STUDY OF ROSE GROWERS FROM SANGLI DISTRICT

By

Prashant Shivaji Pawar

(Reg. No. 02082)

A Thesis submitted to the

**MAHATMA PHULE KRISHI VIDYAPEETH,
RAHURI - 413 722, DIST.AHMEDNAGAR,
MAHARASHTRA, INDIA**

in partial fulfilment of the requirements for the degree

of

MASTER OF SCIENCE (AGRICULTURE)

in

AGRICULTURAL EXTENSION

DEPARTMENT OF EXTENSION EDUCATION

POST GRADUATE INSTITUTE
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APPROVED BY

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2004

CANDIDATE'S DECLARATION

I hereby declare that this thesis or part thereof has not been submitted by me or other person to any other University or Institute for a Degree or Diploma

Place : MPKV, Rahuri

(P.S. Pawar)

Dated : 16 /08/2004.

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Associate Professor,
Department of Extension Education,
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Rahuri - 413 722, Dist. Ahmednagar,
Maharashtra, (INDIA)

CERTIFICATE

This is to certify that the thesis entitled, **"STUDY OF ROSE GROWERS FROM SANGLI DISTRICT"**, submitted to the Faculty of Agriculture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar, Maharashtra State, India, in partial fulfilment of the requirements for the degree of **MASTER OF SCIENCE** (AGRICULTURE) in **AGRICULTURAL EXTENSION,** embodies the results of piece of *bona fide* research work carried out by **SHRI. PRASHANT SHIVAJI PAWAR,** under my guidance and supervision and that no part of the thesis has been submitted to any other university for degree or diploma or publication in other form.

The assistance and help received during the course of this investigation and sources of reference have been duly acknowledged.

Place : M.P.K.V., Rahuri
Dated : 16 / ०8 /2004.

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(D.M. Sawant)

Place : M.P.K.V., Rahuri

Dated : / /2004.

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Place : M.P.K.V., Rahuri (P.S. Pawar)

Date : 16/08/2004.

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ABSTRACT

STUDY OF ROSE GROWERS FROM SANGLI DISTRICT

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Rose (*Rosa indica*) is the best known and most popular of all garden flowers throughout the world. It is one of the nature's beautiful creations and is universally known as queen of flowers. Rose is a symbol of love, adoration and innocence not in our time but also for thousands of years and it has been growing on this earth since time immemorial.

The total area under various flower crops in India is 88607 ha out of which Maharashtra has 6600 ha. In 2002 the area under rose cultivation in Maharashtra was 2720 ha with the production of 5440 metric tonnes.

The present study was conducted in Miraj and Walwa talukas of Sangli district. Out of the rose growing villages, 8 villages were selected randomly. From the selected villages, 120 rose growers were randomly selected and interviewed. The data were

collected with the help of well constructed and pre tested interview schedule. The data collected were processed through primary and secondary tables and statistically analysed.

The objectives of the investigation were to study the personal, social, economic and psychological characteristics of the rose growers; the adoption level of recommended production technology of rose cultivation; marketing; constraints in adoption and to obtain the suggestions to overcome these constraints.

The study revealed that majority of the rose growers belonged to `middle' age category, received 'higher secondary' education, had 'medium' family size, 'medium' social participation, used 'medium' sources of information, had 'medium' farm size, belonged to 'medium' income group and were having 'medium' knowledge level.

The association between adoption level and the personal, social, economic and psychological characteristics of rose growers were studied. It was found that age and family size had negatively significant relationship with their adoption, while other characteristics *viz.,* education, social participation, sources of information, farm size, annual income and knowledge level had significant relationship with the level of adoption of improved rose cultivation practices.

Abstract contd..... **P.S. Pawar**

The study revealed that majority of the rose growers belonged to 'medium' level of adoption of rose cultivation technology.

In regard to the practices followed by the rose growers, it was observed that out of forty practices, eleven cultivation practices were completely followed by the rose growers.

Regarding marketing of roses it was observed that almost all the rose growers marketed their produce regularly in (metropolitan cities) Mumbai. None of the rose grower was exporting roses.

Amongst the constraints studied in respect of supply of inputs, economic, extension, technical and marketing, majority of the rose growers reported the constraints in marketing *viz.,* fluctuation in prices, high rate of commission, lack of proper rates according to grade of flowers and low price in the local market.

In order to overcome the constraints, suggestions were obtained from the rose growers. Majority of the rose growers suggested establishment of cold storage facilities, provision of incentives and subsidies, Extension personnel should use audio-visual aids and efficient and effective marketing system.

Introduction

1. INTRODUCTION

Rose (*Rosa indica*) is the best known and most popular of all garden flowers throughout the world. It is one of the nature's beautiful creations and is universally known as the queen of flowers. Rose is a symbol of love, adoration and innocence not in our time only but also for thousands of years and it has been growing on this earth since time immemorial.

There is no doubt that rose is much older than man. Fossil remains of the rose found in Orgeon and Colorado, are estimated to be more than thirty million years old. The history of man and rose is linked for about 5000 years.

The cultivation of this flower has developed with the distillation of rose as mentioned in *ayurveda* by Charaka around 100 A.D. The moghals were known to be ardent admirers of rose and the *Empress* Nurjehan is credited with the discovery of *attar* from this flower.

The commercial cultivation of roses for cutflowers has increased during the last three decades. The major rose gorwing states are Andhra Pradesh, Karnataka, Tamilnadu, West Bengal and Maharashtra. In India the total area under various flower crops is 88607 ha, out of which Maharashtra has 6600 ha (Kanwat, 2004).

As per the Directorate of Horticulture, Pune the area under rose cultivation in Maharashtra in 2002 was 2720 ha with the production of 5440 metric tones.

In Maharashtra, the rose cultivation is mainly concentrated in Pune, Nashik, Ahmednagar, Sangli and Satara. The area under this flower crop is increasing in other districts of Maharashtra also. In Sangli district, the total area under flower crops was 391.87 ha out of which 26.44 ha (Source : Agriculture Department, Sangli) of area was under rose crop in the year 2002. The major rose growing taluka in Sangli district are Miraj and Walwa.

Importance of roses

Rose has become a part and parcel of the human life. It is connected with all the phases of life of human beings. Roses are grown on large scale for cut flowers and on small scale for planting shrubs, bushes, standard roses, climbers, ramblers, edges, rockeries in the garden and pot plants for decorating the houses. There is considerable demand for loose flowers for making garlands, bouquets and floral decoration.

The rose flowers are used on many social and religious occasions such as marriages, birthdays, for welcoming, for worship, for celebration of rose days in colleges etc.

The other important aspect of commercial value of rose flower is for extraction of floral perfumes, which is having demand both in domestic and international market. From rose flowers perfumes, rose water, *attar* and *gulkand* are prepared. Also vitamins C, A, B_2, K and E are extracted from rose flowers. In European countries roses are also used for preparation of jams, jellies, pickles, vinegar and even for making wines too.

Scope for rose growing

India's export of floricultural products has gone up from $2 million about five years ago to $20 million now.

APEDA is setting up its own marketing center at Amsterdam and local auction centers at Bangalore, Mumbai, Noida.

The domestic market for flowers and flowering plants is picking up in the country because of growing interest of affluent and upper middle class people in indoor plants and flowers. A surge in demand for flowers has been noticed in domestic markets of Delhi, Mumbai and Kolkata.

In European countries during the winter season rose production is very limited and as such they have to depend upon import of rose flowers. Some of the foreign companies have set up shops in India for growing plant material of foreign varieties of roses for sale in India. They provide planting material and consultancy services not only for export oriented production but even for domestic market.

The Government of Maharashtra has launched a special drive under Employment Guarantee Scheme to motivate the farmers for growing horticultural crops. Under various horticultural programmes government is giving loans and subsidies for construction of polyhouses, drip and sprinkler units, for establishing nurseries and also for cultivation and export of flowers through co-operatives *viz.*, Maharashtra Floriculture Development Board.

A need was felt to make available scientific information on the production, marketing and export of rose flowers. Hence, the

present study was undertaken entitled " STUDY OF ROSE GROWERS FROM SANGLI DISTRICT".

1.1 Objectives of the study

1. To study the personal, social, economic and psychological characteristics of rose growers.
2. To study the adoption level of the recommended production technology of rose cultivation.
3. To study the marketing of Rose.
4. To study the constraints faced in cultivation and marketing of Rose.
5. To obtain the suggestions of rose growers to overcome the constraints.

1.2 Hypothesis

The following hypothesis will be tested in the course of this investigation.

Hypothesis

Personal, social, economic and psychological characteristics of the member farmers are related to their adoption of the recommended rose cultivation practices.

1.3 Importance of study

Very little efforts were made so far by the researchers and investigators on studies related with rose growers. In the present investigation efforts have been taken to determine the personal, social, economical and psychological characteristics of rose growers. The investigation was mainly focused on the adoption level of rose

growers about production and management. Constraints experienced by the rose growers were also studied.

It is expected that the study would be useful to the rose growers in Sangli district and particularly in Miraj and Walwa talukas. It would be useful to policy makers, extension workers, agricultural universities and those who are engaged with the floriculture industry. The study would also give certain guidelines to the scientists in social research to undertake the similar studies in different areas for more generalization of the findings of the study and also to conduct such studies on the other ancillary aspects of rose industry for its development and progress.

1.4 Limitations of the study

The present study is limited to only 120 rose growers of 08 villages selected from the Miraj and Walwa talukas in Sangli district of Maharashtra. The present study suffered from the limitations of convergence and coverage as usually faced by single student investigator. Therefore, the findings would be of limited use. For more generalization similar studies with different locations and larger sample size needs to be undertaken. The findings of the study would be applicable to the localities having similar environmental, ecological and socio-economic conditions. As this study is exploratory type, the findings will have to be tested to judge its validity on general and universal scale.

By considering all these limitations, care has, however been taken to make the study as objective and systematic as possible.

Review of literature

2. REVIEW OF LITERATURE

A comprehensive review of literature is an essential part of any scientific investigation. It is always helpful to the investigator as a guideline for his approach. The review of literature is useful to compare the findings of studies undertaken by previous research workers. Many social scientists and research workers have undertaken studies to find out the relationship of adoption of improved agricultural practices and various characteristics of the adopters. Some studies on constraints in adoption of crop technology have also been conducted.

As such, an attempt has been made to review the past studies which are directly as well as indirectly related to present study.

The review is presented under the following headings.

1. Personal, social, economic and psychological characteristics of the farmers.
2. Adoption of recommended crop production technology by the farmers.
3. Relationship between personal, social, economic and psychological characteristics of farmers and their adoption.
4. Marketing of agricultural produce.
5. Constraints in adoption of technology.
6. Suggestions made by the farmers.

2.1 Personal, social, economic and psychological characteristics of the farmers

2.1.1 Age

Deshmukh (1996) stated that majority of custard apple growers (62.50 per cent) were from 'middle age' group followed by 21.66 per cent from 'young age' and 15.88 per cent from 'old age' category.

Ahire (1997) observed that majority of grape growers (55.34 per cent) were from 'middle age' category followed by 24.00 per cent and 20.66 per cent from 'young age' and 'old age', respectively.

Phadtare (1999) found that more than half (60.66 per cent) of the onion growers belonged to 'middle age' group (41-55 years), 22.00 per cent and 17.34 per cent of onion growers belonged to 'old' (56 and above) and 'young' (upto 40 years) age group, respectively.

Chikhale (2002) found majority of the trainees (54.70 per cent) who adopt the dryland cultivation practices belonging to 'middle' age category.

Kolte (2002) found majority of the chilli growers (86.00 per cent) who adopt the improved chilli growing practices from 'middle' age group.

2.1.2 Education

Deokate (1998) observed that 12.74 per cent Jasmine growers were educated 'upto 8th standard and above, while 52.72 per

cent of growers had received `primary' education (upto 7th standard) and 34.54 per cent growers were found to be `illiterate'.

Katkar (2000) revealed that most of the drip adopters (40.00 per cent) had 'secondary' education, 20.00 per cent and 12.00 per cent had 'higher' education and 'primary' education, respectively, whereas only 6.00 per cent were 'illiterate'.

Chikhale (2002) found that majority of the trainees (65.00 per cent) have some formal education.

Kolte (2002) found that large majority (88.00 per cent) of the chilli growers had undergone some formal education i.e. primary, secondary, higher secondary, graduation and above.

2.1.3 Size of family

Deokate (1998) revealed that 46.45 per cent jasmine growers had a family size of '5-6 members', while, 25.46 per cent of jasmine growers had family size of '7 and above' members and 29.09 per cent of jasmine growers had family size 'upto 4 members'.

Phadtare (1999) found that more than half (58.40 per cent) of the onion growers had 'small' family size and remaining (41.60 per cent) of them were having 'big' family size.

Patil (2002) found that majority (68.00 per cent) of the respondents had 'medium' family size.

2.1.4 Social participation

Patil (1995) reported that more than half (56.34 per cent) of the respondents had 'medium' level of social participation.

Chikhale *et al.* (1996) pointed out that 42.00 per cent of orange growers had `medium' social participation followed by 38.50

per cent respondents had 'low' social participation, while 19.50 per cent of respondents were from 'high' social participation category.

Kulkarni (1999) observed that less than one half (48.00 per cent) of the respondents were having 'medium' social participation, whereas 28.00 per cent had 'low' and 24.00 per cent of respondents had 'high' social participation.

Kolte (2002) found that more than three fourth (86.00 per cent) of chilli growers were having 'medium' social participation.

Borse (2003) found that majority (72.00 per cent) of the cotton growers had 'medium' social participation.

2.1.5 Sources of information

Deokate (1998) found that about one third (31.81 per cent) of the jasmine growers had used 'high' sources of information, while 44.54 per cent growers used 'medium' sources of information and near about one fourth (23.65 per cent) jasmine growers used 'low' sources of information.

Kulkarni (1999) reported that 46.66 per cent of the respondents were using 'medium' sources of information, whereas 33.33 per cent of them had used 'low' sources of information, and 20.00 per cent of them were using 'high' sources of information.

Kolte (2002) found that about fifty per cent (45.94 per cent) of the chilli growers used `medium' level of sources of information channel in getting recommended technology of chilli growers.

2.1.6 Farm size

Shinde (1997) revealed that over half (55.22 per cent) of the groundnut growers had 'medium' size of land holding, while 30.56 per cent and 17.22 per cent of them had 'marginal' and 'big' land holding, respectively.

Katkar (2000) reported that majority (66.00 per cent) of the drip adopters had 'medium' land holding, while 28.00 per cent had 'big' size of land holding. Only 6.00 per cent of the respondents had 'small' land holding.

Kolte (2002) found that considerable majority (50.00 per cent) of chilli growers, fall under the 'medium' size of the land holding.

2.1.7 Annual income

Kulkarni (1999) revealed that 57.00 per cent respondents were from 'middle' income group, while 30.67 per cent of respondents were from 'high' income group and 13.33 per cent of them were from 'low' income group.

Katkar (2000) reported that three fifth (61.00 per cent) of the respondents had 'medium' level of annual income, followed by 23.00 per cent and 18.00 per cent who had 'low' and 'high' level of annual income, respectively.

Agresco report on technological gap in pomegranate cultivation (2002) indicated that about 46.86 per cent of the pomegranate growers had annual income between 'Rs. 100001/- to Rs. 250000/-', while one fifth had annual income upto Rs. 100000/.

Only 14.86 per cent of farmers had annual income up to Rs. 400000/- and above.

2.1.8 Knowledge of farmers about recommended package of practices of crops

Aghav (1997) revealed that 48.61 per cent of the vegetable growers had 'medium' level of knowledge, followed by 27.97 per cent possessing 'high' level of knowledge and 23.31 per cent belonged to 'low' level of knowledge group.

Waman and Patil (2000) noticed that farmers had lack of knowledge about improved structure (73.33 per cent), grading (58.66 per cent) handling care during storage period and also lack of knowledge about curing and drying of onion.

Kolte (2002) found that majority (60.00 per cent) of the chilli growers were in 'medium' knowledge level category.

2.2 Adoption of recommended crop production technology by the farmers

Rogers (1962) defined adoption as the mental process through which an individual passes from first hearing about an innovation to final adoption.

Phadtare (1999) found that 60.00 per cent of the onion growers had 'medium' level of adoption, followed by 'low' (32.50 per cent) and 'high' (7.50 per cent) level of adoption of improved cultivation practices of onion.

Katkar (2000) observed that more than half (55.00 per cent) of the respondents had 'medium' level of adoption of

recommended practices of drip irrigation system, while 26.00 per cent had 'high' level of adoption respectively.

Chikhale (2002) found that majority (69.20 per cent) of trainees had 'medium' level of adoption.

2.3 Relationship between personal, social, economic and psychological characteristics of farmers and their adoption

2.3.1 Age and adoption

Supe *et al.* (1990) observed that there was no significant relationship between age of farmers with adoption of improved jowar practices as observed amongst the farmers of dry farming area.

Kher (1991) inferred that there was significant correlation between age and adoption behaviour of rainfed maize growers.

Bhujbal (1995) concluded that there was a statistically non-significant association between age and adoption level of fig growers.

Sakore (1997) found statistically non significant association between age and adoption of rose growers.

Sutar (1997) noticed that age of papaya growers was negatively and significantly related with adoption level.

Phadtare (1999) inferred that, age of the farmers did not influence on adoption behaviour pertaining to improved onion cultivation practices.

2.3.2 Education and adoption

Rade *et al.* (1990) observed that the education has highly significant correlation with the adoption of recommended *kharif* groundnut production technology.

Gaikwad (1992) inferred that flower growers characteristic *viz.*, education was positively and significantly related to the level of adoption in flower production technology.

Javale *et al.* (1994) reported that the education and adoption are significantly correlated as found in the study of socio-personal characteristics of Mango and Citrus growers.

Kadam and Borse (1993) concluded that education had significant correlation with adoption of banana technology by the farmers.

Sakore (1997) found statistically significant relationship between education and adoption of rose growers.

Kalbhor (1998) found positive and statistically significant relationship between education and adoption of Jasmine growers.

Bhosale (2003) inferred that there was a positive and highly significant relationship between the pomegranate growers education and adoption of pomegranate growers.

2.3.3 Family size and adoption

Nikhade and Potdar (1989) observed that family size 'had a negative correlation with adoption behaviour of banana growers.

Kadam *et al.* (1991) found negative and non-significant relation between family size and adoption behaviour of banana growers.

Lianbika and Nikhade (1993) concluded that family size of pine apple growers and their level of adoption were statistically found to be non-significant.

Pandya and Vakeria (1994) showed that the family size of banana growers was found non-significantly associated with their adoption level.

Shinde (1997) revealed that the family size had a negative and significant relationship with adoption level.

Kalbhor (1998) found statistically non-significant correlation between family size and adoption of tuberose growers.

2.3.4 Social participation and adoption

Kadam *et al.* (1991) stated that the social participation had significant relationship with the adoption behaviour of potato growers.

Chiprikar and Khuspe (1992) found that there was significant and positive relation between social participation with the adoption technology by grape growers.

Kharat (1996) observed that there is a significant association and correlation between social participation of the pomegranate growers and their level of adoption of improved practices of pomegranate cultivation.

Phadtare (1999) found the relationship between social participation and adoption of improved practices of onion cultivation significant.

Sawant (2002) found the relationship between social participation and adoption of improved practices of turmeric cultivation positive and significant at 0.01 level of probability.

Bhosale (2003) indicated the relationship between social participation and adoption level of pomegranate growers positive and highly significant.

2.3.5 Sources of information and adoption

Nalawade (1989) observed that information sources have highly significant association with the adoption of improved practices by the farmers.

Javale and Nachane (1994) found that there was significant correlation between sources of information used by mango and citrus growers and their level of adoption.

Kharat (1996) reported that there is a significant association between sources of information used by the farmers and their level of adoption of improved cultivation practices of pomegranate.

Sakore (1997) found statistically high significant association between sources of agricultural information and adoption of rose technology.

Deokate (1998) revealed that there was positive and statistically significant relationship between source of information and adoption.

Sawant (2002) observed highly significant relationship between source of information utilized by turmeric growers and their

adoption level regarding recommended practices of turmeric cultivation.

Bhosale (2003) indicated the relationship between the sources of information and adoption level of the pomegranate growers as positive and highly significant.

2.3.6 Farm size and adoption

Patil and Waghdhare (1989) inferred that size of land holding of banana growers was found to be significantly associated with the adoption of banana cultivation technology.

Kadam *et al.* (1991) found significant correlation between farm size and adoption behaviour of potato growers.

Lianbika *et al.* (1993) found significant relationship of land holding with adoption behaviour of banana growers.

Bhujbal (1995) concluded that the size of land holding of the fig growers was significantly associated with their level of adoption.

Sakore (1997) found that there was statistically significant association between farm size and adoption of the improved rose growing technology.

Kalbhor (1998) found that there was statistically significant association between farm size and adoption of the recommended tuberose growing technology.

Phadtare (1999) showed significant relationship between size of land holding and adoption level of onion cultivators.

Sawant (2002) found relationship between size of land holding and adoption level of turmeric growers positive and highly significant.

2.3.7 Annual income and adoption

Wangikar *et al.* (1991) observed that the annual income was relatively and significantly related with the technology gap in sugarcane farming.

Nikhade *et al.* (1992) found non-significant relationship of annual income with adoption behaviour of soybean growers.

Javale *et al.* (1994) reported significant correlationship of annual income and adoption of recommended practices for mango and citrus crops.

Sakore (1997) found statistically significant relationship between income and adoption of the rose cultivation practices.

Deokate (1998) found positive and statistically significant relationship between annual income and adoption of jasmine growers.

Phadtare (1999) found relationship between annual income and adoption level of improved onion cultivation practices significant.

Bhosale (2003) observed that the relationship between annual gross income and adoption level of the pomegranate growers was positive and highly significant.

2.3.8 Knowledge and adoption

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

They further explained that knowledge is that part of persons information which is in accordance with the established fact.

Sakharkar *et al.* (1992) stated that the knowledge and adoption of improved practices of soybean by the farmers were significantly related with each other. It has been shown that adoption of improved practices depends on the knowledge possessed by farmers.

Lianbika and Nikhade (1993) found significant relationship of knowledge with adoption of improved pineapple practices and stated that adoption increases with the increase in knowledge about improved practices among the respondents.

Sakore (1997) found positive and statistically significant relationship between knowledge and the adoption of rose technology by rose growers.

Bhosale (2003) indicated that the relationship between the knowledge and adoption level of the pomegranate growers was positive and highly significant.

2.4 Marketing of agricultural produce

Shirazi (1979) observed that there were considerable difficulties in marketing of agricultural products. There were complex channels and variety of marketing margins which ultimately reduce the share of the producer.

Sayane (1984) in his study reported that middlemen performed certain discernible functions of marketing of agricultural produce.

Sakore (1997) observed that all the rose growers marketed their rose flowers at Gultekdi Market Yard, Pune and 40 per cent of the rose growers sent their produce to Mumbai market. Further, it was observed that none of the rose growers had exported their produce.

Deokate (1998) found that majority (97.27 per cent) growers sold their produce to one agent. None of the growers exported flowers. Only 18.18 per cent growers secured recommended yield from jasmine crop.

2.5 Constraints in adoption of technology

Kothikhane *et al.* (1987) observed that the unsuitability and use of improved farm implements, high cost of inputs like fertilizers, pesticides, non-availability of inputs at proper time and inadequate quantities, low price of farm produce, non-availability of resources at farmers level, lack of proper irrigation schedule, conflicting attitude among farmers regarding irrigation, apathetic attitude of departmental personnel, problems of development of salinity due to prolonged use of irrigation were the prominent constraints reported by the farmers confound to the area which hinders in adoption of agricultural technology appropriately under irrigated farming system on their farms.

Supe *et al.* (1988) found that unfavourable climatic condition for almond cultivation, lack of guidance in cultivation of almond, lack of knowledge about almond cultivation, lack of inputs like credit, fertilizer and pesticides, lack of irrigation facilities, non-availability of disease free pedigree seed and plant material, lack of

standardized techniques in propagation of almond were the major constraints in almond cultivation.

Negi (1990) studied the constraints regarding exporting cut flowers from India at production, transport and marketing stages. He found production in terms of poor quality, lack of planting material and export varieties, high air freight charges and absence of an organized market monitoring system as the constrains to exporting cut flowers from India.

Singh (1994) stated that although there is a good scope for export of flowers and live plants, India does not have even peripheral presence in the global trade. Poor infrastructure is inadequate for the production of floral crops for export. This leads to inadequate surpluses which may otherwise be exported. Apart from this lack of appropriate planting materials, production technology, basic inputs like standard containers and growing media as well as quality packing materials discourage many entrepreneurs. Floriculture products are perishable and proven methods of prolonging the life of cut flowers and potted plants remain a dream.

2.6 Suggestions made by the farmers

Reddy and Ratnakar (1993) reported that most of the growers were having less knowledge regarding improved mango cultivation technology. Majority of the farmers suggested that there must be timely supply of inputs *viz.*, grafts, fertilizers, pesticides and growth regulators etc.

Bhujbal (1995) concluded that majority of fig growing farmers suggested the establishment of fig market and processing industries.

Kharat (1996) concluded that 90.32 per cent farmers suggested to establish fruit processing industries and 81.94 per cent farmers also suggested to establish it near by market.

Kolte (2002) observed that majority of the suggestions were regarding providing fertilizers and pesticides at reasonable rates and establishment of storage facilities.

Methodology

3. METHODOLOGY

This chapter describes details of the research site, technique used for selection of respondents, designing of interview schedule as well as procedure and techniques followed in collection of data and measurement of variables used in the study.

3.1 Location of the research site

3.1.1 Geographical location

The study was conducted in Sangli district. The Sangli district lies between 16°45′ and 17°22′ latitude and 73°42′ and 75°40′ altitude. Miraj and Walwa talukas were purposively selected out of the 10 talukas in Sangli district. The two talukas are located on the southern side of the district. Walwa taluka is located on the western side of Miraj taluka.

3.1.2 Area and population

The total geographical area of Sangli district is 8572 sq.kms, out of which Miraj and Walwa talukas have 926.10 sq.km. and 772.83 sq.km., area respectively.

According to 2001 census the total population of Sangli district was 2581835. Miraj and Walwa talukas were having 754760 and 427326 population, respectively.

3.1.3 Soils and climate

Different types of soils are prevalent in the district Sangli. The soils in Miraj and Walwa have varied nature ranging from red lateritic to medium black and deep black. Lateritic soils are mainly

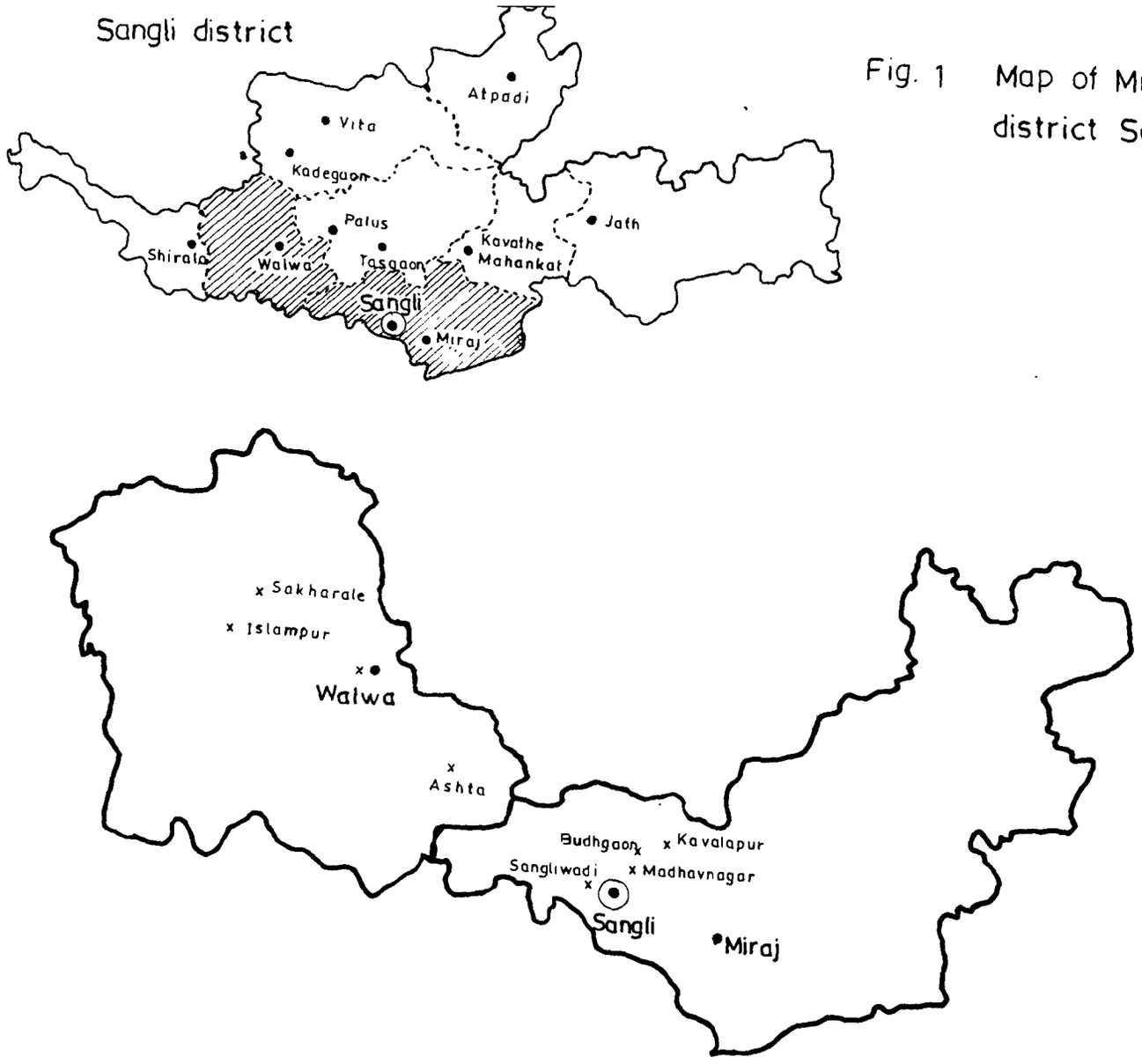


Fig. 1 Map of Miraj and Walwa talukas of district Sangli with selected villages.

observed on the elevated areas of mountain. Medium black soils are observed on the plains while deep black soils are observed along the river banks.

The total rainfall of the district in 2002 was 409 mm.

3.1.4 Irrigation facilities

About 1.54 lakh ha area of Sangli district is under irrigation, out of which 72 per cent is well irrigated and 28 per cent lift and canal irrigated. The ratio of net irrigated area to the area under cultivation is 20 per cent.

Krishna and Warna are main rivers in this region.

3.1.5 Transport and communication facilities

In Sangli district state transport buses and railway are the significant means of transportation. The state transport buses, corporation buses, trucks, tempos, private jeeps, autos are the major means of transportation. Major towns and villages are linked mostly by metal roads.

Total road length 9703 kms and railway track length of 173.96 kms is passing through the district. Pune – Bangalore (NH-4) highway also passes through the district.

Post offices and telephone facilities are available in almost all the villages. The radio and television means of communication are also spreading very fastly in the district.

3.1.6 Other facilities

The educational institutes, hospitals, nationalized banks, credit co-operatives, cold storage facilities, dairies, fair price shops, medical stores etc., are also operating in the district.

Research design

The exploratory design of social research was used in the study.

3.2 Sampling procedure

3.2.1 Selection of talukas

Miraj and Walwa were purposively selected on the basis of highest area among the other talukas in Sangli district. The total area under rose cultivation in Sangli district is 26.44 ha out of which Miraj and Walwa taluka have 19.90 and 6.30 ha, respectively.

Table 1. Talukawise area under rose cultivation (ha) in the year 2002

Sr. No.	Name of taluka	Area under rose cultivation (ha)
1.	Miraj	19.90
2.	Walwa	6.30
3.	Shirala	0.24
4.	Others	0
	Total	26.44

Source : Agriculture Department, Sangli district

Table 2. Talukawise list of selected villages and number of respondents

Sr. No.	Name of villages	Number of rose growers
I.	**Miraj Taluka**	
1.	Kavalapur	150
2.	Budhgaon	150
3.	Sangliwadi	15
4.	Madhavnagar	15
II.	**Walwa taluka**	
1.	Kasegaon	15
2.	Sakhrale	15
3.	Islampur	15
4.	Walwa	15
	Total	120

3.2.2 Selection of villages

The list of rose growing villages of Miraj and Walwa talukas was obtained from the respective Taluka Agricultural Officer. The villages were then arranged alphabetically and then 4 villages from Miraj and Walwa taluka each were selected randomly.

3.2.3 Selection of respondents

The list of rose growers from the selected villages was prepared with the help of village level functionaries namely Talathi, Gramsevak and local leaders. There were about 376 rose growers in the selected villages. From each village, 15 rose growers were selected by using random sampling method. Thus, a total of 120 respondents were selected for the study.

3.3 Designing of Interview schedule

The structured interview schedule serves as a tool for collecting data. Keeping in view the objectives of study, an interview schedule was prepared, which includes relevant questions for seeking information in respect of independent and dependent variables. Efforts were made to formulate a schedule with clear and easy questions. The schedule was prepared in local language i.e. in Marathi in order to get accurate response from the rose growers. The suitable questions regarding the knowledge and adoption of practices by the rose growers were included in the schedule.

3.4 Pretesting of the interview schedule

The interview schedule was tested prior to its finalization, by the researcher. It was pretested by interviewing ten rose growing farmers who were not included in the sample in order to know

whether the rose growing farmers furnish the required information. This pretesting of the interview schedule helped the researcher to make modification and alternation in order to get spontaneous response from the respondents. After making the required changes the interview schedule was finalised for collection of data.

3.5 Procedure for the data collection

The researcher personally interviewed the respondents included in the sample. The help of the local leaders and progressive farmers were sought for establishing rapport with the rose growing farmers. The importance and objectives of the study were clearly explained to them and they were assured that the information furnished by them would be kept confidential and would be used for the research study only. The researcher attempted to contact the selected farmers at their home and on the farms during their leisure time to get the information. The interview were conducted in a friendly and informal manner.

3.6 Duration of the data collection

The work of data collection was started in second week of May 2004 and completed by the end of June 2004. It took total period of about one and half month.

3.7 Compilation of data

The information collected through interviews was transferred from the interview schedules to primary tables and then to the secondary tables. The qualitative data were quantified and worked out different scores in order to find out the nature of

association and correlation between the dependent and independent variables.

3.8 Working of scores and grouping of respondents

The qualitative data were converted into quantitative data by giving scores. The scores obtained by each rose grower in respect of particular characteristics under the study were worked out.

The rose growers were thus classified logically into different categories on the basis of score gained by them.

3.9 Definitions of terms and concepts and Measurement of variables

The procedure followed for measuring personal, social, economic and psychological characteristics of the respondents are explained in detail as below.

All the variables were classified into their respective categories on the basis of mean and standard deviation.

3.9.1 Age

The chronological age of the rose growers at the time of interview was considered. The respondents were classified into the following age groups.

Sr.No.	Category	Age (years)
1.	Young age	Upto 27 years
2.	Middle age	28 to 51 years
3.	Old age	52 and above

3.9.2 Education

It refers to the number of school grades successfully completed by the respondent. According to the educational standard rose growers were classified into following groups.

Sr.No.	Category	Education (Std.)
1.	Illiterate	No education
2.	Primary	Upto 4th Std.
3.	Secondary	5th to 7th Std.
4.	Higher secondary	8th to 12th Std.
5.	College	Above 12th

3.9.3 Family size

It refers to the total number of members living together in family under a common roof having blood relation and share a common food. Accordingly, the rose growers were grouped in the following categories.

Sr.No.	Category	Family size (No. of members)
1.	Small family	Upto 4
2.	Medium family	5 to 11
3.	Large family	12 and above

3.9.4 Social participation

It refers to the participation of a respondent in various formal and informal organizations.

For studying, the social participation of the rose growers score was worked out. Score one was assigned when participation of

a rose grower was in one social organization. When one participated as an office bearer one additional score was given. The total score of the respondent was worked out and then the respondents were classified into following categories.

Sr.No.	Category	Social participation (score)
1.	Low	Upto 3
2.	Medium	4 to 6
3.	High	7 and above

3.9.5 Sources of information

It refers to the use of sources of agricultural information for various recommended cultivation practices by the rose growers.

The respondents were asked to record the consulting pattern used by them, considering three levels that is, whether used 'regularly', 'occasionally' or 'not used'. For regular use two score was assigned, for occasional use one score was assigned and for no use zero score was assigned. The total score was worked out and the respondent were classified into following categories.

Sr. No.	Category	Source of information (score)
1.	Low	Upto 6
2.	Medium	7 to 21
3.	High	22 and above

3.9.6 Farm size

It refers to number of hectares of land owned, cultivated and managed by a rose grower under study. According to extent of land possessed by the rose growers, they were classified into following categories.

Sr.No.	Category	Farm size (ha)
1.	Small	Upto 1.00 ha
2.	Medium	1.01 to 4.00 ha
3.	Big	4.01 and above

3.9.7 Annual income

It refers to the total annual income in rupees obtained from agriculture and other sources by the rose growers.

According to the extent of income earned by the rose growers, they were classified into following categories.

Sr.No.	Category	Annual income (Rs.)
1.	Low	Upto 45271
2.	Medium	45272 to 154211
3.	High	154212 and above

3.9.8 Knowledge

It was operationalised as the factual information about the production technology possessed by the rose growers.

In the present study, the knowledge of rose growers in respect of improved practices of rose cultivation was studied by

computing the knowledge score. In all 39 improved practices were considered for the study. Each of the improved practice was given equal weightage for computing the knowledge socre.

According to the extent of the knowledge of the respondents the score was assigned to them. For 'complete' knowledge of each practice, score two was assigned and score one was assigned for the 'partial' knowledge of the improved practices, while zero score was given for 'no' knowledge. The respondents were then classified into three categories as under.

Sr.No.	Category	Knowledge level (score)
1.	Low knowledge	Upto 43
2.	Medium knowledge	44 to 58
3.	High knowledge	59 and above

3.9.9 Dependent variable

Dependent variables are those variables which vary with the change in independent variables.

3.9.9.1 Adoption

It is operationalised as continued use of recommended rose flower production technology and management practice by the respondents.

According to Rogers, adoption process is a mental process in which individual passes from first hearing about an innovation to its final adoption.

In the present study, the adoption behaviour of the rose growers in respect of improved practices of rose cultivation was studied by computing the adoption score. In all 39 improved practices of rose cultivation were considered for the study. Each of the improved practice was given equal i.e. one weightage for computing the adoption score. According to the extent of adoption, the score were assigned. For 'complete' adoption of each practice score two was assigned and score one was assigned for the 'partial' adoption of the improved practices, while zero was given for 'no' adoption.

The respondents were then classified into three categories.

Sr.No.	Category	Adoption (score)
1.	Low adoption	Upto 36
2.	Medium adoption	37 to 48
3.	High adoption	49 and above

3.10 Marketing of rose

Marketing is a part of the production activity which involves various services like assembling, grading, packaging, storage, transportation and these are performed by various agencies at different levels. The data regarding marketing of the rose flower are collected and analysed for presentation.

3.11 Constraints

Constraints refer to the circumstance or causes which prohibits farmers to adopt improved farm technology.

In order to investigate constraints faced by rose growers. The constraints were grouped in supply of inputs, economical, technical, extension and marketing of roses. The rose growers were exposed to questions whether they faced difficulties in flower production, management and marketing. For each of the difficulties faced by the farmers one score was assigned and for no difficulty zero score was given. In this manner total score was calculated for each respondent. The frequency and percentage of every constraint was worked out.

3.12 Suggestions

Suggestions were invited from the rose growers to overcome the problems faced by them in production, management and marketing of roses. The suggestions were grouped, the frequency and percentage of suggestions was worked out.

3.13 Statistical methods used

In this study the statistical methods, such as frequency percentage, karl pearson's correlation coefficient have been used.

1. Percentage

Percentage is used in descriptive analysis of data for making simple comparison.

2. Correlation coefficient

Karl Pearson's coefficient of correlation was used for measuring the relationship between two variables.

It is represented by r.

$$r = \frac{\Sigma xy - \frac{(\Sigma x)(\Sigma y)}{n}}{\sqrt{\Sigma x^2 - \frac{(\Sigma x)^2}{n}}\sqrt{\Sigma y^2 - \frac{(\Sigma y)^2}{n}}}$$

Where,

r	=	Co-efficient of correlation
x	=	Independent character
y	=	Dependent character
n	=	Total number of respondents

Results and Discussion

4. RESULTS AND DISCUSSION

This chapter deals with the presentation of the results of the investigation and critical discussion of the results presented. The data collected from 120 respondents from 8 villages in Miraj and Walwa talukas of Sangli district were compiled into primary tables. They were then transferred into secondary tables in view of the objectives of the study. Appropriate statistical tests were used to test the results. The results of the investigation are presented and discussed in this chapter under following heads.

4.1 Personal, social, economic and psychological characteristics of the rose growers

4.2 The level of adoption of rose growers about the package of practices of rose cultivation

4.3 Relationship between personal, social, economic and psychological characteristics of the rose growers and their adoption behaviour

4.4 Area under rose cultivation

4.5 Marketing of rose by the rose growers

4.6 Constraints faced by the rose growers in cultivation and marketing of rose

4.7 Suggestions of the rose growers for overcoming the constraints

4.1 Personal, social, economic and psychological characteristics of the rose growers

The data on personal, social, economic and psychological characteristics of the rose growers are presented in Table 3.

4.1.1 Age

It was observed from the Table 3 and Fig. 2 that the maximum number of respondents (63.33 per cent) were from 'middle' age group, followed by 'young' age group (20.84 per cent) and 'old' age group (15.83 per cent).

Thus, it can be inferred that large proportion of the rose growers belonged to middle age group.

The finding is similar to the findings of Deshmukh (1996), Ahire (1997), Phadtare (1999), Chikhale (2002) and Kolte (2002).

4.1.2 Education

It was revealed from Table 3 and Fig. 2 that majority (35.83 per cent) of the respondents were educated upto 'higher secondary' level, followed by 'secondary' level (27.50 per cent) and primary level (19.17 per cent). Only 9.17 per cent of respondents were illiterate and 8.33 per cent had college level education.

This clearly indicates that large proportion of the respondents had 'higher secondary' education.

The finding is similar to the findings of Deokate (1998), Chikhale (2002) and Kolte (2002).

Table 3. Distribution of respondents according to their personal, social, economic and psychological characteristics

Sr. No.	Characteristics	Respondents (n = 120)	
		Number	Percentage
I.	Age (years)		
	1. Young (upto 27)	25	20.84
	2. Middle (28 to 51)	76	63.33
	3. Old (52 and above)	19	15.83
	Total	120	100
II.	Education (Standard)		
	1. Illiterate	11	9.17
	2. Primary	23	19.17
	3. Secondary	33	27.50
	4. Higher secondary	43	35.83
	5. College	10	8.33
	Total	120	100
III.	Family size		
	1. Small (upto 4)	28	23.33
	2. Medium (5 to 11)	72	60.00
	3. Large (12 and above)	20	16.67
	Total	120	100
IV.	Social participation (score)		
	1. Low (upto 3)	35	29.17
	2. Medium (4 to 6)	70	58.33
	3. High (7 and above)	15	12.50
	Total	120	100

Table 3 contd....

Sr. No.	Characteristics	Respondents (n = 120)	
		Number	Percentage
V.	Sources of information (score)		
	1. Low (upto 6)	14	11.67
	2. Medium (7 to 21)	100	83.33
	3. High (22 and above)	6	5.00
	Total	120	100
VI.	Farm size (ha)		
	1. Small (utp 1.00 ha)	7	5.83
	2. Medium (1.01 to 4.00 ha)	87	72.50
	3. Big (4.01 to above)	26	21.67
	Total	120	100
VII.	Annual income (Rs.)		
	1. Low (upto 45271)	15	12.5
	2. Medium (45272 to 1,54,211)	74	61.67
	3. High (1,54,212 and above)	31	25.83
	Total	120	100
VIII.	Knowledge (score)		
	1. Low (upto 43)	19	15.83
	2. Medium (44 to 58)	79	65.84
	3. High (59 and above)	22	18.33
	Total	120	100

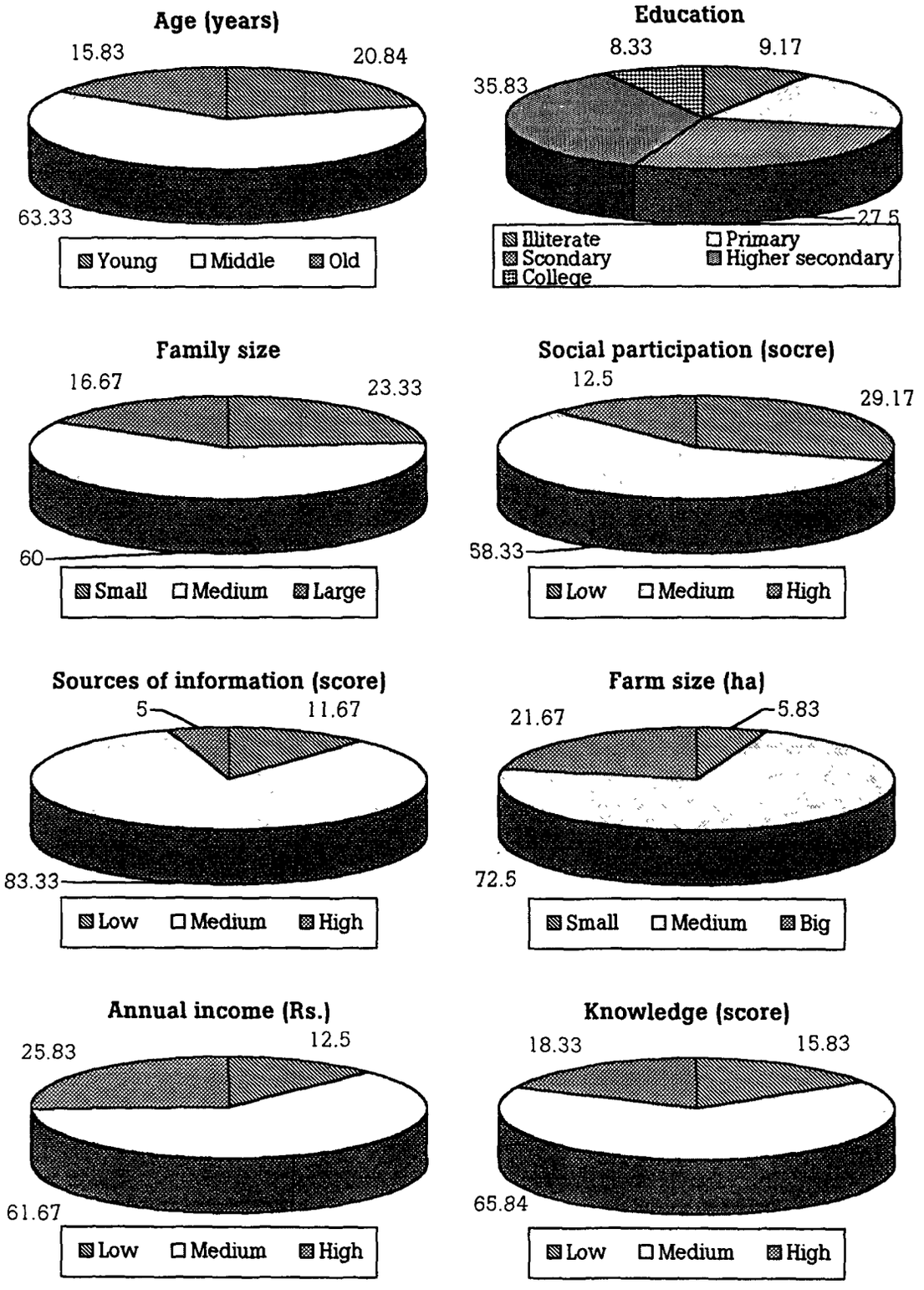


Fig. 2. Distribution of respondents according to their personal, social, economic and psychological characteristics

4.1.3 Family size

It was observed from Table 3 and Fig. 2 that majority (60 per cent) of the respondents had 'medium' family size, followed by 'small' family size (23.33 per cent) and 'large' family size (16.67 per cent).

It was revealed that majority of the rose growers belonged to 'medium' size of family. This observation is in line with that of Deokate (1998) and Patil (2002).

4.1.4 Social participation

Table 3 and Fig. 2 indicates that about 58.33 per cent of the respondents were having 'medium' social participation, while 29.17 per cent of the respondents had 'low' social participation followed by 12.5 per cent of respondents having 'high' social participation.

The result indicated that majority of the rose growers had 'medium' social participation. The finding is in conformity with the findings of Patil (1995), Chikhale *et al.* (1996), Kulkarni (1999), Kolte (2002) and Borse (2003).

4.1.5 Sources of information

As regards the sources of information, it became clear from Table 3 and Fig. 2 that 83.33 per cent of respondents were using 'medium' sources of information, whereas 11.67 per cent and 5.0 per cent of respondents had used 'low' and 'high' sources of information respectively.

It can be concluded that substantial proportion of the rose growers had used various sources of information. This finding is

similar to the findings of Deokate (1998), Kulkarni (1999) and Kolte (2002).

4.1.6 Farm size

It is observed from Table 3 and Fig. 2 that 72.5 per cent of the rose growers had 'medium' farm size, 21.67 per cent of them had 'big' farm size and 5.83 per cent of them had 'small' farm size.

It can be, thus concluded that substantial proportion of the rose growers had 'medium' farm size.

This finding is similar to the findings of Shinde (1997), Katkar (2000) and Kolte (2002).

4.1.7 Annual income

It was revealed from Table 3 and Fig. 2 that 61.67 per cent of the respondents were from 'medium' income group, while 25.83 per cent of respondents were from 'high' income group and 12.5 per cent belonged to 'low' income group.

It can be inferred from the study that large proportion of respondents were from 'medium' income group. This finding is in line with findings of Kulkarni (1999), Katkar (2000) and Agresco report (2002).

4.1.8 Knowledge

The data presented in Table 3 and Fig. 2 shows that 65.84 per cent of the rose growers were having 'medium' knowledge level, while 18.33 per cent of rose growers were having 'high' knowledge level and 15.83 per cent were having 'low' knowledge level.

Thus majority of the respondents were found to be having 'medium' knowledge of rose cultivation. The findings of the present study are similar to the findings of Aghav (1997) and Kolte (2002).

4.2 The level of adoption of rose growers about the package of practices of rose cultivation

The data pertaining to overall adoption level of the respondents are given in Table 4.

Table 4. Distribution of respondents according to their adoption level of rose cultivation technology

Sr. No.	Level of adoption (score)	Respondents	
		Number	Percentage
1.	Low (upto 36)	25	20.83
2.	Medium (37 to 48)	76	63.34
3.	High (49 and above)	19	15.83
	Total	120	100

Table 4 and Fig. 3 demonstrates that the highest percentage (63.34 per cent) of rose growers had 'medium' level of adoption of various recommended package of practices while 20.83 per cent and 15.83 per cent of rose growers had 'low' and 'high' level of adoption, respectively.

It can be said that the level of adoption of rose growers was satisfactory. The majority of rose growers were found in the 'medium' level of adoption. This might be due to higher educational level.

This finding is in conformity with Phadtare (1999), Katkar (2000) and Chikhale (2002).

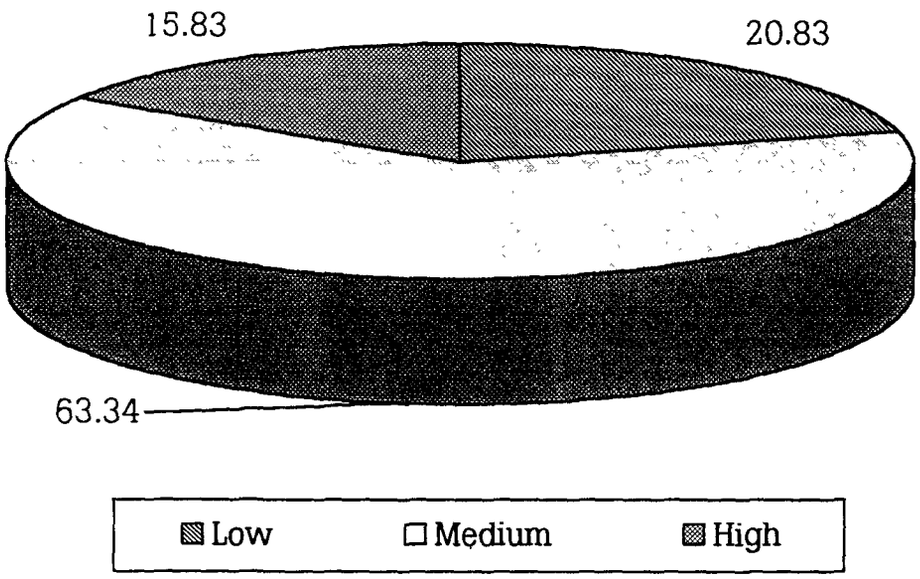


Fig. 3. Distribution of respondents according to their adoption level of rose cultivation technology

4.2.1 Practicewise adoption level of rose growers

The data regarding practicewise adoption of rose cultivation of the rose growers are given in Table 5.

It was observed from Table 5 that all (100 per cent) of the rose growers had adopted the practices related to the recommended soil type, ploughing and harrowing. While regarding the recommended pit size 28.83 per cent rose growers completely adopted the practice.

All (100 per cent) the farmers used the recommended variety Gladiator and also followed the recommended propagation method that is budding.

Regarding planting all (100 per cent) rose growers planted their roses in June-July. 65 per cent of the rose growers adopted 75 x 75 cm spacing whereas 35 per cent adopted 1.5 x 0.45m (Joint row method) spacing.

Fertilizer and manure application at planting was followed completely by 30.83 per cent of the rose growers and the recommended per year per plant dose was completely adopted by 32.5 per cent rose growers.

It was also revealed from the Table 5 that flood irrigation method was adopted completely by 80.83 per cent rose growers whereas drip irrigation system was followed by 19.17 per cent.

Regarding irrigation schedule in summer, winter and rainy days 3.33 per cent, 15.83 per cent and 100 per cent rose growers completely followed the schedule, respectively.

Table 5. Practicewise adoption level of rose growers

Sr. No.	Name of practices	Level of adoption		
		Complete	Partial	No
		Frequency (percent)	Frequency (per cent)	Frequency (per cent)
1.	Soil type (light to medium black, well drainage)	120 (100)	-	-
2.	Preparatory tillage			
	i. Ploughing	120 (100)	-	-
	ii. Harrowing	120 (100)	-	-
	iii. Digging pit (1' x 1' x 1' or 1.5' x 1.5' x 1.5')	34 (28.33)	44 (36.67)	42 (35.00)
3.	Varieties Gladiator, Superstar, peace, Sofia and Landora	120 (100)	-	-
4.	Propagation method			
	i. Budding	120 (100)	-	-
	ii. Cutting	-	-	120 (100)
5.	Planting and spacing			
	i. June-July	120 (100)	-	-
	ii. 75 x 75 cm	78 (65)	-	42 (35)
	iii. 1.5 x 0.45 m joint row method	42 (35)	-	78 (65)
	iv. 60 x 60 cm	-	-	120 (100)
	v. 1.5 x 0.60 m joint row method	-	-	120 (100)
6.	Manure and fertilizers			
	i. At planting Suphala 100 gm/plant Bonemeal 100 gm/plant One ghamela cowdung/plant	37 (30.83)	47 (39.17)	36 (30.00)
	ii. 60 : 40 : 40 gm NPK/year/plant	39 (32.50)	56 (46.67)	25 (20.83)

Table 5 contd....

Sr. No.	Name of practices	Level of adoption		
		Complete	Partial	No
		Frequency (percent)	Frequency (per cent)	Frequency (per cent)
7.	Irrigation method			
	i. Flood	97 (80.83)	-	23 (19.17)
	ii. Drip	23 (19.17)	-	97 (80.83)
	iii.Sprinkler	-	-	120 (100)
8.	Irrigation schedule			
	i. Summer (Twice a week)	4 (3.33)	71 (59.17)	45 (37.5)
	ii. Winter (Once a week)	19 (15.83)	78 (65)	23 (19.17)
	iii. Rainy (as required)	120 (100)	-	-
9.	Intertillage			
	Weeding (Once a month)	39 (32.5)	74 (61.66)	7 (5.84)
10.	Pruning			
	i. Method			
	Light/medium/heavy	31 (25.83)	56 (46.67)	33 (27.5)
	ii. Time			
	a. First week of June onwards	62 (51.67)	42 (35)	16 (13.33)
	b. Last week of September onwards	-	8 (6.67)	112 (93.33)
	c. November 1st week onwards	-	-	120 (100)
11.	Chemical weed control : Simazine 1.5 kg/ha or roundup 30 ml/10 hr water	14 (11.67)	37 (30.83)	69 (57.5)
12.	Control of pests			
	i. Jassids, aphids and thrips Nuvacron 2 ml/Demecron 4 ml or Nuvan 0.5 ml/Lit. water	44 (36.67)	57 (47.50)	19 (15.83)
	ii. Red scales Nuvacron 2 ml/Demecron 1 ml or Nuvan 1 ml/lit water or Carbofuran 1.5 kg/ha			

Table 5 contd....

Sr. No.	Name of practices	Level of adoption		
		Complete	Partial	No
		Frequency (percent)	Frequency (per cent)	Frequency (per cent)
13.	Control of diseases			
	i. Black spot			
	Bavistin 0.1 % or Captaf 0.1 %			
	ii. Powdery mildew			
	Wettable sulphur 30 gm/10 lit water			
	iii. Blight	41	59	20
	Bavistin 0.1 % or Captaf 0.1 %	(34.17)	(49.17)	(16.66)
	iv. Wilt			
	Uproot and burn and soil drenching with blitox or Captaf 30 gm/10 hr water			
14.	Harvesting			
	i. Sharp cutter/Secateur	120 (100)	-	-
	ii. Bud	37 (30.83)	20 (16.67)	63 (52.5)
	iii. Open	12 (28.33)	34 (10.0)	74 (61.67)
15.	Grading			
	i. Colour	8 (6.66)	23 (19.17)	89 (74.17)
	ii. Size	33 (27.5)	36 (30)	51 (42.5)
	iii. Stalk length	42 (35)	56 (46.67)	22 (18.33)
	iv. Opening stage	120 (100)		
16.	Storage			
	i. Dipping stalks in water overnight	120 (100)	-	-
	ii. Cold storage	-	-	120 (100)
17.	Packaging			
	i. Plastic crate	120 (100)	-	-
	ii. Corrugated box	-	-	120 (100)

Intertillage operation weeding was followed by 32.5 per cent farmers completely.

It was also noticed that method of pruning was completely adopted by 25.83 per cent of rose growers. Regarding time of pruning 51.67 per cent completely followed pruning time i.e. from first week of June onwards and 6.67 per cent rose growers partially adopted pruning from last week of September onwards.

Chemical weed control was completely followed by 11.67 per cent of the rose growers.

Regarding the control of pests and diseases 36.67 per cent and 34.17 per cent rose growers completely adopted the recommended practices, respectively.

All (100 per cent) farmers used secateur for harvesting of rose. 30.83 per cent and 28.33 per cent rose growers harvested their rose at bud and open stage, respectively.

All (100 per cent) rose growers followed completely the grading according to the opening stage of flowers. However, 6.66 per cent, 27.5 per cent and 35 per cent rose growers graded their flowers according to colour, size and stalk length, respectively.

All the respondents reported complete adoption of storing by dipping stalks in water overnight and using plastic crate as a material for packing roses.

Some of the practices which were not adopted are cutting method of propagation, spacing of 60 x 60 cm and 1.5 x 0.60 m, sprinkler method of irrigation, pruning from November First week

onwards, cold storage for storing roses and corrugated boxes for packaging of roses.

4.3 Relationship between personal, social, economic and psychological characteristics of the rose growers and their adoption behaviour

In the present investigation an attempt was made to find out the nature of relationship between the selected attributes of rose growers and their adoption.

The correlation coefficient (r) between adoption (dependent variable) with various independent variables *viz.*, personal, social, economic and psychological variables are presented in Table 6 and discussed in subsequent pages.

Table 6. Relationship between selected independent and dependent variables (N = 120)

Sr. No.	Independent variables	Coefficient of correlation (r)
1.	Age	-0.809**
2.	Education	+0.861**
3.	Family size	-0.792**
4.	Social participation	+0.712**
5.	Sources of information	+0.642**
6.	Farm size	+0.591**
7.	Annual income	+0.711**
8.	Knowledge	+0.960**

** Significant at 0.01 level of probability

4.3.1 Age and adoption

The relationship between age and adoption level of rose growers was negatively significant (r = -0.809).

It was observed that there was decrease in adoption level with increase in the age of the rose growers. This means, age influences substantially the adoption of improved cultivation practices of rose. Particularly, middle age and younger farmers had better adoption than the old farmers, possibly because of their desire to try new technologies and gain new experience.

This finding is in line with the findings of Kher (1991) and Sutar (1997).

4.3.2 Education and adoption

The correlation coefficient (r = 0.861) between education and adoption level of rose growers showed that there was a positive and significant relationship. It means, the adoption level increased with an increase in the level of formal education of the respondents.

The educated people could read the relevant literature and grasp modern techniques of agriculture. This might have resulted in establishing a positive and significant relationship of education with adoption level.

The finding is in conformity with the findings of Rade *et al.* (1990), Gaikwad (1992), Javale *et al.* (1994), Kadam and Borse (1993), Sakore (1997), Kalbhor (1998) and Bhosale (2003).

4.3.3 Family size and adoption

The relationship (r = -0.792) between family size and adoption level of rose growers was negative and significant.

It was observed that there was a decrease in the adoption level with an increase in the size of family. This may be due to the fact that after an increase in size of family the expenditure on family is more and therefore the expenditure on inputs and improved technology might have reduced.

This finding is in line with the findings of Nikhade and Potdar (1989) and Shinde (1997).

4.3.4 Social participation and adoption

There was a positive and significant correlation (r = +0.712) between social participation and adoption of improved technology of rose cultivation among the rose growers.

It means that the adoption level increased with increase in the social participation. The rose growers with higher social participation might have got convinced about the utility and advantages of improved practices of rose cultivation through interactions with other individuals, which might have convinced them to adopt the recommended technology to a greater extent.

This finding is in line with Kadam *et al.* (1991), Chiprikar and Khuspe (1992), Kharat (1996), Phadtare (1999), Sawant (2002) and Bhosale (2003).

4.3.5 Sources of information and adoption

Relationship between sources of information of rose growers and adoption was found to be positive and significant (r = +0.642).

The sources of information play a vital role in adoption of improved technology. The study revealed that with an increase in use

of sources of information channels by the respondents, there was an increase in their adoption level.

This finding is in conformity with the findings of Nalawade (1989), Javale and Nachne (1994), Kharat (1996), Sakore (1997), Deokate (1998), Sawant (2002) and Bhosale (2003).

4.3.6 Farm size and adoption

The relationship (r = +0.591) between farm size and adoption level of rose growers was positive and significant. It can therefore be inferred that with an increase in the total farm size, there was an increase in the level of adoption. Farmers with larger farm size are normally resourceful and can afford to use complete inputs as compared to small and marginal farmers. This might have been leading to higher adoption amongst the former type of the farmers than the later type.

The finding is in agreement with the findings of Patil and Waghdhare (1989), Kadam *et al.* (1991), Lianbika (1993), Bhujbal (1995), Sakore (1997), Kalbhor (1998), Phadtare (1999) and Sawant (2002).

4.3.7 Annual income and adoption

The annual income of rose growers exhibited positive and significant relationship with their adoption level of recommended cultivation practices of rose (r = +0.711).

The reason behind this might be that rose growers with sound economic position might be more capable to procure inputs needed for the adoption of recommended practices of rose cultivation

and the farmers having high level of income afford to take risk of accepting the recommended farm techniques.

This finding is in line with the findings of Wangikar *et al.* (1991), Javale *et al.* (1994), Sakore (1997), Deokate (1998), Phadtare (1999) and Bhosale (2003).

4.3.8 Knowledge and adoption

Relationship i.e. correlation coefficient (r = +0.960) between knowledge and adoption shows that there was statistically positive and significant correlation between knowledge and adoption of improved rose cultivation practices.

Thus, this indicates that higher the knowledge, higher the adoption of improved rose cultivation technology by the rose growers.

Similar findings were recorded by Sakharkar *et al.* (1992), Lianbika and Nikhade (1993), Sakore (1997) and Bhosale (2003).

4.4 Area under rose cultivation

The distribution of rose growers according to area under rose cultivation is presented in Table 7.

Table 7. Distribution of rose growers according to area under rose cultivation (ha)

Sr. No.	Area under rose cultivation (ha)	Number of rose growers	
		Frequency	Percentage
1.	Upto 0.10	47	39.17
2.	0.11 – 0.20	62	51.67
3.	0.21 and above	11	9.16
	Total	120	100

Table 7 indicates that majority 51.67 per cent of the rose growers were having '0.11 to 0.20 ha' area under rose cultivation followed by 39.17 and 9.16 per cent rose growers having 'upto 0.10 ha' and '0.21 and above' area under rose cultivation, respectively.

4.5 Marketing of rose by the rose growers

Marketing is a part of the production activity which involves various services like assembling, grading, packaging, storage, transportation and these are performed by various agencies at different levels.

Table 8. Distribution of rose growers according to rose flowers marketed at different places

Sr. No.	Market	Regularly	Occasionally	Never
1.	Village			120
2.	Taluka place		46	
3.	District place		46	
4.	Nearby religious place		46	
5.	Metropolitan city	120		
6.	Export			120

Table 8 indicates that all the farmers used to market their produce 'regularly' in metropolitan city (Mumbai). However, it was also observed that 38.33 per cent respondents marketed some of their produce 'occasionally' in the taluka, district and nearby religious markets, they marketed their produce in these markets occasionally as per the seasonal demands. It was also observed that none of the

respondents marketed their produce in the villages and none had exported their roses.

The unopened and bloom stage rose floral buds were harvested by keeping maximum stalk length with the help of secateur, late in the evening. These floral buds were collected and sorted out on the basis of colour, size, stalk length and opening stage of flowers. The unwanted, fully opened flowers and the diseased plant parts were removed. The bundles of rose flowers were prepared with 6 roses in each bundle according to the size, colour, stalk length and opening stage of flowers and were then stored in buckets by dipping the stems overnight.

Early in the morning 40, 50 or 80-90 bundles of rose flowers according to grade I, II and III, respectively were wrapped in newspapers and then packed in plastic crates and then they were marketed to Mumbai. All the farmers used plastic crates and none used corrugated boxes.

The flowers were marketed through the commission agents. The rate of commission decided by the market committee was 15 per cent. The commission was recovered from the rose growers.

The growers got the rate as per quality of their produce and demand and supply. It was reported by the growers and commission agents that the daily rates were not fixed. The rates fluctuated from Rs. 30/- to Rs. 3/- per bundle. The main agencies which were engaged in retail trade of rose flowers were retailers, stall holders, floral shopkeepers and hawkers.

4.5.1 Method of marketing

The flowers were marketed through commission agents (intermediary persons locally called as 'Dalal) who takes 15 per cent commission from the flower growers. Cash or obligatory credit note was given to the flower growers from the commission agents. They sold the flowers by open auction and the same price was received by the rose growers. It was observed that the consumers are hotel owners, stall holders/ flower shops, retailers and the customers.

4.5.2 Price fixation trend

It was observed that there was a gap between harvesting methods suggested by commercial organizations and actual practices followed by the rose growers. It was one of the feature to determine the value of produce at local and international market. Other salient characteristics responsible for fetching maximum rates for roses were as under.

a. Demand

Demand varied from season to season and from day to day during particular seasons. It was observed that the maximum price was fetched from November to June.

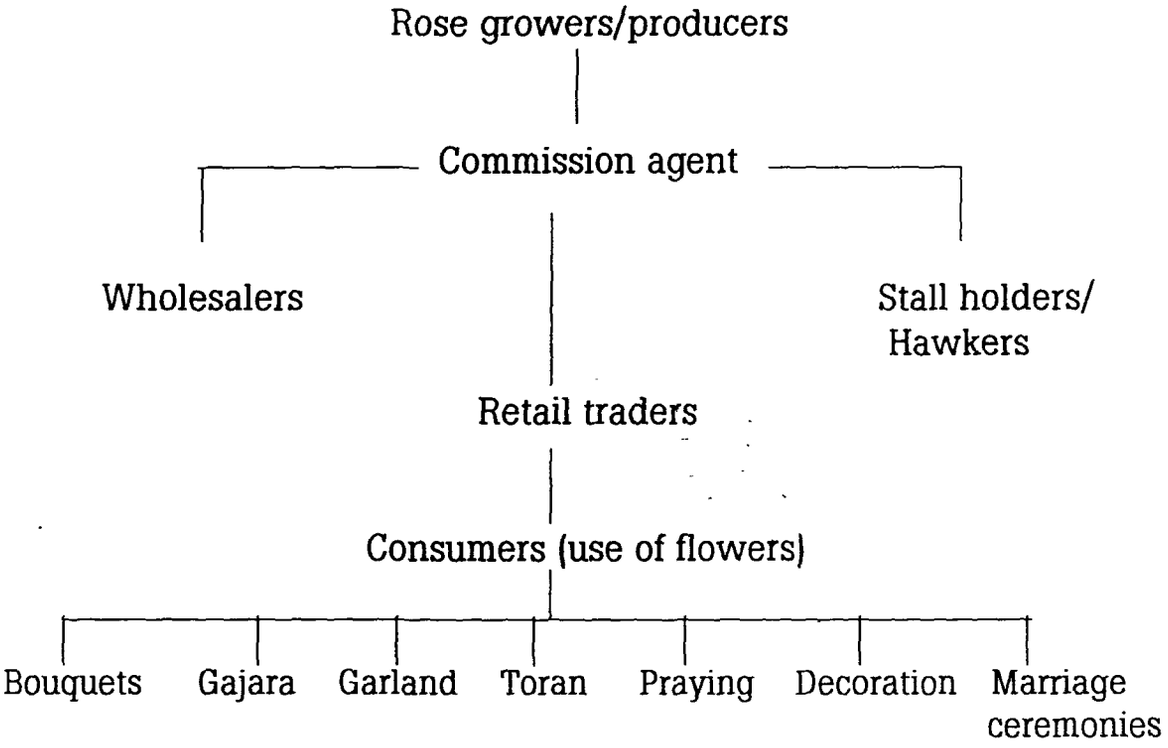
b. Quality

Quality of the flowers was the other key factor which determined the rate of flowers. Quality factors considered were stalk length, colour of flower, floral inflorescence arrangement, disease and pest damage etc.

However, the rose growers reported that the rate per bundle fluctuates from Rs. 3 to Rs. 30.

4.5.3 Channel of rose flowers

The main channel of marketing through which the rose flowers pass from producers to the final consumers was as under.



Generally, the function of commission agents and wholesalers were of an overlapping nature. They purchase the flowers in bulk on their own account for local sale from commission agent. They also act as forwarding agent for wholesalers in consuming area.

Stall holders play an important role in the retail distribution of flowers than the hawkers. Generally, they purchase the flowers from commission agents either on cash or credit note according to their relations.

In the present investigation, it was observed that the produce of all the respondents was sent to Mumbai market.

The researcher had not come across any rose grower exporting the roses.

4.6 Constraints faced by the rose growers in cultivation and marketing of rose

A. Supply constraints

It was observed that 75 per cent of the respondents faced shortage of water. 51.66 per cent respondents were complaining about lack of availability of healthy and guaranteed grafts. Lack of skilled labour was the constraint faced by 38.33 per cent respondents and lack of availability of insecticides and pesticides etc. was faced by 25.83 per cent respondents.

B. Economical constraints

All the rose growers i.e. 100 per cent rose growers complained about high cost of pesticides and weedicides. High cost of manure and chemical fertilizer were reported by 82.5 per cent rose growers. 56.66 per cent of rose growers reported insufficient capital as a constraint. Non-availability of adequate and timely finance was faced by 38.33 per cent rose growers and 35 per cent were complaining about high cost of drip system management.

C. Technical constraints

In respect of technical constraints, majority (92.5 per cent) of rose growers reported lack of knowledge about the export of roses. 42.5 per cent rose growers were lacking in knowledge about nursery management and grafts. Lack of knowledge about fertilizer and manure application and working dose was a constraint faced by

Table 9. Constraints experienced by the rose growers while adopting the improved practices of rose cultivation

Sr. No.	Constraints	No. of rose growers	Per cent N=120
A.	**Supply constraints**		
1.	Lack of availability of healthy and guaranteed grafts	62	51.66
2.	Lack of skilled labour	46	38.33
3.	Lack of availability of insecticides, pesticides etc.	31	25.83
4.	Shortage of water	90	75
B.	**Economical constraints**		
1.	Insufficient capital	68	56.66
2.	Non-availability of adequate and timely finance	46	38.33
3.	High cost of manure and chemical fertilizers	99	82.5
4.	High cost of pesticides and weedicides	120	100
5.	High cost on management of drip irrigation system	42	35
C.	**Technical constraints**		
1.	Lack of knowledge about nursery management and grafts	51	42.5
2.	Lack of knowledge about fertilizer and manure application methods and working out doses	50	41.66
3.	Lack of knowledge about planting of rose grafts	12	10.0
4.	Lack of knowledge regarding pest and disease control	64	53.33
5.	Lack of knowledge about proper harvesting stage of flowers	14	11.66
6.	Lack of knowledge about packaging of flowers	40	33.33
7.	Lack of knowledge about grading of flowers	27	22.5
8.	Lack of knowledge about exporting of flowers	111	92.5

Table 9 contd....

Sr. No.	Constraints	No. of rose growers	Per cent N=120
D.	**Extension constraints**		
1.	Visit of extension personnel are not in time	78	65
2.	Extension personnel lack in the knowledge of rose cultivation	60	50
3.	Lack of literature in local (marathi) language	46	38.33
4.	Audio visual aids are not used by the extension workers	105	87.5
5.	Visits are not organized by the extension workers to Agricultural universities and rosaries of progressive farmers	115	95.8
E.	**Marketing constraints**		
1.	High cost of transportation	48	40
2.	Flower quality deteriorates during transportation	75	62.5
3.	Careless handling of flowers by workers during transportation	64	53.33
4.	Lack of cold storage facilities	98	81.67
5.	The rates of commission are high	120	100
6.	Without involvement of commission agents and middlemen it is difficult to sell the produce	92	76.66
7.	Lack of information about market price	96	80
8.	Fluctuation in price of rose	120	100
9.	Low price in local market	105	87.5
10.	Lack of proper rates according to grade of flowers	108	90
11.	Export of flowers is a very difficult process	98	81.67
12.	It is very difficult to dispose the unmarketed rose flowers	39	32.50

41.66 per cent. 33.33 per cent rose growers were not having knowledge regarding packaging of flowers. Lack of knowledge regarding grading of flowers, about harvesting stage of flowers and regarding knowledge about planting of rose grafts was reported by 22.5 per cent, 11.66 per cent and 10 per cent respondents, respectively.

D. Extension constraints

Majority (95.8 per cent) of rose growers complained about visits not being organized by extension workers to agricultural universities and rosaries of progressive farmers. 87.5 per cent also reported that A-V aids were not used by the extension workers. 65 per cent rose growers were complaining about the visiting extension personnel not in time. Extension personnel lack in the knowledge of rose cultivation and lack of literature in local (Marathi) language was reported by 50 per cent and 38.33 per cent respectively.

E. Marketing constraints

From the Table 9 it was observed that almost all the rose growers reported fluctuation in prices of roses and rates of commission being high the main constraints in cultivation of roses. Lack of proper rates according to grade of flowers and low price in the local market was reported by 90 per cent and 87.5 per cent rose growers respectively. 81.67 per cent of rose growers complained lack of cold storage facilities and export of flowers being a very difficult process. Lack of information about market price was faced by 80 per cent rose growers. 76.66 per cent reported that without the involvement of commission agents it was difficult to sell the produce.

62.5 per cent, 53.33 per cent, 40 per cent and 32.50 per cent rose growers complained about deterioration of flower quality during transportation, careless handling of flowers by workers during transportation, high cost of transportation and disposal of unmarketed rose flowers being very difficult, respectively.

The above mentioned supply, economical, technical, extension and marketing constraints prevent or slower down the rate of adoption of the rose growers about improved cultivation and marketing practices of rose.

4.7 Suggestions of rose growers for overcoming the constraints

Suggestions were invited from the flower growers to overcome the problems faced by them in production, management and marketing of flowers. In all, 11 suggestions were made by the rose growers. The suggestions made by rose growers are presented in Table 10.

The Table 10 shows the suggestions offered by the rose growers to overcome the constraints faced by the rose growers in adoption of improved practices regarding rose cultivation and marketing.

All the respondents made suggestion that cold storage facilities should be made available near to the production centers as there were no cold storage facilities. Followed by the above suggestion 98.33 per cent rose growers wished that government should provide incentives and subsidies to the rose growers.

Table 10. Suggestions made by the rose growers to overcome the constraints

Sr. No.	Constraints	No. of rose growers	Per cent N=120
1.	Guaranteed grafts should be provided from Government nurseries with technical know-how	75	62.50
2.	All the inputs should be provided in time with adequate quantity	52	43.33
3.	Sufficient and timely credit should be supplied at reasonable rate of interest	90	75.00
4.	Extension personnel should use audio-visual aids during meetings and discussions	112	93.33
5.	Extension personnel should supply the technical information in time	72	60.00
6.	Cold storage facilities should be made available near to production centers	120	100.00
7.	Efficient and effective marketing system is necessary	109	90.83
8.	Gradewise price rates may be given	109	90.83
9.	Government should provide incentives and subsidies to rose growers	118	98.33
10.	The procedure of export of rose flowers may be simplified	105	87.50
11.	Rose processing units may be established for the use of unmarketed flowers	60	50.00

Extension personnel should use audio-visual aids during meetings and discussions was suggested by 93.33 per cent rose growers. 90.83 per cent rose growers suggested that efficient and effective marketing system is necessary and that grade wise price rates must be given.

Substantial proportion of rose growers also suggested that the procedure of export of rose flowers may be simplified (87.5 per cent).

Sufficient and timely credit should be supplied at reasonable rate of interest, guaranteed grafts should be provided from government nurseries with technical know-how, extension personnel should supply the technical information in time, rose processing units may be established for using unmarketed flowers and adequate and timely provision of inputs were the other suggestions given by 75 per cent, 62.5 per cent, 60 per cent, 50 per cent and 43.33 per cent rose growers respectively.

The above mentioned suggestions given by the rose growers may certainly to some extent help the growers to overcome the constraints experienced by the rose growers in adoption of improved technology of rose cultivation and marketing.

Summary, Conclusions and Implications

5. SUMMARY, CONCLUSIONS AND IMPLICATIONS

In this chapter, the findings of the study are summarized and their implications and suggestions regarding the future line of research are given.

Floriculture is now emerging as an important venture in the world. It has become a potential money spinner for the third world countries. India is endowed with diverse agro-climatic conditions. All kinds of flowers can be grown throughout the year due to fertile soils, abundant water and sunlight and readily available low cost labour. In cut flowers, it has started making an impact on the world market. At present, rose dominates in the group of cut flowers.

Rose crop is classified as a commercial crop. In the process of commercialization of agriculture, cultivation of rose flower acquires importance due to greater incentives to the growers. In near future, there is a need of more production of good quality rose flowers to meet the increasing demand of the rose flowers in the developed and developing countries.

Rose cultivation is becoming profitable enterprise due to network of the transport in the state and farmers are attracting towards it.

Though the farmers are growing this crop, it is observed that many farmers are facing number of difficulties in cultivation and marketing of roses. Considering these difficulties the present study was conducted to assess the extent of adoption of the rose flower

production and management practices and the constraints faced in producing, managing and marketing of rose flowers by the rose farmers. Findings in this respect will be useful in formulating an effective government policy in future effectively. Considering this, the present investigation entitled, "Study of rose growers from Sangli district" was undertaken.

The area under rose cultivation is more in Miraj and Walwa talukas of Sangli district than any other talukas. Hence, Miraj and Walwa talukas were purposively selected, 8 villages 4 from each Miraj and Walwa taluka were selected randomly. A sample of 120 farmers was drawn randomly for the present study.

The objectives of the present study were as under.

1. To study the personal, social, economic and psychological characteristics of rose growers.
2. To study the adoption level of the recommended production technology of rose cultivation.
3. To study the marketing of rose.
4. To study the constraints faced in cultivation and marketing of rose.
5. To obtain the suggestions of rose growers to overcome the constraints.

With the help of above objectives a hypothesis was formulated that personal, social, economic and psychological characteristics of rose growers were associated with level of adoption of improved practices of rose cultivation and it was tested in this study.

The methodological procedure consists of measurement of adoption as dependent variable and selected characteristics of rose growers as independent variables, selection of research site, villages and respondents. For the analysis of data statistical measures such as frequency, percentage, mean and coefficient of correlation were used.

The data was collected with the help of interview schedule, which was pretested before using it for collecting the data. The data was collected from 120 randomly selected farmers.

The data are presented and discussed by using the frequencies and percentages. The coefficient of correlation (r) was computed to find out the relationship between the selected characteristics of rose growers with their level of adoption of rose cultivation as dependent variable.

The summary of the important findings is given in following pages.

5.1 Summary

5.1.1 Personal, social, economic and psychological characteristics of rose growers

1. It was observed that 63.33 per cent of the rose growers belonged to middle age group, while 20.84 and 15.83 per cent of rose growers were from young and old age group, respectively.
2. Most of the rose growers (35.83 per cent) had received higher secondary education. Secondary and primary education was received by 27.50 and 19.17 per cent, respectively, followed by

9.17 and 8.33 per cent rose growers being illiterate and having college (above 12th) education, respectively.

3. Majority of the rose growers (60.00 per cent) had medium family size followed by those having small family size (23.33 per cent) and large family size (16.67 per cent).
4. Majority of the rose growers (58.33 per cent) had medium level of social participation followed by those having low (29.17 per cent) and high (12.50 per cent) level of social participation.
5. Majority of the rose growers (83.33 per cent) used medium sources of information followed by those using low (11.67 per cent) and high (5.00 per cent) sources of information, respectively.
6. Majority (72.50 per cent) of the rose growers had medium farm size followed by 21.67 and 5.83 per cent rose growers having big and small farm size, respectively.
7. Majority (61.67 per cent) of the rose growers had medium annual income followed by those having high (25.83 per cent) and low (12.50 per cent) annual income, respectively.
8. Majority (65.84 per cent) of the rose growers had medium level of knowledge regarding rose cultivation followed by those having high (18.33 per cent) and low (15.83 per cent) level of knowledge.

5.1.2 Level of adoption of rose growers about package of practices of rose cultivation

1. It was found that majority (63.83 per cent) of the rose growers had medium level of adoption of rose cultivation technology,

followed by 20.83 and 15.83 per cent rose growers having low and high level of adoption of rose cultivation technology.

2. Practice wise adoption level of rose growers

It was observed that all (100 per cent) rose growers completely adopted the practices related to the recommended soil type, ploughing, harrowing, variety, propagation method i.e. budding, planting rose grafts in June-July, harvesting by secateur, grading according to opening stage of flowers, storing by dipping stalks in water overnight and packaging in plastic crates.

Recommended pit size, spacing of 75 x 75 cm and 1.5 x 0.45 m, application of manures and fertilizers at planting and per year was adopted by 28.33, 65, 35, 30.83 and 32.50 per cent rose growers, respectively.

Flood method of irrigation, drip irrigation, irrigation schedule in summer, winter, inter tillage operation i.e. weeding, method of pruning and time of pruning was adopted by 80.83 per cent 19.17, 3.33, 15.83, 32.5, 25.83 and 51.67 per cent rose growers, respectively.

Chemical weed control, control of pests, control of diseases, harvesting at bud and open stage was followed by 11.67, 36.67, 34.17, 30.83 and 28.33 per cent rose growers, respectively.

Grading according to colour, size and stalk length of flowers was followed by 6.66, 27.5 and 35 per cent rose growers respectively.

Some of the practices that were not adopted are cutting method of propagation, spacing of 60 x 60 cm and 1.5 x 0.60 m,

sprinkler method of irrigation, cold storage for storing roses and corrugated boxes for packaging of roses.

5.1.3 Relationship between personal, social, economic and psychological characteristics of the rose growers and their adoption behaviour

The selected characteristics of rose growers namely age and family size of rose growers exhibited negatively significant relationship with their adoption level. While education, social participation, sources of information, annual income, farm size and knowledge exhibited significant relationship with their adoption level.

5.1.4 Area under rose cultivation

It was observed that majority (51.67 per cent) of the rose growers had area between '0.11 to 0.20 ha', followed by 39.17 per cent having 'upto 0.10 ha' area and 9.16 per cent rose growers having area 'above 0.21 ha'.

5.1.5 Marketing of rose by the rose growers

It was observed that all (100 per cent) rose growers marketed their produce to metropolitan city (Mumbai). Only 38.33 per cent rose growers were found to market their produce occasionally at taluka, district and nearby religious places. It was observed that none of the farmers exported their produce.

The flowers were marketed through commission agents who take 15 per cent commission from the flower growers.

The rate of flowers fluctuated from Rs. 30 per bundle (of 6 flowers) to Rs. 3.

It was observed that the consumers were hotel owners, stall holders, flower shop owners, retailers and consumers.

5.1.6 Constraints faced by the rose growers in cultivation and marketing of rose

1. Supply constraints

Shortage of water, lack of availability of healthy and guaranteed grafts, lack of skilled labour and lack of availability of insecticides and pesticides were faced by 75, 51.66, 38.33 and 25.83 per cent respondents, respectively.

2. Economic constraints

All the rose growers faced high cost of pesticides and weedicides as a constraint, followed by high cost of manure and fertilizers, insufficient capital, non-availability of adequate and timely finance faced as a constraint by 82.5, 56.66 and 38.33 per cent rose growers, respectively.

3. Technical constraints

Lack of knowledge about export of roses, nursery management and grafts, fertilizer and manure application was reported by 92.5, 42.5 and 41.66 per cent rose growers, respectively. While lack of knowledge about grading, proper harvesting stage and planting of rose grafts were reported by 22.5, 11.66 and 10 per cent respondents, respectively.

4. Extension constraints

Visits not being organised by extension workers and A-V aids not being used were reported by 95.8 and 87.5 per cent rose growers. These constraints were followed by extension personnel

lack in knowledge of rose cultivation and lack of literature in (local) marathi language felt by 50 and 38.33 per cent rose growers, respectively.

5. Marketing constraints

Fluctuation in price of rose was observed by all respondents. Whereas 87.5, 81.67, 62.5 and 53.33 per cent respondents reported low price in local market, lack of cold storage facilities, deterioration of flower quality during transportation and careless handling of flowers by workers, respectively.

Lack of rates according to grade of flowers and lack of market information were reported by 90 and 80 per cent respondents.

About 40 per cent respondents observed high cost of transportation and 32.50 per cent respondents found difficulty in disposing unmarketed produce.

5.1.7 Suggestions made by rose growers to overcome the constraints

All the respondents suggested to establish cold storage facilities, followed by 98.33, 93.33 and 90.83 per cent rose growers suggesting provision of incentives and subsidies, use of A-V aids by extension workers and efficient and effective marketing system.

Provision of sufficient and timely credit and guaranteed grafts with technical know-how from government nurseries was expected by 75 and 62.5 per cent, respondents.

About 43.33 per cent suggested about provision of inputs in time and in adequate quantity.

5.2 Conclusions

5.2.1 Personal, social, economic and psychological characteristics of the rose growers and their level of adoption of improved rose cultivation practices

The findings of the study are summarized as under.

1. It was found that majority of the respondents (63.33 per cent) belonged to 'middle' age group. A significant but negative correlation was found between age and adoption of improved rose cultivation practices by the respondents.

   Conclusion emerged from result was that younger the age, higher the adoption of improved rose cultivation practices.

2. It was observed that majority (35.83 per cent) of respondents were educated upto 'higher secondary' level. Statistically significant and positive correlation was observed between education and adoption of improved rose cultivation practices.

   Conclusion emerged from the result was higher the educational level, more is the adoption of improved rose cultivation practices by the rose growers.

3. It was observed that majority (60 per cent) of respondents had 'medium' family size. A significant but negative correlation was found between family size and adoption of improved rose cultivation practices by the rose growers.

   Conclusion being that smaller the family size, higher the adoption.

4. It was observed that majority (58.33 per cent) of respondents had 'medium' social participation. Statistically significant and

positive correlation was found between social participation and adoption of improved rose cultivation practices by the rose growers.

It can be concluded that higher the social participation, more is the adoption of improved rose cultivation practices.

5. Majority (83.33 per cent) of the respondents had used 'medium' sources of information. A statistically significant and positive correlation was observed between sources of information and adoption of improved rose cultivation practices by the rose growers.

It can be concluded that more the use of sources of information, more is the adoption of improved rose cultivation practices by the rose growers.

6. It was observed that 72.5 per cent respondents had 'medium' farm size. A statistically significant and positive correlation was observed between the farm size of rose growers and the adoption of improved rose cultivation practices.

It can be concluded that bigger the farm size higher is the adoption of improved rose cultivation practices.

7. The study denoted that 61.67 per cent respondents were from 'medium' income group. A statistically significant and positive correlation was found between annual income and the adoption of improved rose cultivation practices by the respondents.

It can be inferred that the annual income had influence on the adoption of improved rose cultivation practices.

8. The study revealed that 65.84 per cent of the rose growers had 'medium' knowledge level. A statistically significant correlation was found between knowledge and adoption of improved rose cultivation practices.

It is, therefore, concluded that the highly knowledgeable rose growers can adopt the improved rose cultivation practices readily.

9. It was observed that majority (63.34 per cent) of the rose growers had 'medium' adoption level of rose cultivation technology.

Thus, from the above mentioned results it becomes clear that the hypothesis that was formulated is accepted.

5.2.2 Improved practices of rose cultivation followed by the rose growers

In the present investigation, forty rose cultivation practices were studied. Among these practices the following practices were highly adopted soil type, ploughing, harrowing, varieties, budding (propagation method), planting in June-July, irrigation schedule in rainy days, harvesting with sharp cutter/secateur, grading on the basis of opening stage, storing by dipping stalks in water for overnight and packaging in plastic crates.

Spacing of 75 x 75 cm, flood method of irrigation, pruning from June first week onwards was followed by 65, 80.83 and 51.67 per cent rose growers respectively.

Some of the practices which were not adopted are cutting method of propagation, spacing of 60 x 60 cm and 1.5 x 0.60 m,

sprinkler method of irrigation, pruning from November first week onwards, cold storage facility for storing roses and corrugated boxes for packaging of roses.

5.2.3 Area under rose cultivation

It was observed that majority of the rose growers were having area between '0.11 to 0.21 ha' under rose cultivation.

5.2.4 Marketing of roses

It was observed that almost all the rose growers marketed their produce 'regularly' in (Metropolitan city) Mumbai. However, it was observed that 38.33 per cent respondents marketed some of their produce 'occasionally' in the taluka, district and nearby religious places.

It was found that none of the rose growers had exported the rose to foreign market.

It was reported by the rose growers and commission agents that the rate fluctuates from Rs. 3/- to Rs. 30/- per bundle (of six flowers). The maximum rate was fetched during November to June of the year.

5.2.5 Constraints faced by the rose growers in adoption of rose cultivation

The important constraints pointed out by the majority of the rose growers are

1. Lack of availability of healthy and guaranteed grafts (51.66 per cent)
2. Shortage of water (75 per cent)
3. Insufficient capital (56.66 per cent)

4. High cost of manure and chemical fertilizers (82.5 per cent).
5. High cost of pesticides and weedicides (100 per cent)
6. Lack of knowledge regarding pest and disease control (53.33 per cent)
7. Lack of knowledge about exporting of flowers (92.5 per cent)
8. Visit of extension personnel are not in time (65 per cent)
9. Audio-visual aids are not used by the extension workers (87.5 per cent)
10. Visits are not organized by the extension workers to agricultural universities and rosaries of progressive farmers (95.8 per cent)
11. Flower quality deteriorates during transportation (62.5 per cent)
12. Careless handling of flowers by workers during transportation (53.33 per cent)
13. Lack of cold storage facilities (81.67 per cent)
14. The rates of commission are high (100 per cent)
15. Without involvement of commission agents and middlemen, it is difficult to sell the produce (76.66 per cent)
16. Lack of information about market price (80 per cent)
17. Fluctuation in price of rose (100 per cent)
18. Low price in local market (87.5 per cent)
19. Lack of proper rates according to grade of flowers (90 per cent)
20. Export of flowers is a very difficult process (81.67 per cent)

5.2.6 Suggestions made by the rose growers for overcoming the constraints faced in adoption of improved practices of rose cultivation

The following important suggestions were given by majority of the respondents.

1. Guaranteed grafts should be provided from government nurseries with technical know-how (62.5 per cent)
2. Sufficient and timely credit should be supplied at reasonable rate of interest (75 per cent)
3. Extension personnel should use A-V aids during meetings and discussions (93.33 per cent)
4. Extension personnel should supply the technical information in time (60.0 per cent)
5. Cold storage facilities should be made available near to production center (100 per cent)
6. Efficient and effective marketing system is necessary (90.83 per cent)
7. Gradewise price rates may be given (90.83 per cent)
8. Government should provide incentives and subsidies to rose growers (98.33 per cent)
9. The procedure of export may be simplified (87.5 per cent)

5.3 Implications

The researcher hopes that this research study would be highly useful in understanding the personal characteristics of the rose growers and the constraints faced by them while adopting the flower production technology. Moreover, the results of this study would

provide a guideline to the policy makers, executors and the extension agents associated with the floriculture development for promoting future activities and for bringing about desirable changes in the floriculture development. However, suggestions made by the rose growers would be useful to overcome the constraints in adoption of improved rose cultivation technology. On the basis of results of this study, following implications are drawn.

5.3.1 Action implications

1. In the present study, it was observed that majority of the rose growers were facing problems pertaining to marketing of roses which resulted in narrow profit margin to them. It implies establishing, strengthening and reorganizing the Flower Grower's Co-operative Marketing Societies, so that they will get appropriate share from marketing of rose flowers.
2. It was found that majority of the rose growers were ignorant about harvesting and post harvest technology. It is, therefore, necessary to arrange the training and demonstrations by the extension personnel.
3. The disease and pest control measures as well as the manure and fertilizer application method were not being adopted by many of the farmers as per the recommendations. Therefore, the extension agencies need to orient their programmes towards educating the farmers regarding these practices of rose cultivation and management by giving training, organizing field visits and conducting meetings.

4. All other rose cultivation practices namely irrigation, budding, harvesting time, harvesting stage, weed control, grading, storing and packaging etc. were also not being followed properly. It is essential to show the importance of these practices by the result and method demonstrations.
5. There is need of giving some incentives, such as, low rate of interest, subsidies on inputs and timely and sufficient supply of loans to rose growers.
6. The backward and forward linkages and the infrastructural facilities should be made available in the rose growing villages.
7. The marketing agencies like 'Maharashtra State Co-operative Marketing Federation' and marketing associations should provide marketing and cold storage facilities.
8. Personnel from the department of horticulture and Zilla Parishad should visit the rose crop regularly to provide technical guidance to the growers.
9. The agricultural universities should spend more time in research work to evolve, improved and export oriented rose varieties having better keeping quality, resistant to pest and disease, attractive shape and colour etc.
10. In order to avoid the loss of low grade or unacceptable and waste rose flowers, efforts are required to establish the flower processing units.
11. It is essential to establish a special 'Rose Growers Association' which will guide the rose growers for improved rose cultivation practices.

12. Daily or weekly market price rates of the rose flower may be made available to the rose growers.
13. The rose growers should be informed and provided knowledge regarding export quality standards. The export procedure should be simplified and farmers should be encouraged for export oriented production.

5.3.2 Research implications

Due to usual limitation of student researcher, all the aspects of the rose growers in relation to their knowledge and adoption behaviour could not be studied in the present context. The study was limited to Miraj and Walwa talukas of Sangli district only. On the basis of study following suggestions are made for further research.

1. The studies similar to the present needs to be replicated in other parts of the state and country, too.
2. For drawing generalizations about knowledge and adoption of improved practices of rose cultivation, more studies are necessary to be conducted in this area.
3. In order to have a reliable and valid measurements of general level concepts, specific measuring instruments need to be developed. This will help to have scientific and empirical measurement of various concepts and variables useful for future investigation.
4. This study would also be useful as a 'bench mark' for further probe into the studies of similar type.

Literature cited

6. LITERATURE CITED

Aghav, R.S. 1997. A study on adoption of vegetable production technology by farmers. M.Sc. (Agri.) thesis, M.A.U., Parbhani (M.S.).

Ahire, R.D. 1997. A study on the adoption of improved management practices by the grape growers. M.Sc. (Agri.) thesis, M.A.U., Parbhani (M.S.).

Anonymous, 2001-2002. Directorate of Horticulture, Pune.

Anonymous, 2001-2002. Socio-economic review and district statistical abstract of Sangli district.

Anonymous, 2002. Technological gap in pomegranate cultivation AGRESCO report of the Department of Agricultural Extension, M.P.K.V., Rahuri submitted by College of Agriculture, Pune.

Bhosale, S.S. 2003. Knowledge and adoption of post harvest technology by the pomegranate growers in Sangola tahsil of Solapur district. M.Sc. (Agri.) Thesis, M.P.K.V., Rahuri (M.S.).

Bhujbal, L.Y. 1995. A study of constraints faced by the farmers in adoption of improved packages of practices of fig cultivation in Purandhar and Bhor talukas of Pune district. M.Sc. (Agri.) Thesis, M.P.K.V., Rahuri (M.S.).

Borse, P.S. 2003. Constraints faced in adoption of integrated pest management technology by hybrid cotton growers in

Jalgaon district. M.Sc. (Agri.) thesis, M.P.K.V., Rahuri (unpublished).

Chikhale, N.J., Deshpande, P.V. and Thakare, P.V. 1996. Factors influencing adoption of orange production technology by growers. Maharashtra Journal of Extension Education. 15 : 176-180.

Chikhale, S.B. 2002. Impact of krishi vidyan kendra training about dryland agricultural techniques. M.Sc. (Agri.) thesis, Dr. P.D.K.V., Akola (unpublished).

Chiprikar, B.P. and Khuspe, V.S. 1992. A study of grape growers with special reference to grape technology. Maharashtra Journal of Extension Education. 11 : 313-318.

Deokate, M.R. 1998. To study the adoption of jasmine flower growers in Pune district. M.Sc. (Agri.) thesis, M.P.K.V., Rahuri (M.S.).

Deshmukh, P.R. 1996. A study on the knowledge and adoption of recommended cultivation practices of custard apple by the farmers. M.Sc. (Agri.) thesis, M.A.U., Parbhani (M.S.).

English, H.B. and English, A.C. 1958. Comprehensive dictionary of psychological and analytical terms. Green and Collung Mans, New York.

Gaikwad, S.S. 1992. A study of flower growers from Nashik tahasil of Nashik district. M.Sc. (Agri.) Thesis, M.P.K.V., Rahuri (M.S.).

Javale, P.S. and Nachne, M.N. 1994. Socio-personal characteristics and adoption of recommended practices of mango and citrus crops. Maharashtra Journal of Extension Education. 13 : 135-139.

Kadam, K.R. and Borse, A.V. 1993. Adoption behaviour of banana growers. Maharashtra Journal of Extension Education. 12 : 45-46.

Kadam, K.R. and Jagtap, S.S. 1991. Adoption behaviour of potato growers. Maharashtra Journal of Extension Education. 10 (2) : 355-357.

Kalbhor, R.S. 1998. A study of adoption of recommended practices of Tuberose cultivation by the farmers of Pune district." M.Sc. (Agri.) Thesis, M.P.K.V., Rahuri (M.S.).

Kanwat, M. 2004. Introduction to floriculture industry in India. Kurukshetra. 52 (8) : 30-32.

Katkar, B.S. 2000. A study of adoption of management practices of drip irrigation system in Malshiras tahsil of Solapur district. M.Sc. (Agri.) thesis, M.P.K.V., Rahuri (M.S.).

Kharat, G.R. 1996. A study of constraints faced by the farmers in adoption of improved package of practices of pomegranate cultivation in Sangola taluka of Solapur district. M.Sc. (Agri.) thesis, M.P.K.V., Rahuri (unpublished).

Kher, S.K. 1991. Adoption behaviour of rainfed maize growers. Maharashtra Journal of Extension Education. 10 (2) : 271-273.

Kolte, J.B. 2002. A study of adoption of improved cultivation practices of chilli in Rahuri tahasil of Ahmednagar district. M.Sc. (Agri.) thesis, M.P.K.V., Rahuri (unpublished).

Kothikhane, R.R., Bhilegonkar, M.G. and Deshmukh, R.G. 1987. Constraints causing technological gap in irrigated farming. Maharashtra Journal of Extension Education. 6 : 81-87.

Kulkarni, W.B. 1999. A study on adoption of turmeric production technology in Hingoli district. M.Sc. (Agri.) thesis, M.A.U., Parbhani (M.S.).

Lianbika, B. and Nikhade, D.M. 1993.Adoption behaviour of pineapple growers in Mizoram. Maharashtra Journal of Extension Education. 12 : 25-29.

Nalawade, D.B. 1989. A study of constraints in Adoption of potato technology in Koregaon and Khatav blocks of Satara district. M.Sc. (Agri.) Thesis, M.P.K.V., Rahuri (M.S.).

Negi, S.S. 1990. Cut flowers for export infrastructure merits attention. "The Hindu" Survey of Indian Agriculture (Annual report). 187-189.

Nikhade, D.M. and Potdar, N.K. 1989. Adoption behaviour of Banana growers. Maharashtra Journal of Extension Education. 8 : 79-83.

Pandya, R.D. and Vekaria, R.S. 1994. Knowledge and adoption behaviour of Banana growers. Maharashtra Journal of Extension Education. 13 : 289-290.

Patil, D.R. 1995. Constraints faced by dairy farmers in adoption of improved management practices for buffaloes. M.Sc. (Agri.) thesis, M.P.K.V., Rahuri (M.S.).

Patil, M.B. and Waghdhare, K.W. 1989. Some personal, socio-economic, psychological and extension variables

facilitating adoption of banana cultivation technology. Maharashtra Journal of Extension Education. 8 : 131-134.

Patil, N.K. 2002. A study of adoption of selected improved dryland farming practices by the farmers in Mangalwedha tahsil of Solapur district. M.Sc. (Agri.) thesis, M.P.K.V., Rahuri (unpublished).

Phadtare, D.A. 1999. A study of extent of adoption regarding improved cultivation practices of onion (var. N-53) in Khatav tahsil of Satara district. M.Sc. (Agri.) thesis, M.P.K.V., Rahuri (M.S.).

Rade, V.M., Desai, B.R. and Girase, K.A. 1990. Constraints in adoption of recommended *kharif* groundnut production. Maharashtra Journal of Extension Education. 9 : 146-152.

Reddy, V. and Ratnakar, R. 1993. Adoption of mango technology. Maharashtra Journal of Extension Education. 12 : 307-308.

Rogers, E.M. 1962. Diffusion of innovation. The free press, New York Colliter, MacMillan Ltd., London.

Sakharkar, V.S., Nikhade, D.M. and Bhopale, R.S. 1992. Constraints of knowledge and adoption behaviour of soybean growers. Maharashtra Journal of Extension Education. 11 : 212-217.

Sakore, V.D. 1997. A study of rose growers in Pune district of Maharashtra. M.Sc. (Agri.) Thesis, M.P.K.V., Rahuri (M.S.).

Sawant, M.S. 2002. A study of adoption of turmeric production technology in Satara district. M.Sc. (Agri.) Thesis, M.P.K.V., Rahuri (M.S.).

Sayane, V.V. 1984. Price spread in marketing of agricultural produce. Indian Journal of Extension Education. 4 (1) : 23.

Shinde, S.B. 1997. A study of adoption of groundnut production technology in Satara district of Maharashtra state. Ph.D. (Agri.) thesis, M.P.K.V., Rahuri (Unpublished).

Shirazi, S.A. 1979. Marketing agricultural products and its related problems in Pakistan. Govt. Development Review. 1 : 87.

Singh, J.P. 1994. Floriculture, emerging export opportunities. "The Hindu" Survey of Indian Agriculture (Annual report). pp. 129-135.

Supe, S.V., Kher, S.R. and Kude, N.R. 1988. Constraints in adoption of improved cultivation practices in almond. Maharashtra Journal of Extension Education. 7 : 275-276.

Supe, S.V., Parade, P.B. and Kude, N.R. 1990. Factors related with adoption of improved jowar practices among farmers in dry farming area. Maharashtra Journal of Extension Education. 9 : 275-276.

Sutar, S.T. 1997. A study on the knowledge and adoption of recommended cultivation practices of papaya by the farmers. M.Sc. (Agri.) Thesis, M.A.U., Parbhani (M.S.).

Waman, G.K. and Patil, P.S. 2000. Production, storage and marketing constraints faced by onion growers. Maharashtra Journal of Extension Education. 19 : 104-108.

Wangikar, S.D., Kabra, A.G. and Gagare, S.S. 1991. Technical gap in Sugarcane Farming. Maharashtra Journal of Extension Education. 10 : 255-257.

Appendix

7. APPENDIX

STUDY OF ROSE GROWERS FROM SANGLI DISTRICT

Part-I

1. Name of rose grower :
2. Village : Taluka : District :
3. Age : _____ years
4. Education : _____ standard
5. Family size :

	Adult	Children	Total
Male			
Female			
Total			

6. Farm size :

Sr. No.	Particulars	Area in hectare
1.	Non-irrigated	
2.	Irrigated	
3.	Fallow land	
	Total	

7. Annual income :

Sr. No.	Particulars	Annual income (Rs.)
1.	Primary occupation	
2.	Secondary occupation	
3.	Other	
	Total	

8. Area under rose cultivation - ha

9. Where do you market the rose flowers ?

Sr. No.	Market	Regularly	Occasionally	Never
1.	Village			
2.	Taluka			
3.	District			
4.	Nearby religious place			
5.	Metropolitan city			
6.	Export			

10. Social participation

a. Are you member/officer bearer of any social institution ? (Yes/No)

b. If yes, give details.

Sr. No.	Organisation	Type of membership	
		Member	Office bearer
1.	Grampanchayat		
2.	Panchayat Samlti		
3.	Zilla Parishad		
4.	Co-operative society		
5.	Co-operative sugar factory		
6.	District co-operative bank		
7.	Dairy co-operative society		
8.	Flower producers association		
9.	Market committee		
10.	Marketing federation		
11.	Educational institution		
12.	Bhajani mandal		
13.	Youth club		
14.	Other (specify)		

11. Sources of information

Please mention the sources of information used by you for getting the information.

Sr. No.	Sources of information	Regularly	Occasionally	Never
1.	Local politicians			
2.	Progressive farmers			
3.	Relatives/friends			
4.	Neighbours			
5.	Gramsevak			
6.	Agril. Assistant			
7.	Exhibitions			
8.	Agril. Department			
9.	Agril. University			
10.	Flower producers association			
11.	Discussions			
12.	Educational tour			
13.	Radio			
14.	Television			
15.	Magazines			
16.	Newspaper			
17.	Other (specify)			

Part-II

12. Knowledge and adoption of improved practices of rose cultivation

Sr. No.	Name of practices	Knowledge			Adoption		
		Comp lete	Partial	No	Comp lete	Partial	No
1.	Soil type (light to medium black, well drained)						
2.	Preparatory tillage						
i.	Ploughing						
ii.	Harrowing						
iii.	Pit size (1'x1'x1' or 1.5'x1.5'x1.5')						
3.	Varieties Gladiator, Superstar, Peace, Sofia and Landora						
4.	Propagation method						
i.	Budding						
ii.	Cutting						
5.	Planting and spacing						
i.	June-July						
ii.	75 x 75 cm						
iii.	1.5 x 0.45 m (Joint row method)						
iv.	60 x 60 cm						
v.	1.5 x 0.60 m (Joint row method)						
6.	Manure and fertilizers						
i.	At planting Suphala 100 gm/plant Bonemeal 100 gm/plant One ghamela cowdung/plant						
7.	Irrigation method						
i.	Flood						
ii.	Drip						
iii.	Sprinkler						
8.	Irrigation schedule						
i.	Summer (twice week)						
ii.	Winter (once a week)						
iii.	Rainy season (as required)						
9.	Intertillage Weeding (once a month)						

Sr. No.	Name of practices	Knowledge			Adoption		
		Comp lete	Partial	No	Comp lete	Partial	No
10.	Pruning						
i.	Method Light/medium/heavy as per situation						
ii.	Time a. First week of June onwards b. Last week of Sept. onwards c. First week of Nov. onwards						
11.	Chemical weed control Simazine 1.5 kg/ha or roundup 30 ml/10 lit. water						
12.	Control of pests						
i.	Jassids/Aphids and Thrips Nuvacron 2ml/Demecron 4 ml or Nuvan 0.5 ml/lit water						
ii.	Red scales Nuvacron 2 ml/Demecron 1 ml or Nuvan 1 ml/lit. water or Carbofuran 1.5 kg/ha						
13.	Control of diseases						
i.	Black spot Bavistin 0.1 % or Benlate 0.1 %						
ii.	Powdery mildew Wettable sulphur 30 gm/10 lit. water						
iii.	Blight Bavistin 0.1 % or captaf 0.1 %						
iv.	Wilt Uproot and burn plant and soil drenching with blitox or captaf 30 gm/10 lit. water						
14.	Harvesting						
i.	Sharp cutter/secateur						
ii.	Bud						
iii.	Open						

Sr. No.	Name of practices	Knowledge			Adoption		
		Complete	Partial	No	Complete	Partial	No
15.	Grading						
i.	Colour						
ii.	Size						
iii.	Stalk length						
iv.	Opening stage						
16.	Storage						
i.	Dipping stalks in water overnight						
ii.	Cold storage						
17.	Packaging						
i.	Plastic crate						
ii.	Corrugated box						

13. Constraints faced in adoption of improved cultivation and marketing practices

Sr. No.	Constraints	Yes	No
A.	**Supply constraints**		
1.	Lack of availability of healthy and guaranteed grafts		
2.	Lack of skilled labour		
3.	Lack of availability of insecticides, pesticides etc.		
4.	Shortage of water		
B.	**Economical constraints**		
1.	Insufficient capital		
2.	Non-availability of adequate and timely finance		
3.	High cost of manure and chemical fertilizers		
4.	High cost of pesticides and weedicides		
5.	High cost on management of drip irrigation system		
C.	**Technical constraints**		
1.	Lack of knowledge about nursery management and grafts		
2.	Lack of knowledge about fertilizer and manure application and working out doses		
3.	Lack of knowledge about planting of rose graft		

Sr. No.	Constraints	Yes	No
4.	Lack of knowledge regarding of pest and disease control		
5.	Lack of knowledge about proper harvesting stage of flowers		
6.	Lack of knowledge about packaging of flowers		
7.	Lack of knowledge about grading of flowers		
8.	Lack of knowledge about exporting of flowers		
D.	**Extension constraints**		
1.	Visit of extension personnel are not in time		
2.	Extension personnel lack of knowledge of rose cultivation		
3.	Lack of literature in local (marathi) language		
4.	Audio-visual aids are not used by the extension workers		
5.	Visits are not organized by the extension workers to agricultural universities and rosaries of progressive farmers		
E.	**Marketing constraints**		
1.	High cost of transportation		
2.	Flower quality deteriorates during transportation		
3.	Careless handling of flowers by workers during transportation		
4.	Lack of cold storage facilities		
5.	The rates of commission are high		
6.	Without involvement of commission agents and middlemen, it is difficult to sell the produce		
7.	Lack of information about market price		
8.	Fluctuation in prices of rose		
9.	Low price in local market		
10.	Lack of proper rates according to grade of flowers		
11.	Export of flowers is a very difficult process		
12.	It is very difficult to dispose the unmarketed rose flowers		

14. Suggestions to overcome the constraints

Sr. No.	Suggestions	Yes	No
1.	Guaranteed grafts should be provided from government nurseries with technical know-how		
2.	All the inputs should be provided in time with adequate quantity		
3.	Sufficient and timely credit should be supplied at reasonable rate of interest		
4.	Extension personnel should supply the technical information in time		
5.	Extension personnel should use Audi visual aids during meetings and discussions		
6.	Cold storage facilities should be made available near to production centre's		
7.	Efficient and effective marketing system is necessary		
8.	Gradewise price rates may be given		
9.	Government should provide incentives and subsidies to rose growers		
10.	The procedure of export of rose flowers may be simplified		
11.	Rose processing units may be established for the use of unmarketed flowers		

Vita

8. VITA

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