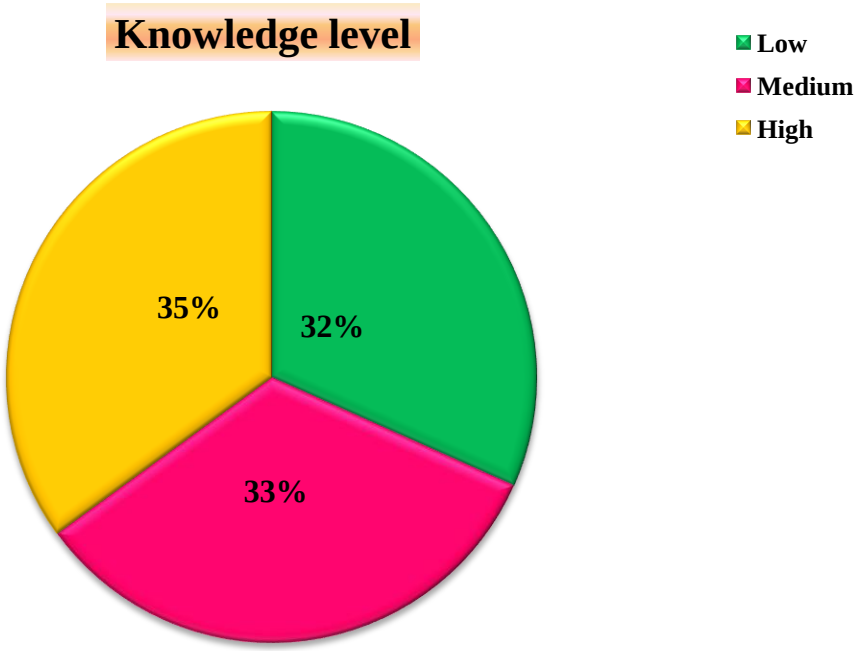

Fig. 15. Distribution of respondents according to their overall knowledge level about recommended chilli cultivation practices

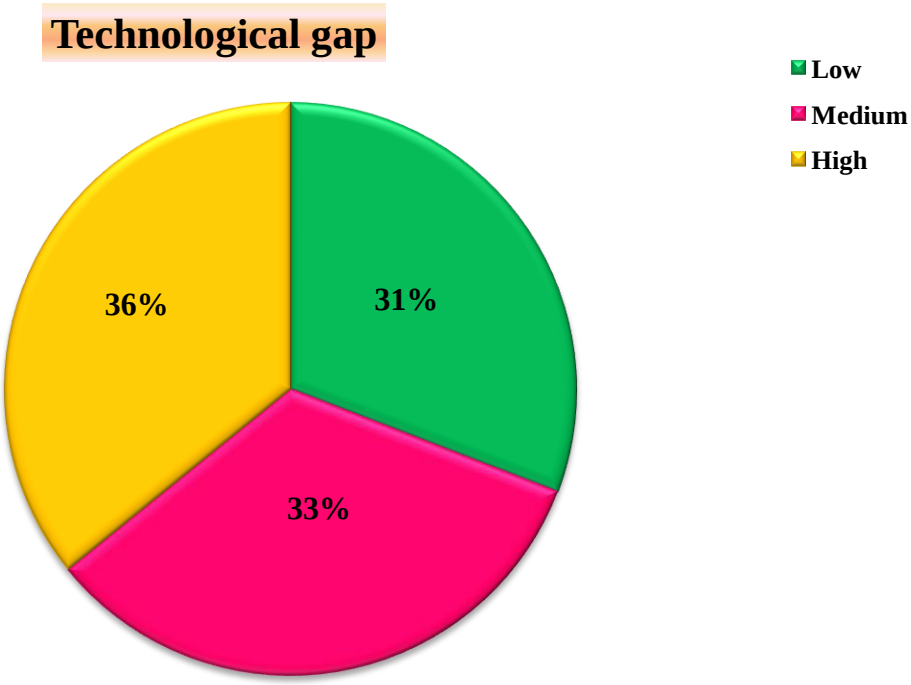

Fig. 16. Overall technological gap about chilli cultivation practices

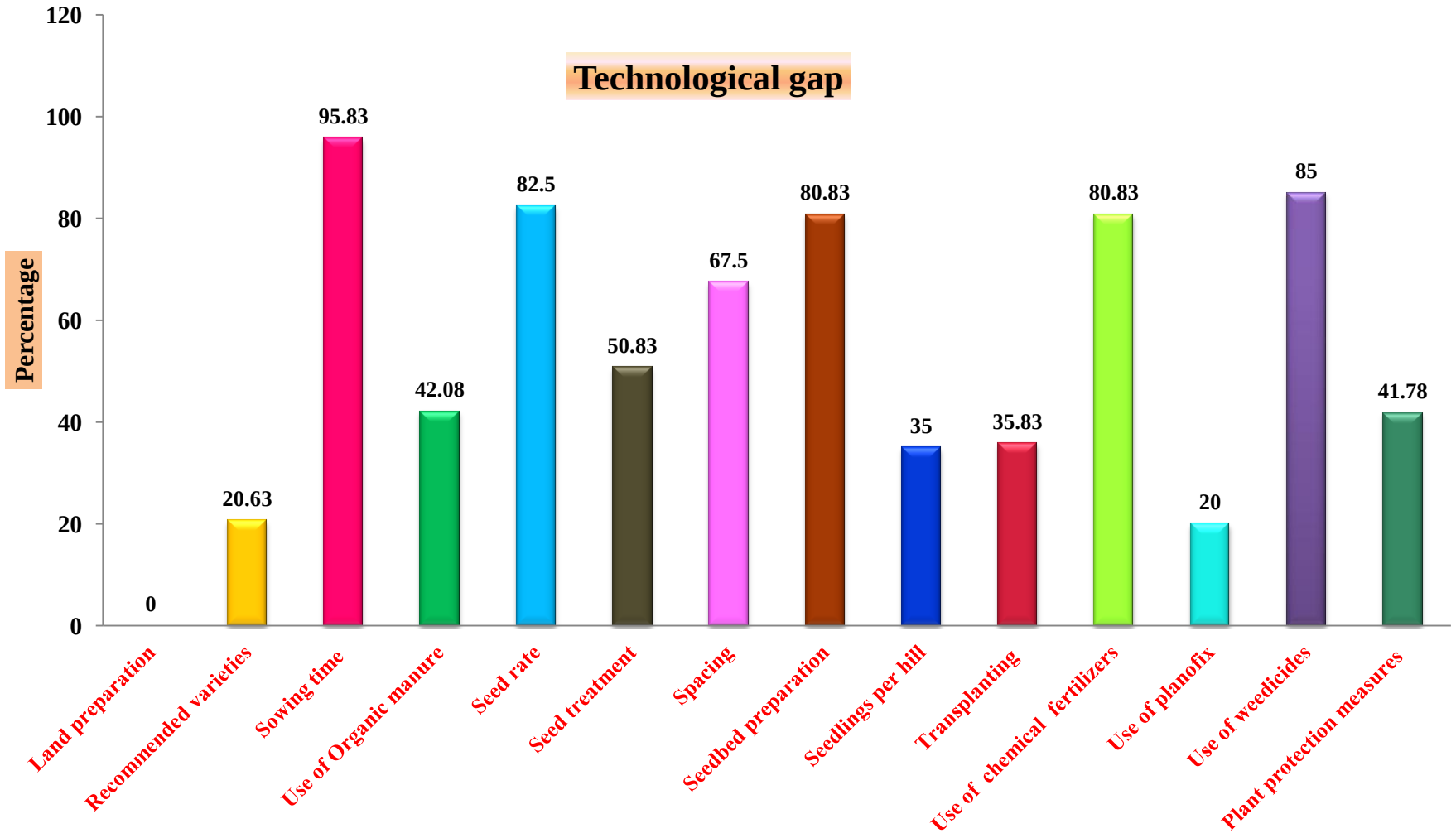

Fig. 17. Distribution of respondents according to their practices-wise technological gap about chilli cultivation practices

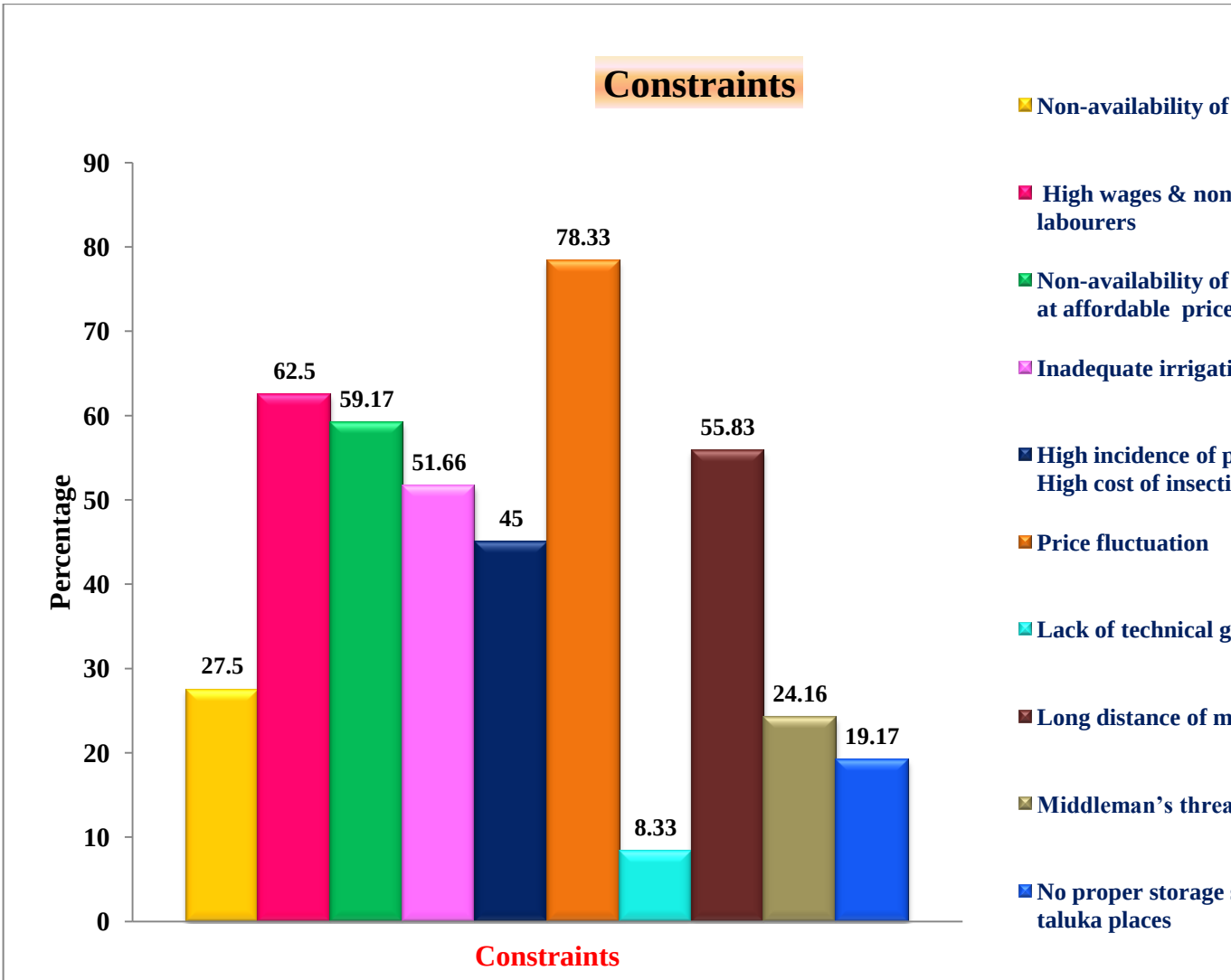

Fig. 18. Constraints faced by respondents in adoption of recommended practices i cultivation

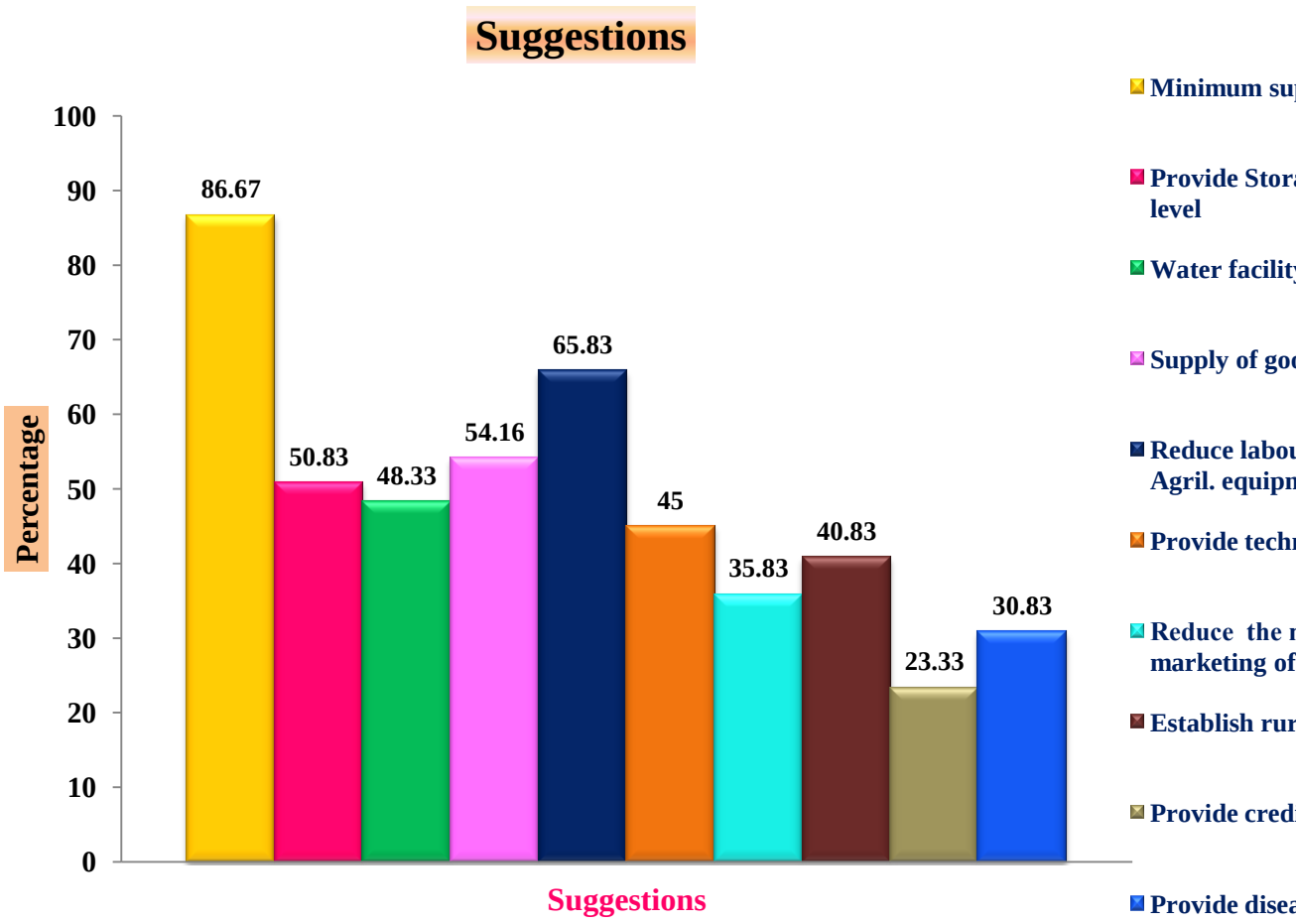

Fig. 19. Suggestions given by respondents

Discussion

V. DISCUSSION

The results presented in the previous chapter are interpreted and discussed in this chapter. The present results were also defended with the previous studies conducted in the field wherever required. The findings of the present study are discussed under the same headings as presented under results chapter.

5.1 Socio-economic profile of chilli growers

The data in Table 1 depicted the results with respect to the profile of chilli growers namely; age, education status, farming experience, land holding, annual income, material possession, risk orientation, cropping intensity, scientific orientation, and management orientation. Similarly data in Table 2 depicted results of extension contact, Table 3 extension participation and Table 4 mass media participation. The individual results of the each profile characteristics are discussed as under.

5.1.1 Age

The results pertaining to age presented in Table 1 indicated that majority (68.33%) of the respondents were middle aged. Followed by young age (24.17%).

Middle aged farmers are more enthusiastic had more knowledge and experience regarding cultivation practices of chilli. Generally this age group (between 30 to 49 years) farmers have more physical vigour, active in adoption of agricultural practices and also have more responsibility towards family than younger ones. Thus, most of the chilli growers were from middle age group that could be justified.

The above findings got support from the studies conducted by studies of Nagesh (2006), and Raghavendra (2007).

5.1.2 Educational status

In the present study, it was found that that one fourth (25.83%) of the respondents were illiterate and 21.67 per cent had high school education, followed by middle school (17.50%), PUC (12.50%), primary education (10.83%) and graduation and above (11.67%).

In general one fourth (25.83%) of the respondents were illiterates, this could be due to the rural people have still traditional base they generally do not prefer to send their children to school rather they want them to assist in farm and household activities.

The long distance between the villages and schools and lack of transport facilities may also be hindrances for better educational status.

Nearly three fourth (74.17%) respondents were educated; this could be due to need for education being slowly felt by people and also their awareness of importance of education to use other benefits in the society.

The results are in line with the findings of Jayale (1992) and Poshetty (2007).

5.1.3 Farming experience

A perusal of the Table indicated that majority of the chilli growers (51.67%) had high farming experience followed by medium (30.83%) and low (17.50%) farming experience.

Farming experience mainly depends upon age and education of the farmer. Majority of chilli growers belonged to middle aged and old age category and they might have started farming in their early age itself. So majority of respondents had medium farming experience. Since agriculture is the main occupation of large majority and the need of support of family members. The findings get support from the studies of Aski (2007).

5.1.4 Land holding

With respect to land holding, over one third (34.17%) of the chilli growers belonged to small farmers category followed by big farmers (30.83%), medium farmers (14.00%) and very negligible per cent (5.00%) of them belonged to marginal farmers.

Over one third (34.17%) of the chilli growers belonged to small farmers category this could be due to fragmentation of ancestral land from generation to generation because of increased population day by day might have led to smaller size of land holdings. However, 30.83 per cent of the respondent who had land holding above 10 acres. The possible reasons that could be attributed to this were those who had agriculture as the main occupation of the family almost depended on their land for their livelihood. Since the size of land holding will be generally high in dry areas. This finding was in line with the findings of Raut (2006), Gotyal (2007).

5.1.5 Annual income

The data presented in Table 1 indicated that a majority of the chilli growers (73.33%) belonged to high annual income (> Rs. 51,000). The possible reason could be due to large size

of land holdings, increased irrigation facility compare to older days and growing of chilli is profitable, when price is good at market which ensures higher income because last year price of chilli was more than 8,500.00 quintal.

Whereas 12.50 per cent of chilli growers were in medium annual income of Rs. 34,000.00 to 51,000.00, followed by only 11.66 per cent were in semi medium category of Rs. 17,001.00 to Rs. 34,000.00 and very negligible percentage of respondents (2.50%) belonged to low income category i.e. up to Rs.17, 000.00. This could be due to the family background of the respondents. the other reasons was small land holding, lack of technical guidance about chilli cultivation and low risk taking ability leading to low income.

This finding was in line with the findings of Thiranjan Gowda (2005), Raghavendra (2007) and Thippeswamy (2007).

5.1.6 Material possession

The data in the Table revealed that more than half (52.50%) of the respondents belonged to medium followed by low (27.50%), high (20%) material possession.

This might be due the nearly three fourth of the respondents belonged to high income category. Also to have status in society, now a day the materials such as television, mobile, motor cycle have become essential than luxury.

5.1.7 Extension contact

The results presented in Table 2 clearly reveals that 67.50 per cent of respondents had low extension contact because 25.83 per cent of farmers were illiterate, and regarding contact of farmers with extension personnel, during cropping season, 58.33 per cent of the respondents contacted local progressive farmers whenever problems occurs. This could be due to the reason that the progressive farmers had more knowledge and venturesome. They also encourage adopting new technologies apart from their availability. And also the need to get information on technological and agriculture programmes.

The per cent (41.67%) of the respondents contacted the University Scientists, whenever problem occurred, because they provided good technology and solution to the problems at when consulted and less per cent (8.33%) of the respondents contacted private agriculture extension officer when problem arises. The possibility of getting information from

informal sources and non-availability of extension workers at time of farmers call might be the possible reasons for the situation.

The one fourth (21.67%) of the respondents contacted the horticulture assistant whenever problem arises because this might be due to the farmers who were beneficiaries under the scheme of Department of horticulture, Govt. of Karnataka. also less per cent of respondents contacted farm facilitator because their easy access. In view of this concerned extension agencies should take utmost measures to strengthen extension workers and their capacity building for solving the problems of farmers.

The above findings were in accordance with the findings of study conducted by Aghazia (2008).

5.1.8 Extension participation

The data in Table 3 indicated that the participation of the respondents in the extension activities like, krishimela, agricultural exhibitions, and field days were 78.33%, 28.33% and 8.33% by the chilli growers respectively.

Regarding the extent of participation in the extension activities, over forty (43.33%) of the respondents participated regularly in krishimela, only (9.16%) in agriculture exhibition, because the study area near to Agriculture University, so farmers participate in these activities and possible reasons might be because there will be room for exposure to new agricultural technologies and better place to acquire more knowledge in short period. The findings were in agreement with the findings of Angadi (1999).

The results implied that the participation in various extension activities other than above were low because of lack of motivation, less interest and low educational level of the respondents might be the reason for the low participation in the extension activities. Extension participations are very important through which farmers can update their knowledge about chilli cultivation and which can increase knowledge & adoption level and reduces technological gap.

The above findings were in accordance with the findings of study conducted by Srinivasreddy (1995).

5.1.9 Mass media participation

More than one third (41.67%) of the chilli growers had low mass media participation and nearly one third (35.00%) of them belonged to high mass media participation category. It

might be due to the reason that majority of the respondents possessed television and had high to medium educational level and sound economic status of the chilli growers.

The data in Table 4 pertinent to mass media participation of the chilli growers revealed that 91.67 per cent of the chilli growers possessed the television. The regular watching behavior of the respondents was found to be 64.17 and 65.83 per cent of the respondents with respect to agricultural and general programmes. TV has become more popular obviously for the reasons that it has both audio and visual effects, it has become affordable to all. The other reason may be that the watching behavior of TV depends on individuals interests.

Majority of the chilli growers (48.33%) subscribed news paper. Out of total that more than one fourth (29.00%) and nearly one third (30.00%) of the respondents were regularly reading agricultural and general information, respectively, whereas, 12.50 per cent and 16.00 per cent of the respondents were occasional readers. Because it's an easier way to have access to more valuable information at shorter period and less costly. Builds more contacts and also time saving.

Regarding subscription of news paper, 48.33 per cent of the respondents subscribed the newspaper, which means that they have habit of reading newspaper in the tea shops and remaining per cent of farmers were do not have habit of reading news paper this could be due to lack of interest.

This finding was in line with the findings of Thangavel *et al.* (1996).

5.1.10 Risk orientation

In the present study, it was found that half (50.83%) of the respondents had low risk taking ability, followed by (35.83%) with medium and (13.33%) with high risk taking ability categories. The possible reason that high cost of chilli cultivation requires more money and price fluctuation was more, so farmers feared to take risk hence; more number of respondents was found to have low to medium risk orientation. As it is a cash crop it might have prompted the respondents to take calculated risks, which might have resulted in more than half of the respondents belonged to medium risk orientation category (35.83%).

Similar result was reported by Vijaykumar (2001) and Chandramouli (2005).

5.1.11 Cropping intensity

It was evident from Table 1 that medium cropping intensity was exhibited by 38.83 per cent of chilli growers, followed by low cropping intensity (36.67%) and high cropping intensity (25.00%) per cent.

The incidence of medium cropping intensity might be due to more dependence on canal water and the dry land nature of farming in the study area. And farmers were not knew benefits of cropping intensity.

Similar results regarding cropping intensity were observed in findings of Patil (1990) and Maraddi (2006).

5.1.12 Scientific orientation

The result shown in Table 1 revealed that, majority (41.67%) of the chilli growers had medium scientific orientation whereas, 30.33 per cent and 17.50 per cent of them had high and low level of scientific orientation respectively.

The possible reason could be Scientific orientation is the orientation of farmer to adopt new technologies in a scientific way. This might be due to the willingness to take risks partly. chilli being a traditional cash crop, respondents were found to be equally adopting traditional and conventional methods been observed in major chilli growing areas due to unscientific usage of irrigation.

These results are in line with the results of Sakharkar (1995) and Maraddi (2006).

5.1.13 Management orientation

It could be observed from Table 1 that over one third (35.00%) of the respondents belonged to high management category followed by exact one third (33.33%) with low and near one third (31.67%) with medium management oriented.

This warranted better management of management orientation on the part of chilli growers in the utilization of water, land, improved cultivation practices and the overall efficiency of farm management.

5.2 Knowledge level of the respondents about chilli cultivation

5.2.1 Overall knowledge level of respondents about chilli cultivation

The data presented in Table 5.a revealed that over one third (35.00%) of the chilli growers had high knowledge level about recommended practices of chilli cultivation

with a mean score of 15.88 whereas, 33.33 per cent and 31.67 per cent of respondents had medium and low knowledge levels with mean knowledge scores of 14.38 and 12.95, respectively.

Majority of respondents possessed television sets, and belongs to middle age category. When analysis of mass media was made, most of respondents participated in extension activities like krishimela (78.33%) followed by agricultural exhibitions (28.33%). These factors might have contributed to possess medium level of knowledge of chilli cultivation practices.

It is a fact that, every year there are additions or improvements over previous practices due to continuous research in agriculture. Under such circumstances, farmers to cope up with the improvement in the improved cultivation practices of chilli. This might be one of the probable reason for majority of farmers to fall in high and medium knowledge category.

5.2.2 Knowledge level of the respondents according to their individual practices of chilli cultivation

Nursery management

An appraisal of Table 6 revealed that cent per cent of the respondents had knowledge about the land preparation, because farmers know the importance of soil health and soil tilth. One fifth of the respondents (20.83%) and (18.33%) of respondents had knowledge of nursery seed bed preparation and size of the seed bed, respectively. And equal per cent of respondents had knowledge about FYM and fertilizer application. Only (15.83%) of the farmers were aware of the seed rate, 16.67 per cent of the farmers had knowledge about the irrigation and plant protection measures in the nursery management.

The data in the Table 5.(b) nearly one fifth (17.00%) of the farmers were following the nursery management on their field for raising seedlings, this may due to lack of correct knowledge and lack of technical guidance regarding nursery management. Remaining over half (56.67%) of the farmers brought seedlings from the other nursery, followed by direct sowing (23.33%), dibbling (9.17%)

The reason behind this could be that majority of the respondents brought seedlings from the other nursery, and also lack of complete knowledge about nursery management.

In case of main field preparation

Cent per cent of the farmers had knowledge about of land preparation; summer deep ploughing, and 89.71% & 26.675 of the farmers had correct knowledge about recommended varieties and spacing, respectively.

Most (93.33%) of the respondents had correct knowledge of seedlings per hill, the recommended age of seedlings was known to 58.33 per cent of the respondents and more than half per cent of the respondents had knowledge about depth of transplanting, nearly sixty per cent (55.00%) of respondents had knowledge of time of transplanting. Therefore more than half of the respondents found to have knowledge about these basic practices.

Less than one fifth (18.33%) of the farmers knew about the practice and importance of intercropping. Because farmers did not know importance of intercropping and lack of knowledge, low extension contact followed by mass media participation, low risk taking ability, respectively in the study area.

With respect to water management, near sixty per cent (59.17%) and (58.33%) each of them had correct knowledge about time of irrigation and frequency of irrigation, respectively. Because they importance of irrigation i.e. once in 10-15 days in case of black soil because of its more water holding capacity and once in 6-7 days in case of red soil.

Large majority (96.67%) of the respondents had knowledge about quantity of FYM application and time for application of FYM, respectively. Since this is the traditional practice and farmers know that enables the FYM to gradually penetrate and mix with the soil for congenial soil texture for better growth and development.

With regards to recommended doses of chemical fertilizers applications, respondents had knowledge of 73.33%, 51.66%, and 46.66% about recommended N, P, and K, respectively. Followed by 77.50%, 93.33% of the respondents had knowledge regarding time of fertilizer applied, quantity of fertilizer applied, respectively. And also fifty five per cent of the farmers had correct knowledge of use of micronutrients. Because majority of the farmers belonged to farming families and they had low to high farming experience.

Further the result also revealed that majority of the respondents had correct knowledge about pests, diseases and their control measures. 73.33 per cent of the farmers knew about NPV (250LE) or corogin 250ml/acre which was used for pod borer control, 80.00 per cent of

the farmers did know the 1gm Acephate 75 SP/ lit of water for control of thrips. Similarly, 85.00 per cent of the farmers did know about the 2.5ml Dicofol for army mites.

Regarding diseases, large majority (95.00%) of the farmers had the knowledge about confider or admire in case of murda complex, whereas 88.33 per cent of farmers had the knowledge about Bavistin for powdery mildew control and 18.33 per cent the farmers had the knowledge about wilt and their control.

The reason may be that the chilli is an important crop grown by farmers in this region. The attack of pests and diseases is also said to be more in chilli. Hence, farmers have better knowledge about chilli cultivation practices, pests and diseases to overcome problem for getting higher yields.

With respect to yield, cent per cent of respondents had correct knowledge about the yield that can be obtained from one acre of land. The reason could be due to the fertile soil and followed good cultivation practices by the farmers.

It is logical to derive from the above discussion that the practices which are complex and difficult to remember are moderately known to farmers. On the other hand, the practices which are simple and are traditionally practiced are known to majority farmers.

The present findings were in accordance with the results reported by Kanavi (2000) and Budihal (2001).

5.3 Technological gap in recommended chilli cultivation practices

5.3.1 Overall technological gap in chilli cultivation

The results presented in Table 7 revealed that over one third (35.83%) of the chilli growers belonged to high technological gap category followed by one third (33.33%) of respondents who belonged to medium technological gap categories. While, 30.83 per cent of them belonged to low technological gap category.

Knowledge limits the action of the individual as it is the basic for any individual to think of pros and cons in making a decision to adopt or reject a practice, hence this may be the probable reason for relatively higher percentage of the respondents to fall under low technological gap category this might be due to unscientific cultivation practices followed by

them and farmers belonged to medium to high knowledge possessed by majority of the respondents.

Distribution of more respondents in high technological gap might be due to lack of knowledge about improved cultivation practices. Since, it is relatively new concept of farming and there use no standardized package of practices developed either by Agricultural Universities/ ICAR /ARS institutions resulting in less dissemination of improved cultivation technology which inturn affected the adoption of these practices by the chilli growers.

The finding was in conformity with the results of Ranish *et.al*. (2001).

5.3.2 Technological gap with respect to selected recommended package of practices

The information with respect to the technological gap for different practices of chilli cultivation is presented in Table 8:

Regarding land preparation, there was no gap observed. Because farmers well knowing about the importance of the land preparation.

The similarity of practice might have tempted the farmers to learn these practices. The other reasons that could have contributed to the fact is that chilli is a commercial crop and being grown over a period of time in the area and farmers are familiar with these practices, which neither requires special skills nor much investment to know. Moreover, cent per cent of the respondents were found to have experience of more than seven years. It was further observed that cent per cent of respondents had knowledge of preparing the land.

This finding gains support from the findings of Kumarswamy (2001) and Goud (1998).

It could be seen from the Table that there was one fourth (20.63%) of technological gap observed in the recommended varieties. farmers use the other than recommended varieties because of their higher yield comparatively than the recommended.

It means nearly (80.00%) of the respondents adopted the recommended varieties namely, Byadagi Kaddi, Byadagi Dabbi and Dyavanoor local as there are the popular varieties mainly grown in many districts of Karnataka. Byadagi Kaddi variety is more popular in north Karnataka because of its mild pungency, high coloring material and its performance under rainfed conditions besides high export potential. It is also best suited to the soils prevailing in this area and has got high market value compared to other varieties. It has gained

name in the international market. Exhaustive research work on agronomic aspects of chilli seed production has been done.

A further look at the data in the Table revealed that the highest technological gap was found in the sowing time (95.83%). This could be due to canal water comes in the month of June – July but recommended is Oct – Nov month.

Over one third (38.23%) gap found in use of organic manures, Less than half (42.08%) of the respondents did not apply FYM as recommended. The reason for lesser application of manure was non-availability of required quantity FYM in the village. The reason attributed by them was non-availability of FYM. It was observed in the study area that cattle population was declining over the years due to high cost of their maintenance, hence resulting in reduced availability of FYM. The quantity produced FYM might not be sufficient to meet the individual's requirement.

Further it was observed that gap in the spacing was 67.50 per cent and 32.50 per cent of respondents adopted as per recommendation. The possible reason might be that in chilli cultivation the inter cultivation practices like harrowing, earthing up and weeding are very important operations for higher yield. Spacing is an important practice which decides the number of plants per acre in turn the yield level; hence farmers should be educated about the recommended spacing and its advantages.

Relatively higher gap (82.50%) was found in the recommended seed rate. It was observed that most farmers do not know the recommended seed rate and also they were using some traditional methods of using from 6kgs of dry chilli fruits from that they get 2kgs of seeds for sowing, etc. to measure the seed quantities. A few who knew the recommended seed rate were negligent. Sometimes when a specific seed variety is in demand, short supply and high cost might have forced the farmers to adopt a lesser seed rate. The reason attributed was cost of seed is high which might have forced to adopt lesser seed rate, while over adoption of this practice was noticed with the major reasons attributed were Lack of knowledge and more seed required to avoid risk of poor plantation.

Technological gap found in the seed treatment is as 50.83 per cent and 49.17 per cent of respondents were practicing seed treatment on their own because they felt that it reduces the pest and disease attack. And also farmers although knew the importance of seed treatment

but were not aware of the technical knowhow involved in it. Major reasons attributed were lack of knowledge and no significant effect on yield.

In Transplanting there was 35.83 per cent gap observed, reasons were lack of knowledge, sowing is easy method because harvest can done single time itself, usually followed by small farmers.

Two to three seedlings per hill was not adopted by the all chilli growers so gap in the seedlings per hill was 35.00 per cent , The major reasons attributed were lack of knowledge and lack of conviction by the respondents.

From table 2 we can observe that over one fourth (25.68%) technological gap observed in use of planofix. Because of lack of knowledge others respondents not used.

There was highest technological gap in the use of weedicides (85.00%), the major reasons expressed were lack of knowledge, fear about crop loss. So they follow hand weeding only. And 80.83 per cent of gap observed in the Seed bed preparation. Because lack of technical knowhow of preparation of seed bed, so they bring from outside.

More technological gap observed in use of chemical fertilizers (82.50%), because majority of the chilli farmers had applied nitrogen, phosphorus and potassium fertilizers more than recommended quantity, respectively. The reason given by the respondents for this behavior was that more fertilizer would give more yields. Also many respondents did not have the correct knowledge about the recommended fertilizer dosage. Possible reason for over adoption of all the three (N, P and K) fertilizers might be lack of knowledge, most of them believed that application of recommended quantity of N,P,K fertilizer was not sufficient to get the expected yield and hence over adoption.

It found that 48.17 per cent of technological gap in the plant protection measures, Application of pesticides and fungicides were over adopted by 52.77 per cent of respondents. The common tendency prevailing among the farmers was that higher doses chemical spraying leads to better control of pest and disease effectively. This might be the probable reason to go for more number of sprays. In addition to this most of the chilli cultivators did not have the correct knowledge about the chemical application. Most of the respondents adopted more than recommended number of chemical sprays and higher dosage of spray concentration. The only reason attributed for this was fear of crop loss.

5.4 Constraints expressed by the respondents of chilli cultivation

Table 9 reflected Constraints expressed by the chilli growers in the areas of inputs, management, technical, and marketing.

5.4.1 Input constraints

Non availability of labours at critical stages & high wages (62.50%), this could be due to migration of labours to nearby industrial cities and most of the young generation gets engaged in non agricultural operations. High wages of labourers was a problem to be related directly to the non availability of labour as the shortage of any goods escalates its cost. The labour availability become scarce at peak periods as almost all the farmers require the labour at the same time.

Non availability of good quality inputs at proper price at right time and at proper price (59.17%) were the constraints expressed in adoption of recommended cultivation practices of chilli with respect to the input. this could be due to the high cost of inputs due to lack of subsidies on fertilizers pose a constraint to chilli cultivation. The cost of fertilizer might not correspond with the profit they obtain by selling their produce resulting many expressing it as a major constraint. The need to purchase fertilizers is time bound and due to steep demand for it at a time, the market might not be able to respond equally resulting in shortage or non availability of it.

Non availability of credit (27.50%), this could be due to the procedural complexities involved in getting loan might discourage many farmers to avail loan and also lack of knowledge about banking system.

5.4.2 Management constraints

Regarding constraints related to management, 51.66 per cent of the respondents quoted inadequate irrigation facility and high incidence of pests and diseases (45.00%) as major constraints.

The reason for this was that the irregular supply of canal water, less rains and drying up of bore wells which was observed in study area, in case of tail end farmers and invariably depends on the canal water resources.

And the next priority constraint faced by 45.00 per cent of the respondents was high incidence of pests and diseases like mites, thrips, murda complex, powdery mildew etc. It was found that since last a few years the chilli crop was severely damaged by these pests and disease.

5.4.3 Technical constraints

Price fluctuation was the main technical constraint as expressed by the respondents (78.33 %), because the price of chilli depends upon various factors like consumers demand, export and import in national and international market, quantity of production and consumers surplus. Due to the changes in above factors, the price of chilli fluctuating to a greater extent.

Whereas, very less respondents (8.33%) quoted lack of technical guidance and negligence by Govt. Agriculture departments as another important technical constraint. This could be due to Non-availability of desired number of chilli experts within study area and lack of competency in field extension personnel resulted in perception of this problem.

5.4.4 Marketing constraints

The major marketing constraint was long distance of market and high transplantation cost expressed by the respondents (55.83%), 24.16 per cent and 19.17 per cent of respondents expressed about problems faced by the middlemen's and there are no proper storage structures nearby taluka places, respectively.

This could be due to there is no chilli market nearer to the study area, very less number of storage facility, transportation cost is huge, and also middleman's were giving more problems.

The present findings were in accordance with the results reported by Bhogal (1994), Saravanakumar (1996), Kumar (1998), Gowda (2002), Raghavendra (2007), Wondangbeni (2009), and Rajashekhar (2009).

Table 10 reflected that suggestions given by the chilli growers for improving the adoption of chilly cultivation.

Minimum support price should be fixed: majority of the respondents (86.67%) suggested that there should be a fixed price for chilli. There was lot of price fluctuation compared to last few years. For example last price was above 8500/- but this year less than 5000/-.

Availability of good quality of inputs at right time: 54.16 per cent of the respondents suggested that should provide good quality of inputs at right time at proper price. Good quality of seeds has better germination, and gives better yield. And also availability of inputs at right time plays a very good role.

Storage facility i.e. cold storages nearby hobli level: more than one third of the respondents (50.83%) were suggested that there should be construct good numbers of cold storage facilities created nearby hobli. Because of lack of storage facility would have sold their produce at lower price. Storage facility helps them to store the produce and can sell when price better.

Water facility should provide throughout the year: nearly half (48.33%) of the respondents suggested because canal water was not available throughout the year so it's not possible to get more number of crops.

Provide technical guidance at right time: more than forty (45.00%) of the respondents suggested because technical guidance should need for nursery raising, seed treatment and spreading of pesticides & fertilizer by the experts. It helps to save money in turn there will be more profit.

Establish rural markets at hobli / rural area: more than half (40.83%) of the respondents suggested. To reduce transportation cost, to avoid threats from middlemen's activity. It helps to store produce and sell when price will be better in the market.

Reduce the middlemen's interference in marketing of chilli: nearly one third (35.83%) of the respondents suggested that should be control over the middlemen's interventions or threat in the market. Because farmers were facing lot of threats from the middlemen's.

Provide disease resistance varieties: less than one third (30.83%) of the respondents suggested because they need little pest and disease control measures so it contributes more to farmers.

Provide credit at low rate of interest: near one fourth (23.33%) of the respondents suggested that credit problem, because money is the main source to buy inputs. It is difficult to get money at lower rate of interest at the time of indeed.

Plate.1. Method of packaging after immediate harvest

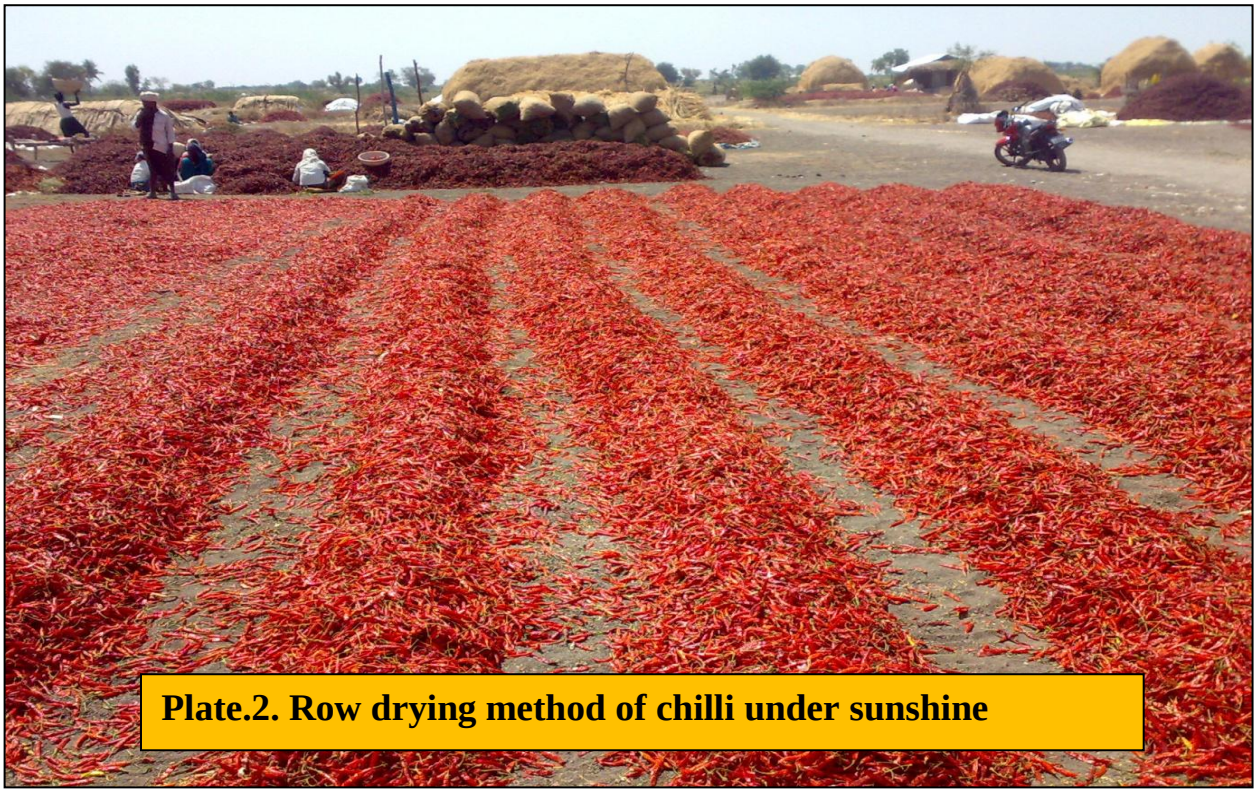

Plate.2. Row drying method of chilli under sunshine

Plate.3. Traditional method drying of red chilli under sunshine

Plate.4. completely dried chilli ready for market

Plate.5. Researcher with the farmers during survey

Summary and Conclusions

VI. SUMMARY AND CONCLUSIONS

Indian economy is vitally linked to agricultural development. About 75 percent of the population is directly or indirectly dependant for its livelihood upon agriculture. India is by traditionally an agricultural country bestowed with abundant natural resources. But its performance on farmer's field is not satisfactory. Due to wide variations in the agro-climatic conditions, the average yield on farmers field continuous to be far below than the potential yield. This is the cause of concern for all, those who involved in the development of technology and spread of technology and also the administrators like namely Agriculture scientists, KVKs, Extension unit of the University and Government.

It thus leads to the conclusion that traditional methods should be replaced by modern scientific system of farming. Education of farmers in scientific farming, but also towards nature and the way in which nature can be harnessed better for increasing production. But traditional attitudes are dominated by working with nature and rely on experimentation and enquiry. Here, agricultural extension plays a significant role in educating farmers and equipping them with the ability to adopt modern scientific techniques by this way technological gap can be reduced.

India, at present is the largest producer, consumer and exporter of spices in the world. Chilli is one of the important spice crops grown in India. It is mainly used as a vegetable spice and also has a number of uses in the pharmaceutical, food and beverage industries. Looking to the importance of chilli as well as the other spice crop, our Government of India established an All India Coordinated Research Project Spices (1971) in order to accelerate production, processing and management technology to achieve self reliance in spice.

A large number of technologies have been generated in the field of agriculture but the farmers to the full extent are not adopting those. In the other word the gap between the recommendations of package of production by the scientist and actual use by the farmers still exists even in irrigated situations. The substantial technological gap in chilli cultivation in respect of use of seed rate, spacing, fertilizer, plant protection measures, organic manure etc by the farmers. This gap is attributed by a number of factors, and even many times they are not having knowledge of actual package of practices. However the study conducted on farmer's knowledge and technological gap levels of chilli cultivation are less. Though a number of improved production technologies are recommended by the researchers and extension workers to obtain maximum profit. With this background, the study was undertaken to know the profile of chilli growers, knowledge level and technological gap in practices of the chill cultivation. This research study intends to focus on the deviation in

technological use at farmers fields from the recommended levels and constrains in chilli cultivation with the following objectives:

1. To study the socio-economic profile of chilli growers
2. To know the extent of knowledge with respect to the chilli cultivation practices
3. To know the technological gap in adoption of the chilli cultivation practices
4. To elicit the constraints and its suggestions in improving the adoption of chilli cultivation practices

Methodology

This study was conducted purposively in Yadgir & Raichur district which falls under Krishna project & Tungabhadra Project (TBP) area respectively and also as it comprises maximum area under chilli. Out of the five talukas, Deodurga and Manavi selected from Raichur district and Shahapur and Shorapur from Yadgir were selected based on keeping maximum area under chilli as criteria. A list of all the chilli growing villages and farmers list were prepared with the help of concerned Assistant Horticulture officer (AHO), Department of Horticulture. Three villages were selected in each taluka in consultation with the AHO's of particular talukas based on the highest area under chilli cultivation. A list of chilli growing farmers was prepared for each of the selected villages with the help of Assistant Horticulture Officer of the respective area. From each of the selected villages, 10 chilli respondents under irrigated condition were selected by random sampling method. Thus, in this study 120 farmers from 12 villages' was the sample size.

Based on the objectives of the study interview schedule was prepared. The information was elucidated from respondents with the help of structured schedule. The interview schedule was pre-tested in non sample area for its practicability and relevancy. Based on the experience gained, the interview schedule was modified wherever necessary. The final schedule was used to collect the information from the respondents by personally interviewing the farmers and the data was analyzed by using suitable statistical measures.

Major findings of the study were as follows:

I. Socio-economic Profile of chilli grower

1. Majority (68.33%) of the respondents were middle aged followed by young age farmers (24.17%).

2. over one fourth (25.83%) of the respondents were illiterate and 21.67 per cent had middle school education, followed by high school (17.50%), PUC (12.50%), primary education (10.83%) and graduation level (10.67%).
3. Majority of the chilli growers (41.66%) had low farming experience followed by high (30.83%) and medium (27.10%) farming experience.
4. Over one third (34.17%) of the chilli growers belonged to the category of small farmers followed by big farmers (30.83%), semi medium farmers (30.00%), medium farmers (14.00%).
5. Majority of the chilli growers (73.33%) belonged to high annual income (> Rs. 51,000) category followed by 12.50 per cent in medium annual income of Rs. 34,000.00 to 51,000.00.
6. Majority (52.50%) of the respondents belonged to medium category of material possession followed by low (27.50%), high (20.00%) material possession category.
7. Over half (55.83%) of the respondents contacted local progressive farmers and 41.67 per cent of respondents contacted scientists of UAS whenever problem aroused, respectively.
8. Majority of chilli growers (78.33%) participated regularly in krishimela, over one third (36.66%) participated occasionally, 28.33 per cent and 8.33 per cent of the respondents regularly participated in agriculture exhibition and field days.
9. In case of training only 6.66 per cent of the respondents participated regularly, whereas, 2.50 per cent of the respondents participated occasionally. Very few percentage (0.83%) of the respondents participated regularly in field days whereas, 7.50 per cent participated occasionally.
10. A large majority (91.67%) of the respondents possessed television, whereas, over half (55.83%) of the respondents possessed mobile followed by 48.33 per cent who subscribed to newspaper.
11. Only 5.00 per cent of the respondents possessed radio and very negligible (3.33%) of respondents subscribed to magazines.
12. Over half (50.83%) of the respondents had low risk taking ability, followed by 35.83 per cent with medium risk oriented category.
13. Majority (41.67%) of the chilli growers had medium scientific orientation.
14. Over one third (35.00%) of the respondents belonged to high management orientation category followed by one third (33.33%) with low management oriented.

Knowledge level of the respondents about recommended chilli cultivation

1. Less than half (35.00%) of the respondents belonged to high level of knowledge level category about recommended cultivation practices of chilli.
2 A majority (89.17%) of the chilli growers had correct knowledge about recommended varieties.
3 Less than half (46.66%) of the chilli growers knew about recommended seed rate.
4 Large majority (87.50%) of the chilli growers had knowledge about practice of transplanting.
5 Nearly one third (26.67%) of the respondents had correct knowledge about recommended spacing.
6 As high as 93.33 per cent of respondents had correct knowledge about number of seedlings required per hill and also number of seedlings required per acre.
7 Most (90.00%) of the chilli growers had correct knowledge about age of seedlings for transplanting.
8 Most (80.00%) of the farmers had correct knowledge with respect to frequency of irrigation at critical stages.
9 Nearly one fourth (18.33%) of chilli growers were aware of crops suitable for intercropping.
10 As high as 91.67 per cent of the chilli growers had knowledge about appropriate time for application of nitrogen fertilizer.
11 A very negligible per cent (3.33%) of the respondents were aware of amount of fertilizers recommended per acre.
12 Most (93.33%) of the respondents had knowledge about split doses of nitrogen application.
13 Majority (88.33%) of chilli growers were aware of growth regulators as recommended for preventing flower and fruit drop i.e. 50ppm, NAA @ flowering stage, it is also known as planofix.
14 Majority (81.67%) of the chilli growers had correct knowledge about frequent occurrence of major pests and their control measures.
15 Large majority (85.00%) of the respondents was aware of major diseases and their control measures.
16 Cent per cent of the respondents had knowledge about yield per acre.

Technological gap in adoption of recommended chilli cultivation

1. Over one third (35.83%) of the chilli growers belonged to high technological gap category followed by one third (33.33%) of respondents who belonged to medium technological gap categories.
2. Regarding land preparation, there was no gap observed. It means cent per cent of the farmers adopted these practices.
3. Nearly one fourth (20.63%) of gap was observed in the recommended varieties.
4. Highest percentage (95.83%) of technological gap found in the sowing time, followed by 82.50 per cent of technological gap observed in the recommended seed rate.
5. More than half (50.83%) of the gap observed in the seed treatment.
6. Relatively higher technological gap (67.50%) was observed with respect to recommended spacing.
7. 80.83 per cent of gap was observed in the seed bed preparation, followed by 35.83 per cent gap was observed in method transplanting.
8. Over one third (35.00%) of technological gap observed in the seedlings per hill.
9. More than half (50.83%) of the gap observed in the seed bed preparation.
10. There was 42.08 per cent gap found regarding use of organic manures, followed by large technological gap (80.83%) was observed regarding in the use of recommended chemical fertilizers with respect to time and doses.
11. One fourth (25.83%) of technological gap observed with respect to use of growth regulators to induce flowering and prevent flower & fruit dropping.
12. Relatively higher (85.00%) technological gap observed in the use of weedicides by the respondents.

Constraints expressed by the respondents

1. Majority (78.33%) of the farmers expressed problem of price fluctuation
2. Majority (62.50%) of the respondents quoted inadequate irrigation facility
3. Over half (59.17%) of the respondents told that non availability of good quality inputs at proper price at right time.
4. Over half (55.83%) of the chilli growers were expressed distance of market and high transportation cost
5. Over half (62.50%) of the respondents expressed non availability of labours at critical stages & high wages
6. Less than half (45.00%) of the respondents said that high incidence of pests and diseases

Suggestions for improving the adoption of chilli cultivation practices

1. Majority (86.67%) of the respondents suggested that minimum support price should be fixed for chilli.
2. More than half (65.83%) of the respondents were suggested that market should be near.
3. Nearly half (54.16%) of the respondents were suggested that should provide good quality of inputs at right time at proper price through Rait Sampark Kendra (RSK).
4. More than one third (50.83%) of the respondents suggested that there should be good number of cold storage facilities at least nearby hobli level.

Implications of the study

The current study brought out certain important findings which have got direct bearing on those involved in technology transfer and policy making. They are detailed below.

Majority of the respondents belonged to high level of knowledge regarding recommended cultivation practices of chilli. This indicates a vast scope for the line departments to intervene and improve the knowledge level of farmers about recommended cultivation practices of chilli.

Seed rate (82.50%), seed treatment (50.83%), spacing (67.50%), quantity of FYM (42.08%), application of fertilizer (80.83%), plant protection measures (52.77%). However these are the technological gap percentages observed. These are the practices which are crucial for obtaining potential yield. Hence line departments should consider these as crucial intervention points and mobilize their system to educate farmers.

The study thus indicated that though the chilli is cultivated by all the farmers in the study area, their scientific knowledge of the farmers was medium. One of the best ways to overcome this is to vigorously utilize the scientific expertise of Krishi Vigyan Kendras for conducting regular off campus training for the farmers. Conducting Farmer's Field Schools would certainly helps to bridge these gaps. Much emphasis thus should be given for such extension approaches by the line departments.

The present study indicated that pesticides and fungicides were applied more than recommend by the respondents. The result has brought out the alarming situation prevailing in the study area. That is to say , if this situation continues then the pests become highly resistant and become difficult to control ultimately farmers have to stop growing chilli due to

high cost of cultivation and low quality products due to residual effect of chemicals. Hence, there is need to propagate the IPM practices by the concerned extension agencies on top priority.

Price fluctuation (78.33%) and non-availability of the labour in time (62.50%) and Non-availability of good quality of inputs at proper price (59.17%) were the three important problems expressed by the farmers that need intervention of researchers and government agencies. Make availability of inputs at low price & at right time certainly benefits chilli growers to afford and use them to obtain better yield and profit. Government should ensure that the fertilizer and seeds is available to the farmers in adequate quantity before the season starts at nearby place to improve the adoption level of the crop.

Create awareness to Farmers to form co-operative societies and made agreement with spice export firm, which is providing 10 per cent higher price than the prevailing market price. Hence the farmers are to be suggested by extension workers to form their own marketing society to enter into the export business of chilli in order to further increase their income.

Suggestions for the future study

A research study covering all chilli growing districts in different agro-ecological zones of the state may be planned. This may help to find out zone specific knowledge and technological gaps. Based on this, proper extension strategies could be developed by the planners and policy makers. The same may be proposed for implementation to ensure better adoption of the recommended practices.

Similarly a study could be planned to assess the knowledge and technological gap of the chilli crop across different categories of farmers. This will enable to identify a particular target group having higher gaps and accordingly extension strategy could be developed to educate this particular farmers group.

Meaningful generalizations cannot be made as the present study has been limited to only 12 villages Raichur & Yadgir districts of Northern Karnataka. Therefore, it is suggested that further investigation may be taken up in other villages of different talukas as well as in other districts of the state .The other suggestions are as follows:

1. Study of Indigenous technological knowledge in chilli crop.
2. A study on extent of knowledge and adoption of organic practices of chilli crop.

3. Study of possibilities of export market for chilli products and development of marketing strategy for chilli farmers.
4. Training needs of chilli farmers and communication behaviour of chilli growers.
5. Study on integrated chilli based farming system for sustainable agriculture.
6. A study on extent of knowledge and yield gap with respect to practices of chilli crop.

References

REFERENCES

Aghazia, Md., 2008, Training needs of onion cultivation in Afghanistan country. *M.Sc. (Ag.) Thesis,* Acharya N. G. Ranga Agricultural University, Hyderabad. Agric. marketing 11(1-2):92-93.

Ananda, T. N., 1992, Farmers perception of drip irrigation efficiency in grapes in Bangalore district in Karnataka. M. Sc. (Agri.) Thesis, Univ. Agric. Sci., Bangalore, (India).

Angadi, S. C., 1999, A study on knowledge, adoption and marketing pattern of pomegranate growers in Bagalkot district in Karnataka state. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad, (Karnataka)

Anonymous, 2010, National Horticulture Board, Govt. of India.

Anonymous, 2010, Spices Board of India.

Anonymous, 2010, Department of Horticulture, Govt. of Karnataka.

Aski, S. G., 2007, An analysis of KVKs managed by University Of Agricultural Sciences, Dharwad And Ngo In Karnataka M.Sc.(Agri.) Thesis, Univ. Agric. Sci., Dharwad, (India).

Atul patil, 2008, A study on constraints analysis of grape exporting farmers of Maharashtra state. Ph. D. Thesis, Univ. Agric. Sci., Dharwad, (India).

Basanayak.R. (2009), An analysis of technological gap in papaya Cultivation in Bidar and Gulbarga districts of north Karnataka. *M.Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad, (India).

Bhapakar, B. B., 1994, A study of cashew growers to assess the technological gap andcauses of non-adoption of recommended practices in Sindhudurg districts. M. Sc. (Agri) Thesis, Konkan Krishi Vidyapeeth, Dapoli, (India).

Bheemappa. A. 2001, A comparative analysis of knowledge and technological gap in adoption of paddy and cotton cultivation practices between migrant and non migrant farmers of TBP command area. *Ph. D. Thesis,* Univ. Agric. Sci., Dharwad, Karnataka (India).

Bhogal, T.S., 1994, Apple marketing in Uttar Pradesh channels, margins and problems. Indian J. Agric. Marketing.8: 120-122.

Binkadakatti, J. S., 2008, Impact of Krishi Vigyan Kendra (KVK) trainings on use of bio fertilizers and bio-pesticides by Tur farmers in Gulbarga district. *M.Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad (India).

Birajdar S. R., 1999, A study on knowledge, adoption behavior grape growing members of Maharashtra Rajya Draksha Bagitdar sangha, Solapur. M. Sc. (Agri) Thesis, Univ. Agric. Sci., Dharwad, (India).

Biradar, B., 2008, A study on impact of income generating activities on sustainable rural livelihoods of KAWAD project beneficiaries. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad, Karnataka (India).

Chandra, P., 2001, A study on rate of adoption and consequences of hybrid paddy in Cauveri command area, Karnataka state. *M.Sc. (Agri.) Thesis*, Univ. Agric Sci., Bangalore.

Chandramouli Pandeli, 2005, A study on entrepreneurial behaviour of farmers in Raichur Karnataka (India).district of Karnataka *M. Sc. (Agri.) Thesis,* Univ. Agric. Sci., Dharwad,

Chaudhary, R., Singh, A.K. and Prajapati, M. (2008).Technological Gap in Rice–Wheat Production System. Indian Res. J. Ext. Edu. 8 (1):39-41

Chidananda, M., 2008, A study on entrepreneurial behaviour of dry land farmers in Karnataka State. *M.Sc. (Agri.) Thesis*, Acharya N. G. Ranga Agricultural University, Hyderabad.

Chikhale, N.J., Deshpande, P. V. and Thakre, P.V., 1996, Factors influencing adoption of orange production technology by growers. Maha. J. Extn. Edun., 15: 176-180.

Chitnis, D.H. and Bhilegaonkar, M.G., 1985, Technological gap in dry farming system: An Analysis Maha. J. Extn. Edun., 4:73-76

Deepak. M. P., 2003, A Study on perception of beneficiaries and non beneficiaries towards WYTEP programme in Dharwad district. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad, Karnataka (India).

Dhamodaran, T. and Vasantha kumar, J., 2001, relationship between selected characteristics of registered sugarcane growers and their extent of adoption of improved sugarcane cultivation practices. *Journal of Extension Education,* 12(2): 3138-3143.

Dwarakanath, B. V., 1987, An analysis of intermediate technology adopted by small farmers in Tumkur district of Karnataka , *M. Sc, Thesis (Agri),* Univ. Agric. Sci., Bangalore, Karnataka (India).

Gaddi, G. M., Koppad, M. B., Gummagolamath, K. C. and Naik, A D., 1999, An economic analysis of growth performance of oilseed crops in India. Karnataka J. Agric. Sci., 12: 93-98.

Gaikwad, B. H. and Gunjal, S. S., 2000, Information seeking behaviour of KVK beneficiaries in Maharashtra. *Journal of Extension Education*, 11(1): 2672-2676.

Gangappa, G. N., 1975, A study of adoption behavior, consultancy pattern and information source credibility of small farmers in Mysore district of Karnataka state. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Bangalore, Karnataka (India).

Gandhi. Venkatesh R., (2002), Knowledge level and Adoption behaviour of vegetable growers with respect to integrated pest management of tomato crop in Kolar district. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad, Karnataka (India).

Gotyal, S. H., 2007, Backward and forward linkages of grape production in Karnataka. *Ph.D. Thesis*, Univ. Agric. Sci., Dharwad.

Gowda T. B., 2005, A study on cultivation and marketing pattern of selected cut flowers in Belgaum district. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad (India).

Hinge, R. B., 2009, A study on diffusion and adoption of wine grape production technology in Maharashtra. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka.

Homraj nilkan thrao and Rajput, 2003, Adoption of university recomanded rice production technology by rice growers. *Thesis Abstracts* 30(1): 130-131

Ingle, P.O., and Wayazade, M.R., 1989, Adoption of agriculture technologies in Rain fed Farming Project. Maha. J. Extn. Edun., 8: 189-192.

Jadhav.B.A. (2009). An Analysis of Technological Gap in Papaya Cultivation in Bidar and Gulbarga districts of North Karnataka. M.Sc theses, UASD

Jairath, M.S., 1997, Operational efficiency in fruits and vegetable market: A case study. Indian J.

Jayale, P.S., 1992, A study on extent of adoption and sustainability horticulture crops advocated by horticultural department. M.SC.(Agri.) Thesis, Maha. Agri.Univ. Parbhani, (India).

Kadam, K. R. and Borse, A. V., 1993, Adoption behavior of banana growers. Maharashtra J. Extn. Edun., 12: 45-46.

Kadam, R.P., 1999. A study on knowledge, cultivation practices followed and marketing behavior of sweet orange growers in Nanded district, Maharashtra state, M.Sc.(Agri.) Thesis, Univ. Agric. Sci., Dharwad, (India).

Kanavi, V. P., 2000, A study on the knowledge and adoption behaviour of Sugarcane growers in Belgaum district of Karnataka. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad (India).

Karpagam, C., 2000, A study on knowledge and adoption behaviour of Turmeric growers in Erode district of Tamil Nadu. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad (India).

Kiran, S.T., 2003, A study on technological gap and constraints in adoption of recommended practices of mango growers. M. Sc. (Agri.) Thesis, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth. Dapoli, Maharashtra (India).

Kishorbabu, B., 2004, Marketing Behaviour of vegetable growers in Ranga Reddy district of Andhra Pradesh. *M.Sc. (Agri.) Thesis*, Acharya N. G. Ranga Agricultural University, Hyderabad.

Kumar, H. S., 1998, A study on knowledge, adoption and economic performance of banana growers. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Bangalore, Karnataka (India).

Madhu B. M. (2010) Technological Gap in Turmeric Production Practices in Belgaum District. M.Sc theses, UASD M. Sc. (Agri.) Thesis, Univ. Agric. Sci., Dharwad, (India).

Madhusekhar, B. R., 2009, A study on marketing behaviour of chilli growers in guntur district of Andhra Pradesh. *M.Sc. (Agri) Thesis*, (Unpub.), Acharya N. G. Ranga Agricultural University, Hyderabad.

Mamatha, T. G. and Hiremath, G. K., 2000, Farm women participation in socio-economic organizations and extension activities in Tumkur district of Karnataka state. *Karnataka J. Agric. Sci.,* 13(1): 483-485.

Mangala, B., 2008, Impact of integrated farming system on socio-economic status of Bharateeya Agro Industries Foundation (BAIF) beneficiary farmers. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad (India).

Maraddi, G. N., 2006, An analysis of sustainable cultivation practices followed by Sugarcane growers in Karnataka. *Ph. D. Thesis*, Univ. Agric. Sci., Dharwad (India).

Maraddi, G. N. and Verma, N. S., 2003, Knowledge of farmers on Cotton production technologies in Malaprabha command area. *Karnataka J. Agric. Sci*., **16**(1): 72-76.

Meeran, N. and Prince Jayaseelan, M. J., 1999, Socio-personal, socio-economic and socio-psychological profile of shrimp farmers. *Journal of Extension Education,* 10(2): 2445-2448.

Meti, S. K. and Hanchinal, S. N., 1994, A study on the adoption pattern in the cultivation practices of sunflower crop. *Maharashtra Journal of Extension Education*, 13: 85-90.

Misal, M. M., 2002, A study on adoption of paclobutrazol technology by mango growers in Sindhudurg district. M.Sc.(Agri.) Thesis, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, (India).

Moulasab, I., 2004, A study on knowledge and adoption of improved cultivation practices by mango growers of north Karnataka, *M.Sc. (Agri) Thesis*, Univ. Agric. Sci., Dharwad.

Nagadev, B and Venkataramaih, P., 2007, Characteristics of integrated pest management (IPM) trained dry paddy farmers. *The Andhra Agric. J.*, 54(3&4): 240-242

Nagaraja, M. V., 2002, A study on knowledge of improved cultivation practices of sugarcane and their extent of adoption by farmers in Bhadra command area in Davanagere district, Karnataka state. *Ph. D. Thesis*, Univ. Agric. Sci., Dharwad.

Nagaraja, N., 1989, A study on management efficiency and economic performance of sericulture in Karnatraka. Ph. D. Thesis, Univ. Agric .Sci., Bangalore (India).

Nagesh, 2006, Study on entrepreneurial behavior of pomegranate growers in Bagalkot district of Karnataka, M.Sc. (Agri.) Thesis, Univ. Agric. Sci., Dharwad, (India).

Nagesh, P.N., 2005, Study on entrepreneurial behaviour of vegetable seed producing farmers of Haveri district. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad (India).

Natikar, K. V., 2001, Attitude and use of farm journal by the subscriber farmers and their profile. A critical analysis. *Ph. D. Thesis*, Univ. Agric. Sci., Dharwad, Karnataka (India).

Navasakthi, 2005, Managerial abilities and farming performance of coconut cultivation in Andaman district. *M.Sc. (Agri.) Thesis*, Acharya N. G. Ranga Agricultural University, Hyderabad.

Nirmala devi, M. and Manoharan, M., 1998, Contributing characters of Guava cultivators. *J. Extn. Edun.* 10(2): 2431-2433.

Partha sarathi, S, and Santha govind, 2002, Knowledge of trained and untrained farmers of IPM practices. *J. Extn. Edun.*, 13(1): 3293-3297

Patil, A. B., 2008, A study on constraints of grape exporting farmers of Maharashtra state. *Ph.D. Thesis*, Univ. Agric. Sci., Dharwad.

Patil, N., 2005, A study on knowledge, extent of participation and benefits derived by participant farmers of the watershed development programme. *M.Sc.(Agri.) Thesis*, Univ. Agric. Sci., Dharwad (India).

Raghavendra B. N., 2007, A study on management practices of pineapple growers in Karnataka.

Rai, D. P. and Bhupendra Singh, 2010, carried out a study on extent of knowledge and constrains in cotton production technology in Madhya Pradesh. *Indian Res. J. Extn. Edun.* **10**(2): 78-80

Rao, G. A., 2000, Sustainability of rice farming and attitude of farmers towards sustainable agriculture in north coastal zone of Andhra Pradesh. *M. Sc. (Agri.) Thesis (Unpubl.)*, Univ. Agric. Sci., Bangalore.

Raju, A., 2002, Analysis of selected factors responsible for sustainability of major crops production in a watershed area as perceived by farmers in Medak district of Andhra Pradesh. *M.Sc. (Agri.) Thesis*, Acharya N. G. Ranga Agricultural University, Hyderabad.

Ramanna, K. N., Chandrakandan, K. and Karthukeyan, C., 2000, Motivation factors and constraints of hybrid sunflower seed growers. *Journal of Extension Education*, 11(3): 2840-2844.

Ranish, V. P., Malik, R. S. and Punia, R. K., 2001, Adoption of rapeseed – mustard production technology, Indian *Journal of Extension Education,* **37** (1&2) : 58-62.

Ratnam, T. R., 2000, Impact of sunflower On-Farm Extension Demonstration (OFED) in Kurnool district of Andhra Pradesh. *M.Sc. (Agri.) Thesis*, Acharya N. G. Ranga Agricultural University, Hyderabad.

Raut, P. N., 2006, Production constraints of orange cultivation in Nagpur district of Maharashtra. *Asian J. Ext. Edu*., 25 (1&2): 1-4.

Ravishankar, K., 2005, Agricultural wealthier forecasting impact and analysis in Andhra Pradesh. *Ph.D. Thesis*, Acharya N. G. Ranga Agricultural University, Hyderabad.

Ray, G. L., Chattergee, P. and Banerjee, S. N., 1995, Technological Gap and Constraints in Agric. Tech. Tran., Naya Prakash, Calcutta, p. 27

Reddy, C.V. and Ratnakar, R., 1993, Adoption of recommended practices in mango Mysore J. Agric Sci. 27: 186-188.

Sain M., 2008, Socio-economic and technological constraints in adoption of SRI. In:http://sri-india.110mb.com/documents/3rd_symposium_ppts/DRR-Mangal%20Sain.pdf.retrieved on 27th October 2009.

Sakharkar, V. S., 1995, A study on knowledge, fertilizers use pattern and constraints in the cultivation of soybean by farmers of Nagpur district, Maharashtra. *Ph. D. Thesis*, Univ. Agric. Sci., Dharwad.

Santosh S., 2006, A study on technological gap and constraints of bidi tobacco cultivation in Belgaum district, Karnataka state. M. Sc. (Agri.) Thesis, Univ. Agric. Sci., Dharwad, (India).

Samanta, R. K., 1977, A study of some agro-economic, socio- psychological and communication variables associated with repayment behaviour of agricultural credit users of Nationalized Bank. *Ph. D. Thesis*, (unpub.), Bidhan Chandra Krishi Vishwa-Vidyalaya, West Bengal.

Saravanakumar, R., 1996, A study on management of mango gardens by farmers in Krishnagiri taluk of Dharmapuri district, Tamil Nadu. *M.Sc (Agri.) Thesis*, Univ. Agric. Sci., Bangalore.

Shaikh. A. M., Bajaj, S. S. and Gondkar. P. P. 1993 A study of adoption of custard apple technology by the growers, *Maharashtra J. Ext.Edu*., 12: 55-58.

Shakuntala Manay and Chaman farzana, 2000, Socio-economic characteristics of rural families. *Maharashtra Journal of Extension Education*, 19: 325-328.

Shanmukappa, S., 1978, A study on the adoption behaviour and value orientation of arecanut grower of Shimoga district in Karnataka State. *M. Sc. (Agri.) Thesis,* Univ. Agric. Sci., Dharwad, Karnataka (India).

Sharma, F.L., Chaudhary, M.C. and Kalla, P.N., 1997, Adoption constraints of scientific maize production technology. *Maharashtra Journal of Extension Education*, 16: 192-96.

Shashidhar, D.N., 2004, A study on influencing factors and constraints in drip irrigation by horticulture farmers of Bijapur district of Karnataka. *M.Sc.* (*Agri) Thesis*, University of Agricultural Sciences, Dharwad.

Shashidhar, K. K., 2003, A study socio-economic profile of drip irrigation farmers in Shimoga and Davangere district of Karnataka. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad, Karnataka (India).

Sidram, 2008, Analysis of organic farming practices in Pigeonpea in Gulbarga district of Karnataka state. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad (India).

Singh, M. and Mankar, D.M., 2007, Adoption of Paclobtrazol technology by mango growers. Asian. *J. Ext. Edu*., 26 (1&2): 64-71

Sinha, P. R. R. and Kolte, N. V., 1974, Adult Education in Relation to Agricultural Development: An Evaluative Study of Development Block, Andhra Pradesh, National Institute of Country Development, Hyderabad.

Sivasubrahmaniyam, J., 2003 Impact of coconut development schemes among coconut growers. *M.Sc. (Agri.) Thesis,* Annamalai University, Tamilnadu.

Sophiasatyavathy, 2001, A study on knowledge and adoption of sustainable cultivation practices in sugarcane and cotton by farmers in Cuddlore district of Tamil Nadu. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad.

Sreenivasreddy, M. V., 1995, A study on knowledge and adoption of recommended mango cultivation practices among farmers of Kolar district. M.Sc.(Agri.) Thesis, Univ.Agric. Sci., Bangalore, (India).

Sriram, N. and Palaniswamy, A., 1999, Farmers extent of adoption of eco-friendly agricultural practices in cotton cultivation. *Journal of Extension Education,* 10(1): 2318-2323.

Sriram, N. and Palaniswamy, A., 2000, Cotton growers extent of awareness about the eco-friendly agricultural practices in cotton. *Journal of Extension Education,* 11(2): 2790-2794.

Sunilkumar, G.M., 2004, A study on farmers knowledge and adoption of production and post-harvest technology in tomato crop of Belgaum district in Karnataka. *M.Sc.* (*Agri) Thesis,* Univ. Agric. Sci., Dharwad.

Suresh Kumar. (2009). A Study on Technological Gap in Adoption of the Improved Soybean Cultivation Practices. M.Sc theses, UASD

Sushma. K. C., 2007, An analysis of entrepreneurship development in women through EDP trainings. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad (India).

Suresh, 2004, Entrepreneurial behaviour of milk producers in Chittoor district of Andhra Pradesh – A critical study. *M. V. Sc. Thesis,* Acharya N. G. Ranga Agric. Uni, Hyderabad. (Andhra Pradesh).

Supe, S.V., 1969, Factors related to different degree of rationality in decision making among farmers, *Ph.D. Thesis,* IARI, New Delhi.

Thangavel, N. R., Subramanian, R. and Karthikayan, C., 1996, Characteristics of buffalo farmers. *Maharashtra Journal of Extension Education,* 7(1): 1307-1309.

Thiranjangowda, B. T., 2005, A Study on knowledge and adoption level of soil and water conservation practices by farmers in north Karnataka. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad, Karnataka (India).

Vani, C. H. S., 2002, Awareness of farmers, scientist and extension personnel about pesticide pollution in Guntur district of Andhra Pradesh. *M.Sc. (Agri.) Thesis*, Acharya N. G. Ranga Agricultural University, Hyderabad.

Venkataramalu, 2003, A study on the knowledge level, adoption and marketing behaviour of chilli growers in Guntur district of Andhra Pradesh. *M.Sc. (Agri.) Thesis*, Uni. Agric. Sci., Dharwad.

Vijayakumar, A. C. and Narayanagowda, K., 1999, Adoption of improved cultivation practices among rose growers. *Journal of Extension Education,* 10: 2331-2334. *(Agri.) Thesis*, University of Agricultural Sciences, Dharwad.

Vijaykumar, K., 2001, Entrepreneurial behaviour of floriculture farmers in Ranga Reddy district of Andhra Pradesh. *M. Sc. (Agri) Thesis*, Acharya N.G.Ranga Agric. Univ., Hyderabad (India).

Vijay, G.P., 1990, A critical analysis of technological gap and constraints in the adoption of improved rice cultivation practices in kokana region, Maharashtra state, Ph. D. Thesis, Univ. Agric. Sci., Dharwad, (India).

Wondangbeni .K. (2010).Adoption Gap in Groundnut Production in Northern Transition Zone of Karnataka.

www.ikisan.com

www.fao.org

www.spiceboard.org

www.indianspices.com

Appendices

"A STUDY ON TECHNOLOGICAL GAP IN ADOPTION OF IMPROVED CHILLI CULTIVATION PRACTICES IN YADGIR AND RAICHUR DISTRICTS OF KARNATAKA"

INTERVIEW SCHEDULE

Respondent no: **Date:**

(Part-1)

I. General Information

1. Name of the farmer: _____ 2. Village: _____ 3. Taluk: _____

4. Name of the district: _____

II. Personal and Socio-economic Characteristics

1. Age: ____years **2**. **Education**: _____ **3. Farming experience**: _____ years

4. Size of the land holding (ha): **5. Annual income:** Rs_____/-

SL.NO	**Particulars**	Area (acres)
1.	Irrigated	
2.	Dry land	
3.	Others	
TOTAL		

Particulars	**Amount (Rs)**
Agriculture	
Subsidiary	
Other sources	
Total	

6. Material possession:

a) Electronic & home appliances:

Radio	TV	Two wheeler	Four wheeler	Mixer	Cooler	Refrigerator	Bio gas	LPG

b) Agricultural implements / Equipments:

MB plough	Wooden plough	cultivator	Tractor	Pump set	Oil engine	sprayer	Harrow

7. Extension contact: Indicate your contact with extension worker

SI. No.	Extension worker	Frequency of contact			
		Once in a week	Once in a 15 days	Whenever problem arise	Never
1.	Farm facilitator				
2.	Horticultural assistant				
3.	Assistant Horticulture Officer				
4.	Agril. University scientists				
5.	Private Agency Extension Officer				
6.	Others (Specify)				

8. Extension Participation: Please indicate your participation in extension activities

Sl. No.	Extension activity	Participated		Extent of participation		
		Yes	No	Regular	Occasional	Never
1	Training programmes					
2	Demonstrations					
3	Field days					
4	Field visits					
5	Group meetings					
6	Agriculture exhibitions					
7	Krishi melas					
8	Educational tours					

9. Mass media participation

Sl. No.	Mass Media Sources	Subscriber/ Possessed	Programmes	Frequency of use		
				Regular	Occasional	Never
1	Radio		Agriculture Programmes			
			General Programmes			
2	Television		Agriculture Programmes			
			General Programmes			
3	News Paper		Agriculture Programmes			
			General Programmes			
4	Magazine		Agriculture Programmes			
			General Programmes			
5	Mobile		Agriculture Purpose			
			General Purpose			

10. Risk Orientation

Please indicate whether you agree or disagree with the following statements

Sl. No	Statement	Response	
		Agree	Disagree
1	A farmer should grow more number of crops to avoid greater risks involved in growing one or two crops.		
2	A farmer should rather take more of risk in making a big profit than to be content with a smaller but less risky profit.		
3	A farmer who is willing to take greater risks than the average farmer usually has better financial condition.		
4	It is good for a farmer to take risks when he knows his chance of success is high.		
5	It is better for a farmer not to try new farming methods unless most other farmers have used them with success.		
6	Trying an entirely new method in farming by a farmer involves risk, but it is worth.		

11. Cropping Intensity

Sl.No	Cropping Intensity	Season	Crop	Area in Acres
1	Single Cropped Area			
2	Doubled Cropped Area			
3	Triple Cropped Area			

12. Scientific Orientation:

Please indicate your degree of agreement or disagreement to the following statements

Sl. No.	Statements	Response		
		Agree	**Undecided**	**Disagree**
1.	Improved practices give better yield than old practices.			
2.	The way farmer's fore-fathers practiced agriculture is still the best way even today.			
3.	Even a farmer with lot of experience should use improved practices.			
4.	Though it takes lot of time for a farmer to learn improved production practices, it is worth the efforts.			
5.	A good farmer experiments with new idea in farming.			
6.	Traditional methods of farming have to be changed in order to raise the level of a farmer.			

13. Management orientation:

Please indicate your agreement or disagreement for the following statements.

Sl. No	Statement	Response	
		Agree	Disagree
	1. Planning orientation		
1	Every year one should think afresh about the crops to be cultivated in each type of land		
2	It is not necessary to make prior decisions about the variety of crops to be cultivated in land		
3	Selection of crop does not depend upon the availability of rain water		
4	The amount of inputs such as seeds, fertilizers and plant protection chemical needed for raising a crop should be assessed before cultivation		
5	It is not necessary to think ahead of the cost involved in raising a crop		
6	It is possible to increase the yield through farm production plan		
	2. Production orientation		
1	Timely planning of a crop ensures good yield		
2	One should use as much manures/fertilizers as he can		
3	Determining fertilizer dose by soil testing saves money		
4	Seed rate should be given as recommended by specialists		
5	It is not necessary to consult a specialist during crop growing		
6	For timely weed control one should use suitable herbicides		
	3.Market orientation		
1	Marketing news is not so useful to a farmer		
2	A farmer can get good price by grading his produce		
3	Warehouses can help the farmers to get better price of his produce		
4	One should sell his produce to the nearest market irrespective of price		
5	It is of little value to record cost and return of particular crop		
6	One should grow those crops which have more marketing demand		

(Part-II)

Questions pertaining to test the Knowledge of irrigated chilli growers about improved chilli cultivation practices

1.Whether the deep ploughing practices are necessary: Yes/No. if Yes

- In which season & month deep ploughing is practiced: _____
- What are the benefits of deep ploughing:_____

A. Nursery Management

2. Do you about nursery management? Yes/No
3. Does seed bed preparation necessary for raising seedlings?
4. Mention the required seed rate in nursery for a acre of land: _____gms
5. What is the size of the seed bed? _____
6. Mention the amount of FYM required in nursery?
7. Mention the amount of organic fertilizer required in nursery? _____
8. Mention the frequency of irrigation in nursery? _____
9. Mention the Plant protection measures in nursery? _____

B. Main field cultivation

10. Name the recommended chilli varieties for your area? _____
11. Which is the best suited method of sowing the seeds of chilli : Sowing / Transplanting
12. What is the spacing for chilli cultivation? _____
13. Mention the sowing time for chilli cultivation? _____
14. Required Seed rate for one acre of land : _____
15. Do you know about transplanting method of sowing chilli? Yes/no
16. Mention the time of transplanting: _____
17. Mention the depth of transplanting : _____
18. The age of seedlings at transplanting stage is: _____
19. How much Chilli seedlings you use per hill: _____
20. How many seedlings are required per acre? _____
21. Which are the crops suitable for intercropping in chilli?
22. What is the frequency of irrigation for black and red soil? _____
23. Mention the time of time of irrigation?
24. Mention the amount of FYM required per acre: _____tons
25. Mention the amount of chemical fertilizers required per acre? _____ Kg (N:P:K)
26. Mention the time of fertilizer applied: _____

27. Mention the quantity of fertilizer required: _____

28. Do you quantity of micro nutrients required and name those? _____

29. Spraying of NAA @ 15 ppm can reduce flower drop : True/False

Plant protection measures

30. Name the important pest which causes loss in your chilli crop:

_____

31. Chemicals that are recommended for pests control :

_____

32. Name the important diseases which causes loss in your chilli crop:

_____

33. Chemicals that are recommended for diseases control

_____

34. Mention the Yield obtained per acre in kilograms: _____

(PART-III)

Technological gap level

Please indicate followed by you against the recommended in irrigated chilli cultivation

Sl. no	Recommended practices			Practices followed by farmers				
				Yes	No	Quantity	Time	Reasons
1.	**Preparatory cultivation:** • Deep ploughing							
2.	**Recommended varieties :** • Pusa Jwala, G-4, KDSC-1, Guntur, Byadagi							
3.	**Sowing time** : • Irrigated: oct-nov							
4.	**FYM**: • 25tonnes/ha							
5.	**Seed rate** : • 1250grams/ha							
6.	**Seed treatment** : • Azospirillum (400gms/ ltr)							
7.	**Spacing**: • 75x45cm irrigated							
8.	**Seedbed** : • 7.5mx1.2mx10cm							
9.	**seedlings/hill** : • 2-3							
10.	**Fertilizer application**(kg/ha)							
	N	150	**Split dosage**					
	P2o5	75	1st split dose					
	K2o	75	2nd split dose					

11.	**Irrigation:** • Black soil once in 15-17 days					
12.	**Weeding and Intercultivation**: • 2-3 times					
13.	**Plant growth regulators** : • 50ppm NAA during flowering stage					
14.	**Weed control**: • Butaclor (pre) 1.5litre/ha					
15.	**Pests/ Diseases** / **Chemical** Thrips Mites Aphids Pod-borers Powdery mildew Cercospora leaf spot Anthracnose Murda complex					
16.	Harvesting					
17.	Yield					
18.	Cost of cultivation/acre(Rs)					

(PART-IV)

PROBLEMS & SUGGESTIONS BY THE FARMER

16. PROBLEMS: Please mention problems you have faced in chilli cultivation

Sl. No	Particulars	Give Details
1.	**Management constraints**	
2.	**Technical constraints**	
3.	**Marketing constraints**	
4.	**Mention Others if any**	

17. SUGGESTIONS: Please indicate your suggestions for chilli cultivation and its improvement

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

RECOMMENDED PACKAGE OF PRACTICES FOR IRRIGATED CHILLI CULTIVATION OF UAS, RAICHUR

1	Varieties	: Pusa Jwala, Guntur, Byadagi,
2	Size of nursery area	: 7.5m*1.2*m*10cm
3	Sowing time	: September - October
4	Seed rate	: 1250 gm/ha
5	Seed treatment	: Azospirillum (400gm per liter)
6	Age of seedlings	: Seedlings of 6 weeks are to be transplanted
7	Spacing	: 75 x 45 cm
8	Plant population	: 2-3 Seedlings/hill
9	Organic manure	: FYM 25 t/ha
10	Fertilizer application	For Irrigated crop
	Total N: P: K	150:75:75 kg N: P: K/ha
	Basal	75:37:37 kg/ha
	Top dressing	75:37:37 kg/ha after 6 weeks of planting
11	Irrigation schedule	Once in 15-17days in Black soil Once in in 6-7 days in Red soil
12	Inter cultivation	: 2-3 times
13	Plant growth regulator	: 50PPM, NAA @ flowering stage (Planofix)
14	Weed control	: Butaclor (pre) @ 1.5ltr/ha

15	Plant protection measures	
	Important insects	
	Thrips	: 1.7ml Thiometeate 30EC or 1gm Acephate 75 SP/ lit
	Mites	2.5ml Dicofol
	Aphids	Chlorpyripos 2 ml/lit of water
	Pod borers	NPV (250LE) or 5% Neem seed kernel extract oil
	Important diseases	
	Murda complex	0.5% (mixture of garlic + Greenhill + Kerosene) + Neem seed kernel extract oil -- 2.5ml/ ltr
	Powdery mildew	1gm Carbendazem 400ltr/ha, Mancozeb – 3 g/lit
	Bacteria leaf spot	Plantamycin + Blitox – 0.6 g + 9 g/lit of water
	Cercospora leaf spot	Bavistin – 1 g/lit of water
16	Yield	Dry chilly 10-12 quintal/ha

A Study on Technological gap in Adoption of Improved Chilli Cultivation Practices in Yadgir and Raichur districts of Karnataka

G.S.Biradar (Author)
M.Sc (Agri) (Degree)
Agricultural Extension Education (Department)
University of Agricultural Sciences, Raichur (Institute)
Karnataka state, India (Place)

Major advisor: Dr. D.M.Chandargi

ABSTRACT:

A Study on technological gap in adoption of improved chilli cultivation practices in Yadgir and Raichur districts of Northern-Karnataka was carried out during 2010-12. Following the Simple random sampling, 120 respondents were selected from 12 villages of four taluks in the selected districts. The data was elicited through personal interview method and analysed using frequency and percentage.

The major findings were:

Over one third of the respondents (35.00%) belonged to high and medium (33.33%) level of knowledge on chilli cultivation practices. similar percentage of respondents (35.83%) belonged to high technological gap category.

High technological gap was found in the practices like use of weedicides (85.00%), seed rate (82.50%), seed bed preparation (80.83%) and use of chemical fertilizer (80.83%) and low technological gap was found with respect to variety (20.63%), use of planofix (20.00%) and seedlings per hill (35.00%).

Majority (68.33%) of the respondents were middle aged, over one fourth (25.83%) were illiterate, 41.66 per cent of them had low farming experience, and majority (73.33%) of them belonged to high annual income category.

Over half (55.83%) of the respondents contacted local progressive farmers and 41.67 per cent of respondents contacted scientists of UAS whenever problem aroused. Moreover, majority of chilli growers (78.33%) participated regularly in krishimela.

A large majority (91.67%) of the respondents possessed television, whereas, over half (55.83%) of the respondents possessed mobile followed by 48.33 per cent who subscribed to newspaper.

Majority of the respondents had low risk taking ability (50.83%) and medium scientific orientation (41.67%).

Majority of the farmers expressed problem of price fluctuation (78.33%) followed by inadequate irrigation facility (62.50%), non availability of labourers at critical stages & high wages (62.50%), non availability of good quality inputs at proper price at right time (59.17%). majority of the respondents suggested that minimum support price should be fixed for chilli (86.67%) .