PROBLEMS AND PROSPECTS OF COMMERCIAL FLORICULTURE IN NORTH HARYANA

BY
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(2010A35M)

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CERTIFICATE – I

This is to certify that this thesis entitled "**Problems and Prospects of Commercial Floriculture in North Haryana**" submitted for the degree of Master of Science in the subject of Extension Education of the Chaudhary Charan Singh Haryana Agricultural University, Hisar, is a bonafide research work carried out by **Mr. Sandeep Kumar**, Admn. No. **2010A35M** under my supervision and that no part of the thesis has been submitted by him for any other degree.

All the assistance and help received during the course of investigation have been duly acknowledged.

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CERTIFICATE - II

This is to certify that this thesis entitled **"Problems and Prospects of Commercial Floriculture in North Haryana"** submitted by **Mr. Sandeep Kumar,** Admn. No. **2010A35M** to the Chaudhary Charan Singh Haryana Agricultural University, Hisar in partial fulfilment of the requirement for the degree of Master of Science in the subject of Extension Education, has been approved by the Student's Advisory Committee after an oral examination on the same.

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Place: Hisar ***Sandeep Kumar***

Dated:

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTO

PHOTO NO.	TITLE
1	Researcher interviewing the floriculturist/farmer, background view, roses, at Dukheri village
2	Researcher interviewing the floriculturist/ farmer at Panjokhera village.
3	Researcher and farmer interaction, at Kulhari
4	Corms of gladiolus
5	Gladiolus, at Mulana
6	French Red and African Gold varieties of Marigold, at Dukhari Village
7	Roses, the prosperity, in a field at Dukhadi village
8	French Red and African Gold varieties of Marigold at Dukhari village

CHAPTER-I

INTRODUCTION

Diversification in agriculture is in great demand today for increasing income from per unit cultivated area. The floriculture business is very fast emerging as a major venture on the world scenario. Floriculture is considered as a lucrative profession with a great potential for returns per unit area as compared to field crops. Different kinds of ornamental plants and flowers are grown for domestic and international trade in developed and developing countries. Flower cultivation is an ancient farm activity with great potential for generating remunerative self employment among the small and marginal farmers besides earning the much needed foreign exchange. Commercial floriculture is of recent origin though the traditional flower cultivation has been in practice for centuries. The flowers can be grouped under two categories i.e. traditional flowers and cut flowers. The major crops cultivated under traditional category are marigold, jasmine, and chrysanthemum, while rose, gladiolus, carnation tuberose and orchids are the main crops for the cut flowers. Emphasis is being shifting from traditional flowers to cut flowers for export purposes.

Flowers are associated with mankind since time immemorial. It is said that from birth to death flower are inseparable from human life, there is wide reference of flowers in mythology and '*puranas*' signifying their importance. It is often refered that the God is an ardent lover of flowers though they are one of his own creation. Flower symbolise beauty, purity, tranquillity, honesty and divinity. Offering of flower is a sign of reverence. It is a source of inspiration for poets and artists. Fascinating colours and fragrance of flowers have led the children into the world of wonders and magic. The use of flowers in home decoration has become an integral part of living in human society. In India large consumption of flower is in paying tributes in temples, marriages, reception parties and other social/religious ceremonies. They are used in the form of garland, bouquets, essences, painkillers, sprays and medicines etc.

In the earlier period of civilization, the flowers were grown for their aesthetic value. But with the passage of time, due to change in the life style of people, the flower growing gained the economic importance and people started

growing flowers on commercial basis, thus the flower cultivation has now become a business proposition.

According to National Horticulture Board Report, the total area under flower crops in 2009-2010 was estimated around 160.9 thousand hectares though under cut flowers it was only 800 hectares. Total area under floriculture in India is second largest in the world and only next to China. Fresh and dried cut flowers dominate floriculture export from India. Among the states, Karnataka is the leader in floriculture with about 18,000 hectares accounting for 75% of India's total flower production. (Anonymous, 2010).

In Haryana, the area under flower cultivation covers 8200 hectares of which maximum area is under marigold (6481 hectares) followed by 1275 hectares under gladiolus. Other flowers like tuberose, rose and chrysanthemum are also grown in different part of Haryana. (Anonymous, 2010).

In most part of the country flower growing is carried out on small holdings, mainly as a part of the regular agriculture systems. The availability of natural resources like favourable and diverse climatic conditions permit production and availability of many varieties of the flower crops round the year. Availability of labour at low wages leads to reduction in production costs, increasing access to market increases our competitiveness in the export markets.

There are also special government programmes for expansion of area under floriculture with state assistance. The National Horticulture Board, a major developmental agency for horticulture, also makes available finances as soft loan for setting up integrated projects for production and marketing of flowers. All possible efforts and resources have been directed to develop new and viable technologies of production, create favourable market, provide better transport, storage and packaging facilities and promote export to make cut flower growing a profitable business. With domestic flower consumption on increase, the technical collaboration with foreign companies has also been allowed, in order to increase the export of flowers. Presently India's share in global floriculture trade is just 0.61 per cent. Researches had identified various constraints in flower cultivation of technical knowledge, poor infrastructural facilities, inadequate production poor quality and inconsistent supply of planting material and lack of efficient post harvest handling. Additionally non-availability of organized marketing and monitoring system, marketing surveys, poor sales promotion activities and insufficient cold storage facilities are main marketing constraints (Sidhu and Mishra, 1997).

Keeping this in view the importance of floriculture, its export potential, employment generation potential etc., the present study was conducted with the following objectives:

Objective

1) To explore the knowledge level of floriculturists.
2) To identify the training needs of floriculturists.
3) To find out the constraints encountered by the floriculturists.
4) To develop a strategy for floriculture cultivation for sustainable development

Scope of the study

The present study would provide a deep insight into the problems and prospects of commercial floriculture in north Haryana by explaining its various dimensions. It would be immensely useful for the researchers, extension worker, planners, and policy makers, for developing the action plan to guide, encourage, motivate and train the farmers for commercial flower cultivation. In view of the findings of present investigation, the government programmes and policies for promotion of commercial flower cultivation may be formulated. The investigators' may also develop interest to plan and conduct research on flower crops in other regions on similar lines.

Limitation of the study

Being a students research project. The study was carried out with the following limitations.

1) The study is limited to north Haryana only so the comprehensive result could not be obtained.
2) The finding of the study is based on the expressed opinion of the respondents. Although every effort was made to get accurate information from the respondents. The possibility of the respondents giving some baised information cannot be completely ruled out and some vital information could have been kept back.
3) Being a student's project, it has all those limitation which are common in such cases i.e. the limitation of time, human resources and financial resources.

CHAPTER-II

REVIEW OF LITERATURE

Commercialization of floriculture including cut flowers has gained importance in India over past few years, since it fetches higher returns as compared to other crops. However, due to perishable nature of flowers, it requires established and adequate marketing facilities. Many research studies pertaining to knowledge and adoption of recommended practices, of various crops, relationship of farmer's socio-personal class with their knowledge and adoption level etc. have been undertaken in past by several research workers.

A very few studies have been conducted on problems and prospects of commercial floriculture in India and particularly in Haryana. The author has made an attempt to review the literature for explaining and discussing the findings of the past studies in meaningful manner. The salient findings of the researches relevant to present investigation have been presented below:

2.1 Farmers' knowledge level about recommended practices of flower cultivation and their relationship with background characteristics of farmers

2.2 Constraints perceived by farmers about various aspects of flower cultivation

2.3 Training needs of farmers about various aspects of flower cultivation

2.4 Perceived prospects of flower cultivation

2.1 Farmers' knowledge level about recommended practices of flower cultivation and their relationship with background characteristics of farmers

Nikhade *et al.*, (1992) reported that most of the pineapple growers' posses low level knowledge in case of application of manure and use of chemical for seed treatment and plant protection measures.

Singh (1993) reported that mean knowledge of the farmers regarding cotton production technology was (62.0%). It was considerably high about irrigation, agronomical practices and fertilizer. The knowledge of farmers was found low in case of variety and plant protection measures.

Chand (1994) found that the knowledge of farmers regarding rice varieties was low (54.9%). The knowledge of farmers regarding seed treatment, green manuring and plant protection practices was very low. Majority of the farmers (66.0%) had knowledge of more than 50.0 per cent of recommended dose of fertilizers. Farmers' knowledge about seed rate, sowing time and water managemet was satisfactory.

Halkatti and Sundraswami (1994) observed that farmers had knowledge about recommended varieties and time of sowing with regard to potato cultivation. The knowledge index in respect of selection of seed was (75.8%), whereas that of recommended spacing was less than (50.0%). The same way (52.5%) with regards to seed treatment the farmers had good knowledge of doses of chemical fertilizers, FYM, seed rate and plant protection measures. The over knowledge index was found to be (72.4%).

Pandya and Vekaria (1994) found that (60.6 %) of the farmers possessed medium level of knowledge regarding banana growing practices, whereas (26.3%) had high level of knowledge and only (16.0 %) were reported to have low level of knowledge.

Chand *et al.*, (1997) found that less than half number of farmers had correct knowledge about seed rate (47.0%), sowing time of nursery (48.0%) and chemical weed control (36.0%).regarding rice production.

Ramamurthi *et al*., (1997) reported that (56.7%) farmers had medium level of knowledge followed by low (30.8%) and high (12.5%) on turmeric production and processing. They pointed out that low level of knowledge existed in plant protection (32.73%) and manures and fertilizers (33.0%) while, farmers had high knowledge in seeds processing (81.4%) sowing (67.7%) and weeds (50.3%).

Thoronetharan *et al.,* (1998) revealed that higher utilization of various information sources and mass media by the respondents had helped them to had relatively more knowledge on recommended agro-forestry practices.

Ekka (1999) revealed that education, socio - economic status, extension contact, mass media exposure and change proneness showed positive and significant relationship with knowledge of paddy growers.

Gogia (1999) revealed that the differential knowledge on coconut cultivation was found that large size land holding farmers having more knowledge than small size land holders.

Kumar (2000) reported that education, extension contact, mass media exposure, change proneness and material possession were positively and significantly correlated with knowledge level.

Atchuta Raju, K. and Radha Krishana (2001) conducted a study in Guntur district of Andhra Pradesh on knowledge level of betel vine growers who were observed that 67.0 per cent of the betel vine grower possessed medium level knowledge while, 17.0 per cent had low and 16.0 per cent high knowledge about the recommended technologies, respectively.

Karthikeyan and Chandrakandan (2001) observed that majority of the cut flower growers (95.2 %) were lacking in knowledge about post harvest handlings of cut flowers while (85.7%) were lacking infrastructure support for post harvest handling of cut flowers,

(76.2%) were lacking due to non-availability of regular and reliable export-oriented market information service.

Kumar Ashok (2004) conducted a study on problems and prospects of horticultural growers in diversified agriculture and found that the risk orientation had positive and significant (b value) regression coefficient in use of knowledge about horticulture.

Rathod (2009) concluded that 67.5 per cent of the chilli growers had medium level of risk orientation, while 20.0 per cent and 12.5 per cent of them had high level and low level of risk orientation, respectively.

2.2 Constraints perceived by farmers about various aspects of flower cultivation

Bonny (1996) reported that increased cost of plant protection chemicals was perceived as constraints by 98 per cent of respondents in adoption of improved agricultural practices of commercial production of vegetables. The next highest ranking constraints were inadequate market facilities, poor storage and other post harvest facilities, insufficient capital and high labour costs.

Choudhary and Makode (1996) found that non availability of irrigation facilities (55.33%), of required equipment (42.6%), lack of finance (37.3%), very few farmers i.e. (10.0%) quoted high cost of equipment for cultivation of high yielding varieties of chilli and jawar.

Desai *et al*., (1997) indicated that the major constraints in adoption of new technology were non-availability of improved seeds improved implements, chemicals biofertilizers, pesticides, plants protection application, beneficial to the advocated crops and timely guidance from village extension workers.

Singh (1997) studied that the various constraints in floriculture viz. non-availability of organized marketing and monitoring system, market surveys, lacking of sales promotion activities and insufficient cold storage.

Devi, Nirmala and Manmohan (1998) analyzed various constraints and observed that the marketing constraints low price for the produce (74.2%) was ranked as for most important followed by lack of quick transport facilities (58.6%), and lack of storage facilities (51.1%), and non-availability of processing units in the nearby area (32.3%). The existence of problematic soil and water (76.2%) was their prime constraints. High cost of fertilizers (53.2%) lack of training facilities (50.2%), high cost of pesticides (46.2%), lack of development programmes for guava (38.2%) were the production constraints. Non-availability of laborers (15.2%) was also reported as a constraint in guava production.

Ravishanker and Kattepa (1998) reported that the constraints in production of potato were lacking in technical guidance (94.2 %), more pests (90.0%), followed by more diseases (88.3%), high cost of fertilizer (85.0%), high cost of plant protection chemicals (81.7%), non-availability of seed material (78.3%) and non-availability of fertilizer (68.3%). Major

constraints faced by the producers in marketing of potato were high cost of transportation (93.3%) distance of market (90.0%).

Pushplata (1999) reported that majority of the farmers had given the higher rank to lack of awareness about large number of varieties for commercial cultivation (59.05%) followed by labour intensiveness (48.02%), fear of natural hazards (42.19%), flower size decreases year after year (22.33%), lack of irrigation facilities (21.20%).

Kumar *et al.,* (2000) observed that unavailability of suitable variety realized as a constrained with high intensity by turmeric growers, followed by lack of technical guidance and inadequate technology of turmeric production with second and third priority constraints.

Thyagarajan and Vasanthakumar (2000) observed that lack of quality seeds was the most important constraints. Irrigation channels were not properly maintained and heavy pest and disease incidence was ranked as the third among important constraint.

Paul *et al.,* (2001) revealed that lack of proper knowledge of composting, losses on account of perishable nature of mushroom, difficulty in borrowing loans, lack of education among villagers about nutritional values of mushroom and lack of storage facilities were major constraints confronted by the selected mushroom growers.

Chianu *et al.,* (2008) reported that input information (75% respondents), credit (13%) and bulk breaking (8%), and spraying (4%), long distance to market disconnected villages from inputs supply chain, high transport cost (53%), low demand (30%), lack of market information (21%), lack of storage facilities (13%), and limited business knowledge (12%) were the most important constraints.

Manju *et al*., (2010) reported that majority of the farmers had ranked (score) higher score to the lack of awareness about large number of varieties for commercial cultivation (423 score) followed by labor intensive (315 score), lack of irrigation facilities (135 score) and flower size decrease year after year (115 score). The major storage constraints faced by the farmers were lack of standard containers (349 score) followed by damage or spoilage due to storage facility (317 score), unfavorable temperature range/climatic conditions (295 score) and lack of quality packing materials (180 score).

Shrivastava *et al.,* (2010) reported that lack of knowledge about appropriate selection of fungicides, non availability of plant protection equipments, lack of technical guidance high cost of fungicides and sale of spurious agrochemicals were the constraints in the study.

Kamboj Moji (2011) observed that non-availability of quality inputs, high cost of insecticides/pesticides and fungicides inadequate weed control in kinnow production, low production due to unfavourable weather condition, absence of agro processing unit, lack of knowledge of current advances on kinnow production, lack of guidance for controlling insect pest/disease were considered the providing training to the farmers and also found that distributing literature regarding technical.

2.3 Training needs of farmers about various aspects of flower cultivation

Singh *et al*., (1991) pointed out that majority of citrus growers of Bulandsaher, (Utter Pradesh) had high level of knowledge gap regarding practices which were technically complex and required training on these aspects of the technology.

Sidhu (1992) observed that the need of farmers for training with regard to decision-making and the selection of crops, were their felt need.

Saini and Sandhu (1993) reported that the training need was high in disease and insect-pest of fodder crops production, seed production, varieties and fertilizer etc. of Agriculture Inspectors in Punjab.

Vakaria *et al.,* (1993) observed in study conducted at Gujarat that there is urgent need to organize regular training programmes and group discussions particularly in tribal areas to upgrade and their technical knowledge so as to increase their rice production.

Chandran and Perumal (1995) reported that farm women need training in crop husbandry, floriculture, food related activities, dairy farming and poultry farming under indigenous resource management that studied at Kannyakumari Tamil Nadu.

Puspa *et al.,* (1995) observed that the needs of training for women in poultry in Salem, Tamil Nadu (82.0%), need training on disease management (82.0%) on feed and feeding.

Shivalingaih *et al.,* (1995) observed that in Bangalore, the training needs of youth in agriculture and horticulture were high in identification of pest and diseases, control of pest, diseases, seed treatment and fertilizer application.

Jassi and Dhillon (1997) observed that the crop production of horticulture and vegetable, animal science and farm power machinery during the training course in which the farmers trainees had high training need intensity to make it more meaningful and effective

Anandan and Vasantha Kumar (1999) observed that most of the respondents preferred training once in a year, this may be due to that they want to know the recent trends in groundnut cultivation.

Krishnamurthy, *et al.,* (2000) observed that most of the existing plantations were established with seedling progenies which are generally poor in quality and erratic in bearing. The respondents indicated that their needs for training and pruning (rank III) plant protection aspects (rank IV) and fertilizer application (rank V). It indicated that majority of farmers were performing these operation and they have some knowledge.

Rajpravan *et al.,* (2000) observed that farmers in Uzhavar Santhai expressed their need for training in the production of value added products, market oriented gardening, rules and regulation of market and selection of varieties. In cultural practices, farmers required training in weed management, plant protection and fertilizer management.

Atchuta Raju, K. and Radha Krishana (2001) suggested that training programmes helps to raise betel vine farmers' socio- economic level through improved agricultural practices.

Sharma and Khan (2001) conducted that the trained group possessed significantly higher levels of knowledge, adoption and gain in income than the untrained group.

Sanjeev and Singha (2010) reported that in the most popular areas of training in which farmers sought maximum trainings were integrated farming systems, integrated pest and disease management and technologies for soil and water conservation.

2.4 Perceived prospects of flower cultivation

Katyayan (1989) explained that flowers are now becoming a commercial proposition of great potentially. The flower culture is spreading fast. The demand for flower is rising day by day.

Janvry *et al*., (1990) indicated that the peasant sector in Latin Amrica has been unable to absorb the economically active population at a faster pace than the modern sector, thus raising question about its competitiveness relative to commercial farming. In the process, gainers and losers from agricultural growth were identified from clearly defied social groups. The importance of a clear "identification of peasants", survival strategies and their specific resource and institutional constraints is stressed.

Verma *et al*., (1991) emphasized the need for utilizing usher land through floricultural alkaline soils ere found extensively in the states of Haryana, Punjab and Utter Pradesh to a lesser extent in the other states. There are many floricultural crops, which are salt resistant up to certain extent and can be successfully grown in user land alkaline soils.

Hegde (1992) concluded that the strategy for the expansion of export needs to be developed. So that India can gain from its comparative advantage in terms of cost bearing in mind the sector's infrastructure limitation. He further reported that India's advantage arises due to limited environmental controls and low cost labour. Thus, any adopted strategy will need to maintain low environmental control costs and aim to minimise labour.

Chhabra (1996) discussed the prospects of floriculture industry in India and reported that the business of flower has so much flourished that floriculture industry now one of the few industries with very bright prospects.

Dahiya (1996) conducted a study on flower growers in Rai block of Sonipat district of Haryana and reported that lack of adequate demand throughout the year, lack of regulated market in local area and wide fluctuation in prices were the major problems faced by the flower grower in marketing their produce.

Dutt (2001) concluded that horticultural industry consisting of fruit, floriculture, medicinal and aromatic plants, has emerged as an enterprise with best diversification in land utilization.

Kalloo (2003) Floricultural is gaining popularity day by day in the Indian economy, contribution substantially to its growth. Recent International policy changed and established of WTO (World Trade Organization) has opened up immense opportunities for the export of floricultural produce. Vast potential to be tapped by the country to increase the production level of many horticultural crops. Since India has best facilities in world in terms of available raw material and cheap labour, it can do better with conducive soil and climatic conditions, comparatively cheaper and abundant agricultural labour, and available infrastructure, there is an immense scope for increasing diversification towards floricultural crops.

Vidya (2006) reported that flower growing is an age old enterprise however, what lacked was its commercialization. To forth coming challenges and to meet out the growing demands of flowers in the domestic as well as the export market.

Lazer *et al.*, (2010) reported that the cut flowers of gladiolus occupy a major share in floriculture industry. For a viable cut flower business it is very important to maintain high quality of the produce. The qualitative and quantitative post harvest losses of gladiolus can be reduced by adopting improved technologies like harvesting at proper stage, use of floral preservatives and bud opening solution, pulsing, precooking, improved storage techniques such as low temperature storage, proper packaging methods etc.

Tanya *et al.*, (2010) reported that floriculture certification programs for sustainable production practices are a relatively new phenomenon in the United States. A commercial floriculture grower survey was conducted to determine potential barriers to sustainable floriculture certification. Using a logistic regression model, seven potential areas were evaluated: risk, profitability, economic viability, prior experience, education, operation size, and customer type.

Zaidi *et al.*, (2011) reported that India is gracefully paving its path to emerge as a significant player of the world floriculture trade and a new floral superpower of the future. Floriculture is an industry which has tremendous potential in India. The different types of climatic conditions provide for the possibility of growing almost all the major cut flower species of the world, either from tropical, subtropical or temperate climates.

CHAPTER-III

MATERIAL AND METHODS

The scientific study of any problem requires to follow appropriate methods and procedures in order to reach reliable, unbiased, objective and valid interferences. The value and utility of any research study considerably depends upon its research design and methodology. The present study is exploratory in nature dealing with background characteristics, and their affect on knowledge level, training needs and constraints related to flower cultivation. This chapter contains the methodological steps and procedures adopted in conducting the study, measurement of characteristics and other relevant information regarding the process of investigation. The research design, tools and techniques including the interview schedule employed for data collection, proper sampling techniques, devices used for the collection of the data and statistical tools employed for analysis of data in sequential manner as follows :

3.1 Locale of study

3.1.1 Selection of districts

3.1.2 Selection of respondents

3.2 Characteristics and their measurements

3.2.1 Background characteristics

3.2.2 Dependent characteristics

3.3 Construction of interview schedule

3.4 Collection of data

3.5 Analysis of data

3.6 Interpretation of result and report writing

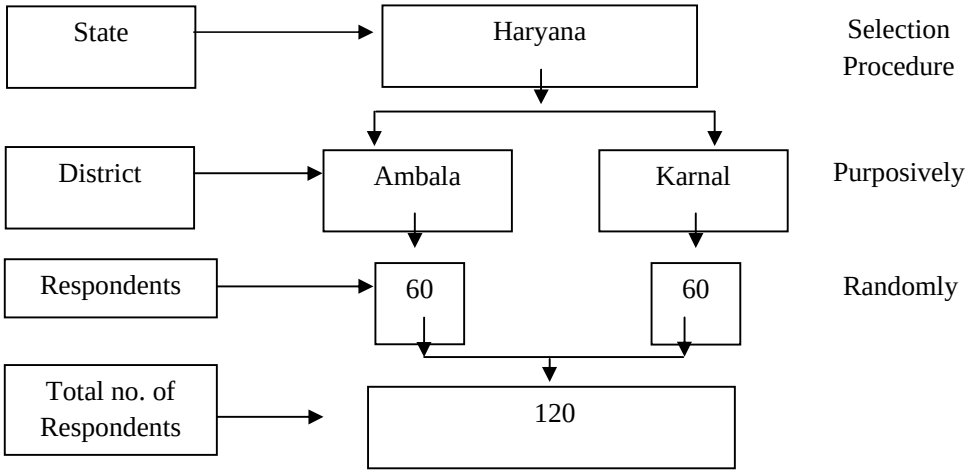
3.1 Locale of study

3.1.1 Selection of districts

The study was conducted in north Haryana and two districts purposively selected from north Haryana on bases of area under flower cultivation ie.Ambala and Karnal

RESEARCH AREA

MAP OF HARYANA



SAMPLING PLAN

3.1.2 Selection of respondents

The respondents, in the present study are the floriculturists (the farmers who grow / cultivate the field crops which produce flowers for commercial use, which has exchange value in terms of utility for survival / continuity of human life), the farmer (who holds the farms, owned / hired, cultivate the land for production of saleable agricultural commodity or for their consumption). Hence in the present study, the terms floriculturists, respondents and farmers were used interchangeably, denoted the same meaning / connotation.

A list of floriculturists from both districts was prepared after seeking information from horticulture development officials and various other sources and then a random sample of 60 farmers from each district was taken. Thus 60 respondents from Ambala and 60 respondents from Karnal were selected. In this way a total number of 120 farmers were selected for the present study, as respondents/ farmers/ floriculturists, the terms which are used interchangeably in this study, hence might be treated synonymous in present study.

3.2 Characteristics and their measurements

The background and dependent characteristic included in the study and the instruments utilized for their measurements are given below:

3.2.1 Background characteristics

The background characteristics of farmers namely age, education, land holding, socio-economic status, extension contact, mass-media exposure, change proneness, risk orientation, scienticism constituted as background characteristics. The operational definitions of the characteristics included for the study and their measurements are given below:

3.2.1.1 Age

It refers to chronological age of the respondents in term of completed years at the time of investigation. It was measured by direct questioning. The respondents were categorized into three age group.

Sr. No.	Categories	Age in years
1.	Young	up to 35
2.	Middle	36 to 50
3.	Old	above 50

3.2.1.2 Education

It refers to the respondent's academic qualifications acquired through formal schooling. It was measured with the help of socio-economic status (SES) scale developed by Trivedi (1963). The respondents were categorized into low, medium and high categories by following the equidistance method of computing the categories and scoring was done according to the scale as under:

Sr.No.	Category	Score range
1.	Low	(>2)
2.	Medium	(3-4)
3.	High	(5- 6)

3.2.1.3 Land holding

In the present study the concept of land holding is the area of cultivated land in terms of acres possessed by the respondents. The score based on the pattern of socio-economic status (SES) scale (Trivedi, 1963) with some modification were allotted to different size of land holding and the farmers were categorized into groups of land holding as under:

Sr. No.	Categories	Score range
1.	Low	(upto 5 acres)
2.	Medium	(6 to10 acres)
3.	High	(above 10 acres)

3.2.1.4 Socio-economic status (SES)

It refers to be the position of the respondents in the society as determined by various social and economic characteristics, as, caste, occupation, education, type of family, size of family, size of land holding, house type, material possession etc.

It was measured with the help of socio-economic status scale developed by Trivedi (1963), with some modification. The socio-economic status (SES) of respondents was categorized into three categories on the basis of equidistant method.

Sr. No.	Categories	Scores
1.	Low	>19
2.	Medium	19-28
3.	High	28-37

3.2.1.5 Extension contact

It has been generally considered that the frequency of contacts with extension agency is likely to affect the knowledge, understanding and attitude of respondents. Keeping these facts in view, the information about extension contacts of respondents was collected. For the purpose of present study it refers to both acquaintance of respondents and personnel of different ranks and frequency of contacts with them. It was measured with the help of scale developed by Bhatti (1985). Extension contact of respondents was divided in to three categories on the basis of equidistant method of computing categories.

Sr.No.	Category	Score
1.	Low	(upto 6)
2.	Medium	(6-12)
3.	High	(above 12)

3.2.1.6 Mass media exposure

The mass media exposure has been operationalized as the degree to which the respondents were exposed to the mass media (radio, T.V, Exhibition/Kisan Mela, Farm Magazine, newspaper etc.) for obtaining floriculture information.

This was measured through a schedule developed for the purpose by Bhati (1985). Mass media exposure categorized into three categories on the basis of equidistant method.

Sr. No.	Category	Score
1.	Low	(upto 3)
2.	Medium	(4-8)
3.	High	(above 8)

3.2.1.7 Irrigation Facilities

It refers to the sources of irrigation facilities available at the farmers' field. For measurement of characteristic, an index was developed containing items related to source of irrigation. The respondents were categorized into four categories of irrigation. The scoring was done as under:

Irrigation facilities	Score
No irrigation	0
Canal irrigation	1
Tube well irrigation	2
Both canal and Tube well irrigation	3

3.2.1.8 Risk Orientation

It refers to the risk taking capacity of the respondents, it was measured by using risk orientation scale developed by Supe (1969). The responses were optioned on five point continuum ranging from 'strongly agree' 'agree', 'undecided' 'disagree' and 'strongly disagree'. These categories were assigned the scores of 5 to 1 for positive statements and 1 to 5 for negative ones. The respondents were divided into low, medium and high risk orientation categories by using equidistance method. The scoring was done as under:

Risk orientation	strongly agree	Agree	Undecided	Disagree	Strongly disagree
For positive statement	5	4	3	2	1
For negative statement	1	2	3	4	5

3.2.1.9 Change proneness

It refers as the disposition of the farmers to accept or to reject a change. The change proneness was measured by using the scale developed by Moulik (1965). The scale of 3 items and each item has 3 parts with varying degree of change proneness. The responses were checked by reading the statements of change proneness. The farmers were also categorized as low, medium and high level of change proneness by using equidistance method. Scoring procedure of change proneness is given below:

Responses	Most likely	Least likely
Favorable statement	2	1
Unfavorable statement	1	2

3.2.1.10 Scienticism fatalism

Scienticism has been defined as belief that human situation are results of natural or social forces can be understood and changed by violation or by human action. On the other hand, fatalism has been defined as a belief that human situation and acts are predetermined by some supernatural power and can never or little be influenced violation or by act of anyone else (Chattopadhayaya, 1963).

This characteristic was measured by using scienticism scale developed by Chattopadhyaya (1963).It consisted of six items and rating was done against five point continuum. The respondents were categorized into five categories by following equidistance methods into low, medium, high on the basis of their scienticism/fatalism scores

Scienticism/fatalism	Strongly agree	Agree	Undecided	Disagree	strongly disagree
For positive statement	5	4	3	2	1
for negative statement	1	2	3	4	5

3.2.1 Dependable characteristics

3.2.2.1 Knowledge

English and English (1961) defined 'Knowledge as a body of understood information possessed by an individual or by a culture. They further stated that knowledge is that part of person's information which is in accordance with established facts.

The knowledge for the purpose of the present study was operationalized as the amount of understood information possessed by the farmers regarding the package and practices as recommend by the CCS HAU, Hisar for cultivation of flower crops. The respondents were requested to reply a set of questions to ascertain their knowledge level. For the purpose of quantification of data one score was assigned to 'Yes' as reply and zero to 'No' as reply for the question.

3.2.2.2 Prospects

Prospects mean expectation from commercial floriculture crops in future. This characteristic was measured by a structured schedule constructed for this purpose. After consultation with the scientists, extension workers and progressive farmers, some statements were prepared highlighting the prospects. The flower grower were asked to give their response on three point continuum that is, for 'Agree', 'Undecided' and 'Disagree' and the score of 3, 2and 1 were assigned, respectively. To see prospects of commercial floriculture respondents were analyzed weighted mean and rank order.

3.2.2.3 Constraints

The dictionary meaning of 'constraint is something which restricts.' Constraints are not individual phenomenon but it is a group of phenomena and only structuralists' perspective can do justice to social phenomena (Gajbhiye1990).

These refer to social, economical, technical and other related problems which may impede/restrict the respondents in the commercial floriculture crops, for measuring constraints a schedule was developed. A comprehensive list of possible constraints perceived by the respondents was prepared after consulting available literature, having detailed discussion with extension scientist, extension personnel and flower grower. Then these constraints were categorized into four broad heads namely inputs, marketing, production, technical guidance and the respondents were asked to response on three point continuum i.e. 'Very Serious', 'Serious', 'Not Serious' about the nature of the constraints. The weights were also assigned in decesending order 3, 2 and 1 respectively

3.2.2.4 Training Needs

Bains (1980) defined training as "A kind of learning process in which an individual gets learning experience to internalize desired knowledge, skill and attitude resulting in increased ability to perform specific jobs in better ways".

In the present study, the training need has been operationalized as an expression of need for training in selected item which are considered by them that training is required in these items/topics. A list of training items was prepared by consulting the relevant available literature and the experts on the subject. It was measured in terms of the expressed opinion of the respondents on three point continuum i.e. 'Very Necessary', 'Necessary', and 'Not Necessary', the score assigned were 2, 1 and 0, respectively.

3.3 Construction of interview schedule

A well structured interview schedule was prepared for this purpose. This was pre-tested and modified as per the suggestion received. The interview schedule consisted of questions on general information about respondent's background (independents) characteristics and dependable characteristics.

3.4 Collection of data

The data was collected by holding personal interview with the respondents at their farm /home. Greater reliance was placed on free and informal interview with the respondents. The interview of each individual was conducted separately so that other may not be influenced by the reply of that particular respondents.

Photo 1: Researcher interviewing the floriculturist/farmer, background view, roses, at Dukheri village

Photo 2: Researcher interviewing the floriculturist/ farmer at Panjokhera village.

Photo 3: Researcher and farmer interaction, at Kulhari

Photo 4: Corms of gladiolus.

3.5 Analysis of data

Keeping in view the requirement of the study, frequency, percentage, weighted mean, rank, correlation coefficient, and regression were calculated for the purpose of analysis and interpretation of data.

3.6 Interpretation of result and report writing

After analysis of data, the results have been interpreted .On the basis of results, valid and meaningful conclusion has been drawn in the form of report under the chapter entitled result as per the objectives of the study.

CHAPTER-IV

RESULTS

This chapter deals with the findings and their interpretation emerged on the basis of statistical analysis of data collected during the study. The results of this investigation have been presented under different sections given below:

4.1 Background Characteristics of farmers.

4.2 Knowledge level of farmers.

4.3 Constrained as perceived by farmers.

4.4 Training Needs as perceived by farmers.

4.5 Prospects of floriculture as perceived by farmers.

4.1 Background Characteristics of Farmers

The distribution of the respondents according to their background characteristic is presented in the Table 4.1. expressed in percentage and frequency, the later is shown in parenthesis, in text of this chapter. Total no of respondents in this study were 120.

4.1. 1 Age

The data in Table 4.1 revealed that majority of the respondents 54.17 per cent (65) were in the young age group followed by the middle age group 27.50 per cent (33) and old 18.33 per cent (22) age group respectively.

4.1.2 Education

The Table 4.1 revealed that 57.50 per cent (69) of the farmers were in medium category and 30.00 per cent (36) of farmers were in low category and remaining 12.50 per cent (12.50) of farmers were in high category regarding their education.

4.1.3 Socio-economic status

The results in Table 4.1 also shown that half of the respondents 50.00 per cent (60) belonged to medium category of socio-economic status followed by 36.67 per cent (44) in low category of socio-economic status. Where as, only 13.33per cent (16) of the respondents were in high category (Table 4.1).

4.1.4 Land holding

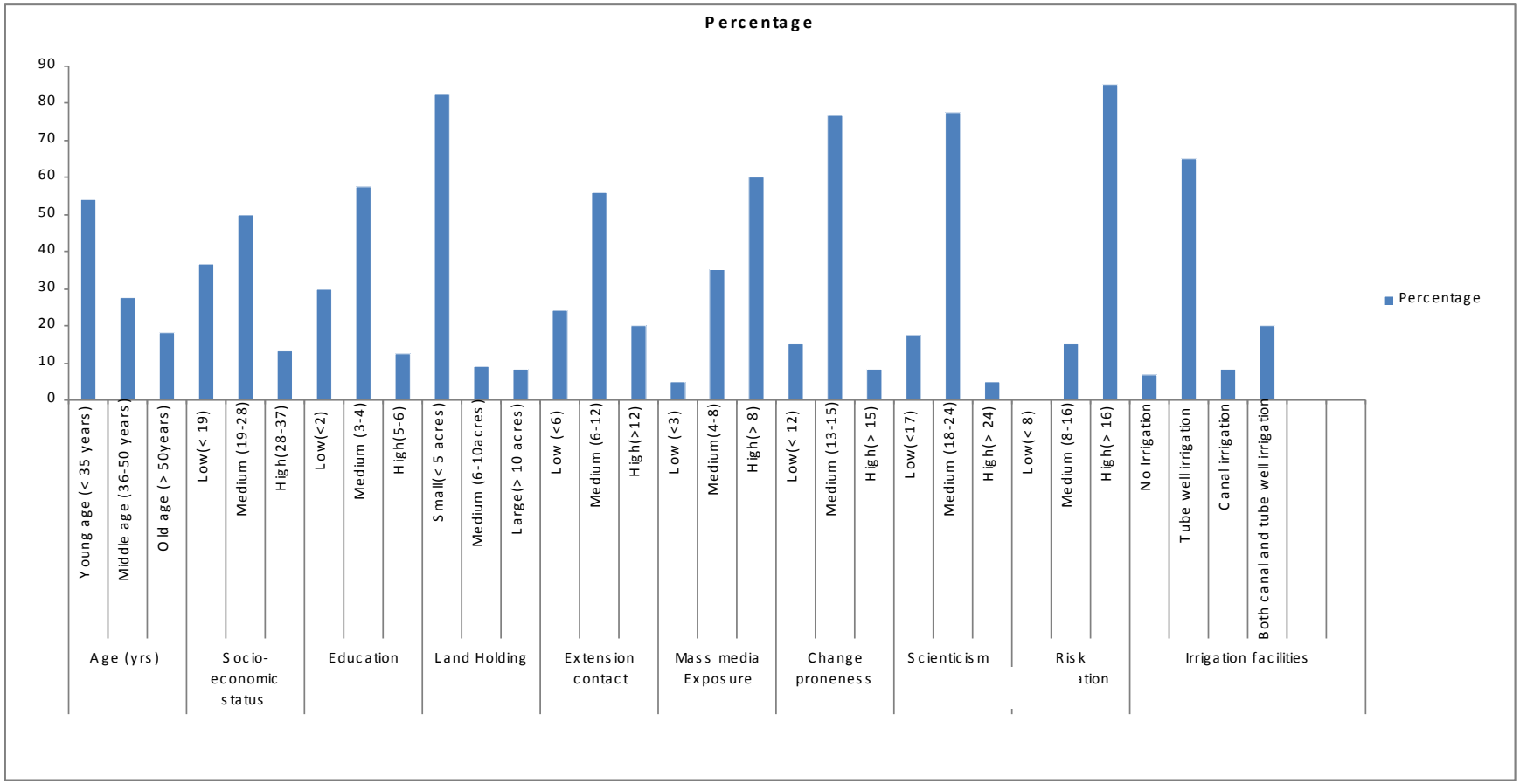
The table 4.1 showed that 82.50 per cent (99) of respondents had small size of land holding followed by 9.17 per cent (11) medium size of land holding. The results also indicated that only 8.33 per cent (10) farmers have large size of land holding.

4.1.5 Extension Contact

Table 4.1 highlights that about half of the respondents 55.83 per cent (67) had medium level of extension contacts followed by 24.17 per cent (29) having low and 20.00 per cent (24) were having high level of extension contact.

Table 4.1: Back ground Characteristics of farmers **n=120**

Sr. No	Trait	Class	Class range	Frequency	Percentage
1	Age (yrs)	Young age	(< 35 years)	65	54.17
		Middle age	(36-50 years)	33	27.50
		Old age	(> 51years)	22	18.33
2	Socio-economic status	Low	(< 19)	44	36.67
		Medium	(19-28)	60	50.00
		High	(28-37)	16	13.33
3	Education	Low	(<2)	36	30.00
		Medium	(3-4)	69	57.50
		High	(5-6)	15	12.50
4	Land Holding	Small	(< 5 acres)	99	82.50
		Medium	(6-10acres)	11	9.17
		Large	(> 10 acres)	10	8.33
5	Extension contact	Low	(<6)	29	24.17
		Medium	(6-12)	67	55.83
		High	(>12)	24	20.00
6	Mass media Exposure	Low	(<3)	6	5.00
		Medium	(4-8)	42	35.00
		High	(> 8)	72	60.00
7	Change proneness	Low	(< 12)	18	15.00
		Medium	(13-15)	92	76.67
		High	(> 15)	10	8.33
8	Scienticism	Low	(<17)	21	17.50
		Medium	(18-24)	93	77.50
		High	(> 24)	6	5.00
9	Risk Orientation	Low	(< 8)	0	0.00
		Medium	(8-16)	18	15.00
		High	(> 16)	102	85.00
10	Irrigation facilities	No Irrigation		8	6.67
		Tube well irrigation		78	65.00
		Canal irrigation		10	8.33
		Both canal and tube well irrigation		24	20.00



Backround characteristics

Fig. 1: Backround characteristics of farmers

4.1.6 Mass Media Exposure

The study revealed that 60.00 per cent (72) of the farmers had high level of mass media exposure followed by 35.00 per cent (42) medium and only 5.00 per cent (6) low exposure to mass media.

4.1.7 Change proneness

It was observed from Table 4.1 that 76.67 per cent (92) of the respondents had medium level of change proneness followed by low15.00 per cent (18) and 8.33 per cent (10) high level of change proneness.

4.1.8 Scienticism

It is evident from the Table 4.1 that 77.50 per cent (93) of respondents had medium level of Scienticism followed by low 17.50 per cent (21) and high 5.00 per cent (6) class of Scienticism. This indicated that majority of the respondents had medium to low level of Scienticism.

4.1.9 Risk orientation

The Table 4.1 revealed that majority of respondents 85.00 per cent (102) were under high category of the risk orientation followed by 15.00 per cent (7) in medium category . None of the respondents were under the low category of risk orientation.

4.1.10 Irrigation facilities

It is revealed from Table 4.1 that 65.00 per cent (78) of farmers use tube well as a source of irrigation. Whereas, 20.00 per cent (24) of the respondents were having both tube well and canal irrigation facilities. It is further evident from the Table 4.1 that 8.33 per cent (10) of the respondents had depended only on canal irrigation and 6.67 per cent (8) of respondents had no source of irrigation at their field and hence depend on the rain.

4.2 Knowledge level of floriculturists regarding flower cultivation

The data in Table 4.2 revealed that more than half of the farmers 57.5 per cent(69) were having medium knowledge level regarding flower cultivation followed by 25.84 per cent (31) with low knowledge level and 16.67 per cent (20) of the farmers had high knowledge level.

Table 4.2: Knowledge level of floriculturists regarding flower cultivation

Sr. No	Knowledge	Class range	Frequency	Percentage
1	Low	<35	31	25.84
2	Medium	35-42	69	57.5
3	High	>42	20	16.66

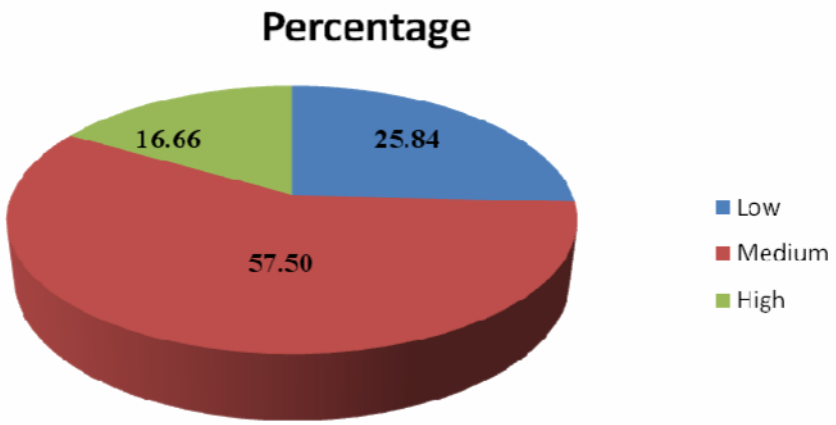


Fig. 2: Knowledge level of floriculturists regarding flower cultivation

Further analysis of the knowledge of respondents regarding floriculture practices under six sub headings showed in Table 4.3 that included concept and importance, flower verities, agronomic practices, fertilizer application, harvesting packing and marketing and precaution limitation.

Table 4.3: Knowledge level of floriculturists regarding flower cultivation

n=120

Sr.No	Statement	Characteristic class	Class range	frequency	Percentage
1	Concept and importance	Low	4-8	46	38.33
		Medium	9-12	62	51.67
		High	Above-12	12	10.00
2	Flower crops varieties	Low	0-3	72	60.00
		Medium	4-6	32	26.67
		High	Above 6	16	13.33
3	Agronomic practices	Low	3-7	53	44.17
		Medium	8-12	43	35.83
		High	Above 12	24	20.00
4	Fertilizer Application	Low	1-2	80	66.67
		Medium	3-4	2	1.67
		High	4-6	38	31.67
5	Post Harvest practices packing and marketing	Low	1-4	46	38.33
		Medium	5-8	53	44.17
		High	Above 8	21	17.50
6	Precautions and limitation in cultivation	Low	1-3	45	37.50
		Medium	4-6	31	25.83
		High	Above 6	44	36.67

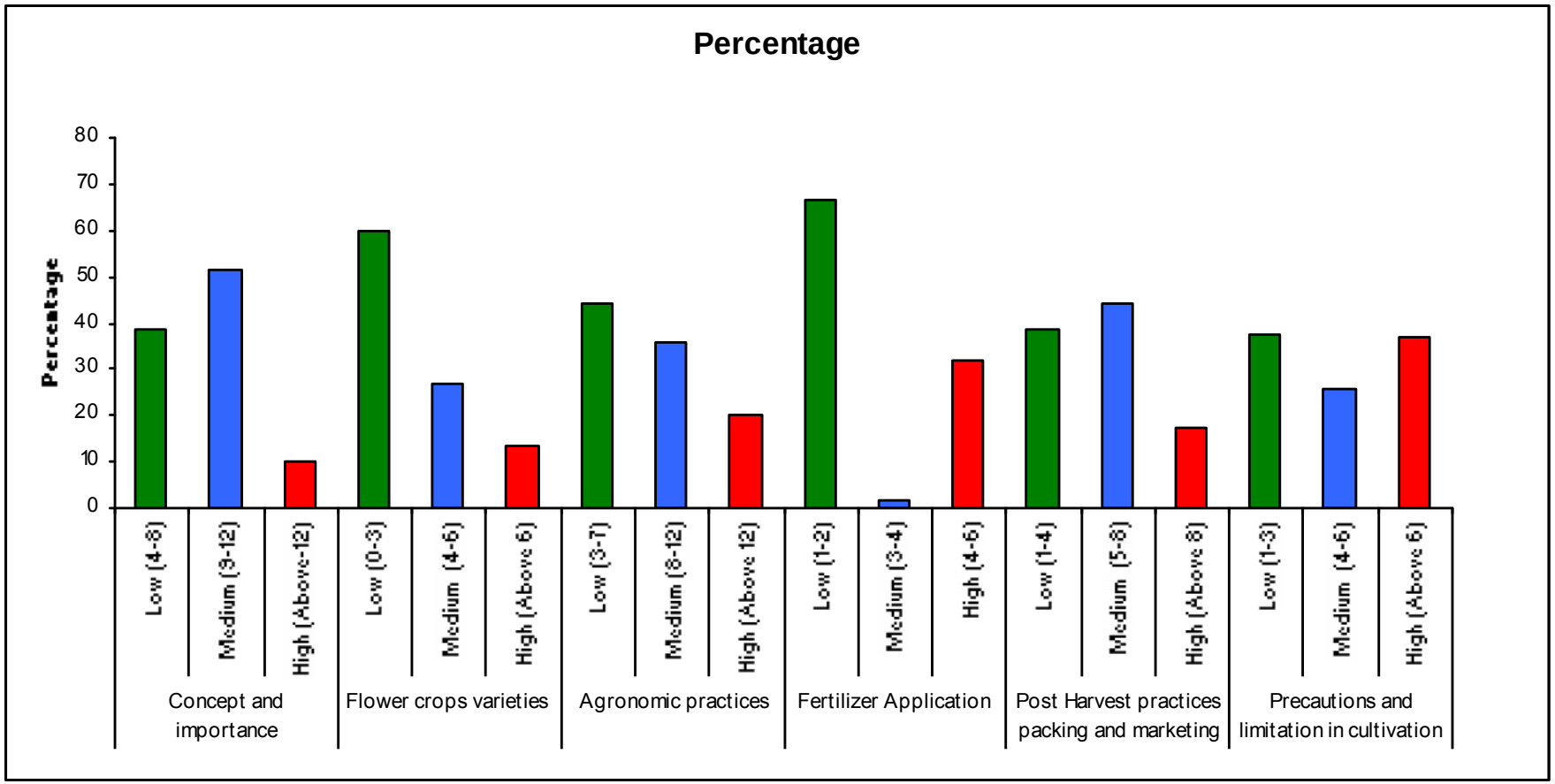


Fig. 3: Knowledge level of floriculturists regarding flower cultivation

Data in Table 4.3 regarding concept and importance of floriculture shows that 51.67 per cent (62) of the respondents belonged to medium level of knowledge class ,followed by 38.33 per cent (46) and 10 percent(12) respondents in low and high level of knowledge regarding floriculture practices, respectively.

Data presented in Table 4.3 indicated that flower crop varieties of floriculture about half of the respondents were included in low level of knowledge class as 60.00 per cent (72) followed by 26.67 per cent (32) of respondents include in medium level of knowledge and 13.33 per cent (16) of respondents had high level of knowledge related to flower varieties.

In case of agronomic practices, in Table 4.3 it was observed that 44.17 per cent (53) and 35.43 per cent (43) of the respondents belonged to low and medium level of knowledge class respectively, where as, only 20.00 per cent (24) of respondents were in high class of knowledge.

Table 4.3 further indicated that knowledge of fertilizer application where majority of 66.67 per cent (80) respondents belonged to low level of knowledge class followed by 31.67 per cent (38) respondents in high class of knowledge.

Regarding harvesting packing and marketing knowledge level of farmers was medium for 44.17 per cent (53), followed by 38.33 per cent (46) respondents in low class and 17.50 per cent (21) respondents belongs to high class score.

In case of precaution and limitation of floriculturists most of the respondents had low level of knowledge followed by medium by 36.67 per cent (44) and high level by 25.83 per cent (31) of knowledge, respectively.

4.2.1 Relationship between respondent's background characteristics and their knowledge level regarding flower cultivation

To determine the relationship between background characteristics of respondents and their knowledge regarding flower cultivation, correlation co-efficient was calculated which had been presented in Table 4.4. The background (independent) characteristics age, education, socio-economic status, extension contact mass media exposure, change proneness, scienticism and risk orientation were found positively and significantly correlated with knowledge of respondents regarding flower cultivation.

Table 4.4: Correlation between respondent's background characteristics and their knowledge level regarding flower cultivation

n=120

Sr. No.	Independent Characteristics	Correlation co-efficient
1	Age	0.707**
2	Education	0.285**
3	Socio economic status	0.293**
4	Extension contact	0.247**
5	Land holding	0.218*
6	Mass Media exposure	0.219*
7	Irrigation facility	0.194*
8	Risk orientation	0.212*
9	Change Proneness	0.222*
10	Scienticism	0.194*

**Significant at the 0.01 level of probability
* Significant at the 0.05 level of probability

Where as age, education, socio economic status and extension contact were found positively significant at 0.01 level of probability but irrigation facilities, land holding, risk orientation, mass media exposure, change proneness and scienticism were found significant at 0.05 level of probability, which indicated that these characteristics contribute significantly towards knowledge of flower cultivation.

Table 4.5 Regression coefficient of respondent's background characteristics and their knowledge level regarding flower cultivation

n=120

Sr. No.	Independent Characteristics	Regression Co-efficient	
		Regression Co-efficient	t-value
1	Age	0.306**	7.216
2	Education	0.827**	5.053
3	Socio economic status	0.305	1.497
4	Extension context	0.043	0.974
5	Land holding	0.176	0.515
6	Mass Media exposure	0.113	1.644
7	Irrigation facility	0.053	0.398
8	Risk orientation	0.218	1.203
9	Change Proneness	0.287	1.702
10	Scienticism	0.187*	1.976

R – Square 0.78
**Significant at the 0.01 level of probability
* Significant at the 0.05 level of probability

4.2.2 Regression analysis of respondent's background (independent) characteristics with knowledge level of floriculturists (dependent)

Regression analysis was carried out to know the contribution of different background characteristics for knowledge level of flower cultivation. The regression coefficients with their significance have been presented in Table 4.5. The Table revealed that age, education and scienticism had highly significant effect on knowledge level. The co-efficient of determination R^2 (0.78) showed that the regression equations is capable of explaining 78 % variation in the data. Other characteristics such as socio economic status, extension contact, land holding, mass media exposure, and irrigation facilities other had shown non-significant effect on dependent characteristics.

4.2.3 Floriculture cultivation practices adopted by floriculturists

Regarding cultivation of flower crop, marigold dominated in north Haryana 79.17 per cent (95) followed by gladiolus 39.17 per cent (47) and rose 36.67 per cent (44) respectively. Regarding procurement of planting material, such as seed, cutting, corm, micro-propagation, it was found that in case of seed, private sector contributed 41.67 per cent (50), where as govt. and co-operative sectors were contributing equally 16.67 per cent (20) each. In case of procurement of cutting as planting materials, private sector holded the major share 58.34 per cent (70) and co-operative had no share, in case of the corm as planting materials 66.67 per cent (80) procured from private agency, again zero per cent procurement from co-operative sector.

Table 4.6: Floriculture cultivation practices adopted by floriculturists

n=120

Sr. No	Practices		Frequency	Percentage
1	Flower crop cultivated	Marigold	95	79.17
		Gladiolus	47	39.17
		Rose	44	36.67
		Chrysanthemum	3	2.50
2(A)	Procurement of planting material(flower seeds)	Govt.Agency	20	16.67
		Co-operative	20	16.67
		Private	50	41.67
2(B)	Procurement of planting material(cuttings)	Govt.Agency	30	25.00
		Co-operative	0	0.00

		Private	70	58.34
2(C)	Procurement of planting material (corms)	Govt.Agency	40	33.34
		Co-operative	0	0.00
		Private	80	66.66
2(D)	Procurement of planting material (micro-propagation)	Govt.Agency	43	35.84
		Co-operative	0	0.00
		Private	77	64.16
3	Procurement of organic manure	Prepare your self	90	75.00
		Purchased	28	23.33
		Not using at all	2	1.67
4	Purchase of fertilizer	Govt.	17	14.17
		Co-operative	18	15.00
		Private	85	70.83
5	Purchase of Pesticides	Govt.	6	5.00
		Co-operative	21	17.50
		Private	93	77.50
6	Purchase of micro nutrient	Govt.	11	9.17
		Co-operative	26	21.66
		Private	83	69.17
7	Packing material	Gunny bags	84	70.00
		Bamboo baskets	56	46.67
		Polythene bags	39	32.50
		Corrugated cardboard boxes	18	15.00
		Any others(Specify)	5	4.17
8	Cold Storage facilities	Not using	96	80.00
		Owned	4	3.33
		Hired	20	16.67
9	Method of sale of flowers	Open auction in Mandi	82	68.33
		Mutual negotiation to wholesaler	30	25.00
		Direct to consumer	8	6.67
		Producer-Commission Agent-Retailer-Consumer	12	10.00
10	Place of marketing	District level	36	30.00
		Block level	34	28.33
		Local market	33	27.50
		Tehsil level	17	14.17
11	Method of transport facilities	Owned	53	44.17
		Hired	67	55.83

Table 4.6 also revealed that majority of farmers acquired micro-propagation materials which was mainly 64.16 per cent (77) from private sector and govt. sector 35.84 per cent (43).

Table 4.6 indicated that in procurement of organic materials most of the farmers prepared organic materials themselves and they used on their field 75.00 per cent (90) while 23.33 per cent (28) purchased of organic materials from gau-shals, farms houses, other sources of organic materials etc.

Table 4.6 revealed that for purchase of fertilizer farmers still depends on the private sector (Aadhaties/Traders) 70.83 per cent (85). The co-operative sector much lagging behind 15.00 per cent (18) and Govt 14.17per cent (17).

Table 4.6 further shows that for the purchase of pesticides majority of the respondents were dependent on private sector 77.50 per cent (93), co-operative 17.50 per cent (21) and Govt. sector 5.00 per cent (6).Similarly, for purchase of micro nutrient 69.17 per cent (83), farmers purchased from private sector followed by 21.66 per cent (26), from co-operative and 9.17 per cent (11) from Govt. Sector.

It is shown in Table 4.6 that the majority of the farmers 70.00 per cent (84) still use gunny bags as packing materials, whereas, only 15.00 per cent (18) used corrugated cardboard boxes as packing materials.

Cold storage facilities are also considered very important as flowers are highly perishable commodity. Table 4.6 reveals that majority were not using cold storage facilities 80.00 per cent (96), hired 16.67 per cent (20), and negligible number of farmers 3.33 per cent (4) using their own cold storage facilities.

Regarding methods of sale of flowers, nothing changed from aegis, open auction in mandis still going on as reported by majority & respondents 68.33 per cent (82). Whereas, through mutual negotiation to whole saler was 25.00 per cent (30), and only 6.67 per cent (8) was directly sold to consumer.

The most of the sale was at district level with 30.00 per cent (36), at block level with 28.33 per cent (34) and at local market with 27.50 per cent (33). Methods of transport used by respondents from to farm market of their produce was, hired 55.83 per cent (67), and 44.17 per cent (53) own transport facilities.

4.3 Constraints as perceived by farmers

4.3.1 Constraints related to inputs as perceived by floriculture

The Table 4.7 revealed that non-availability of inputs on proper time at village level was ranked 1st (weighted mean 2.49) by respondents. Non- availability of quality seed was given 2nd rank (weighted mean 2.43) and high price of pesticides was given 3rd rank (weighted mean 2.40).

Table 4.7: Constraints related to inputs as perceived by floriculturists

Sr. No	Constraints related to inputs	Total=120	
		Weighed mean	Rank
1	Non-availability of inputs on proper time at village level	2.49	1st
2	Non-availability of quality seed	2.43	2nd
3	High price of pesticides	2.40	3rd
4	High labour charges.	2.35	4th
5	High cost of transportation for marketing of flowers	2.34	5th
6	Lack of finance for purchase of inputs	2.28	6th

High labour charges was ranked 4th (weighted mean 2.35), high cost of transportation for marketing of flower, was ranked 5th (weighted mean 2.34), lack of finance for purchase of input was ranked 6th (weighted mean 2.28), in descending order of their importance.

4.3.2 Constraints related to marketing as perceived by floriculturists

The Table 4.8, indicate that, no support price of flowers was ranked 1st by respondents (weighted mean 2.48). Problems of middle man who away major share of the profit was perceived 2nd by respondents (weighted mean 2.42).The absence /scarcity of processing units was ranked 3rd (weighted mean 2.40), problems of storage of flower till lifted for marketing was ranked 4th (weighted mean 2.36), lack of guidance for proper time and place of marketing was ranked 5th (weighted mean 2.33), self marketing is a problems was ranked 6th (weighted mean 2.30) and lack of transport facilities for disposal of flowers was ranked 7th(weighted mean2.13).

Table 4.8: Constraints related to marketing as perceived by floriculturists

Sr. No	Constraints related to marketing	Total=120	
		Weighed mean	Rank
1	No support price for flowers	2.48	1st
2	Problems of middleman	2.42	2nd
3	Absence /scarcity of processing units	2.40	3rd
4	Problems of storage of flower till lifted for marketing.	2.36	4th
5	Lack of guidance for proper time and place for marketing	2.33	5th
6	Self marketing is a problems	2.30	6th
7	Lack of transport facilities.	2.13	7th

4.3.3 Constraints related to production as perceived by floriculturists

Table 4.9 indicated that use of seed without treatment was ranked 1st by all respondents (weighted mean 2.50).

Table 4.9: Constraints related to production as perceived by floriculturists

Sr. No	Constraints related to production	Total=120	
		Weighed mean	Rank
1	Use of seed without treatment	2.50	1st
2	Non application of proper and balanced dose of fertilizers	2.47	2nd
3	Farmers and labours are not skilled in flower cultivation	2.40	3rd
4	Unfavourable climatic condition, soil type and difficult to maintain the proper moisture in soil	2.35	4th
5	Lack of irrigation facilities	2.30	5th
6	Non-availability of improved implements	2.29	6th

Non application of proper and balanced dose of fertilizers were perceived at 2nd rank (weighed mean 2.47), by respondents. Farmers and labours were not skilled in flower cultivation was ranked 3rd (weighed mean 2.40), unfavourable climatic condition, soil type and difficult to maintain the proper moisture in soil was ranked 4th (weighed mean 2.35). Lack of irrigation facilities was ranked 5th (weighed mean 2.30), non-availability of improved implements was ranked 6th (weighed mean 2.29) their importance of constraints.

4.3.4 Constraints related to technical guidance as perceived by floriculturists

Table 4.10 indicated that lack of knowledge about post harvest practices was ranked 1st by respondents (weighted mean 2.67).

Table 4.10: Constraints related to Technical guidance as perceived by floriculturists

Sr.No	Constraints related to Technical guidance	Total=120	
		Weighed mean	Rank
1	Lack of knowledge about post harvest practices	2.67	1st
2	Lack of guidance for controlling insect pest and disease	2.59	2nd
3	Lack of guidance for seed treatment	2.58	3rd
4	Lack of knowledge of current advances in flower cultivation	2.53	4th
5	Lack of knowledge of fertilizer application	2.52	5th

Lack of guidance for controlling insect pests and disease was ranked 2nd (weighted mean 2.59) by respondents. Lack of guidance for seed treatments, was ranked 3rd (weighted mean 2.58). Lack of knowledge of current advances for cultivation was ranked 4th (weighted mean 2.53), lack of knowledge of fertilizer application was ranked 5th (weighted mean 2.52) in order of their importance.

4.4 Training needs as perceived by floriculturists

To ascertain the training needs as perceived by farmers, three point continuum scale was used, the weighted mean was calculated of each item of practices, 21 statement were considered of the total sample (n = 120).Table 4.11 revealed that plant protection measures was given 1st rank (weighted mean 1.86) by respondents post harvest process of flower, use of biproduct, application of herbicides in different flowers crops were ranked as 2nd (weighted mean 1.79), 3rd (weighted mean1.75), and 4th (weighted mean 1.73), respectively, as important areas, in which they needs training as per their perception.

Table 4.11: Training Needs as Perceived by floriculturists

n=120

Sr. No	Training	Weighted Mean	Rank
1	Plant protection measures	1.86	1st
2	Post harvest processing of flowers	1.79	2nd
3	Uses of biproduct	1.75	3rd
4	Application of Herbicides in different flower crops	1.73	4th
5	Uses of waste product	1.69	5th
6	Different methods of irrigation for different flower crops	1.65	6th
7	Techniques for commercial cultivation of flowers.	1.63	7th
8	Technique of weeding in different flower crops	1.61	8th
9	Storage of post harvested flowers	1.53	9th
10	Different type of Packing techniques	1.52	10th
11	Different types of packing material	1.50	11th
12	Transportation of flowers to distant market places	1.49	12th
13	Grading, sorting and standardization of flowers	1.48	13th
14	Different types of storage & transplantation material	1.45	14th
15	Methods of Harvesting	1.41	15th
16	Type of soil and climate required for cultivation of flowers.	1.40	16th
17	Raising of flower nursery.	1.38	17th
18	Marketing of flowers	1.36	18th
19	Selection of flower varieties most suited for commercial cultivation.	1.33	19th
20	Account keeping of flower cultivation	0.97	20th
21	Different methods of fertilizer application	0.82	21st

The respondents felt needs of training about use of waste product found 5th rank (weighted mean1.69).Different method of irrigation for different flower crops was ranked 6th (weighted mean1.65), techniques for commercial cultivation of flower was ranked 7th (weighted mean1.63), technique of weeding in different flower crops at 8th rank (weighted mean1.61). Storage of post harvested flowers, different type of packing techniques, different type of packing material, transportation of flowers to distant places, grading sorting and standardization of flower, different types of storage & transplanting material and method of harvesting were ranked 9th (weighted mean1.53), 10th (weighted mean1.52), 11th(weighted mean1.50), 12th(weighted mean1.49), 13th(weighted mean1.48), 14th (weighted mean 1.45) respectively.

Type of soil and climate required for cultivation of flower, raising of flower nursery, marketing of flower, selection of flower varieties most suited for commercial cultivation, account keeping of flower cultivation were ranked at 16th (weighted mean 1.40), 17th (weighted mean 1.38), 18th (weighted mean 1.36) and 20th (weighted mean 0.97) respectively whereas different method of fertilizer application was felt least important and was ranked 21th (weighted mean 0.82).

4.5 Prospects of floriculture as perceived by floriculturists

Table 4.12 elaborates the specific areas to which the flower growers perceived more bright in relation to prospect of commercial flower cultivation. The weighted mean about different items of prospects and rank order of different items revealed that the floriculturists perceived as flower fetches a good market price, was 1st ranked (weighted mean 2.80). More demand in and outside the India was perceived 2nd rank (weighted mean 2.75). Similar manner, best suited climate for flower cultivation; better for only those who is residing near the city and more income in less time were ranked as 3rd (weighted mean 2.65), 4th (weighted 2.61) and 5th (weighted mean 2.57) respectively. High price of flower was perceived by respondents at ranked 6th (weight mean 2.51).

Table 4.12: Level of prospects as perceived by floriculturists

n=120

Sr. No	Items	Weighted Mean	Rank
1	Flower fetches a good market price.	2.80	1st
2	More demand in and outside the India.	2.75	2nd
3	Best suited climate for flower cultivation.	2.65	3rd
4	Better for only those who is residing near the city?	2.61	4th

Photo 5: Gladiolus, at Mulana

Photo 6: French Red and African Gold varieties of Marigold at Dukhari Village

Photo 7: Roses, the prosperity, in a field at Dukhadi village

Photo 8: French Red and African Gold varieties of Marigold at Dukhari village

5	More income in less time.	2.57	5th
6	High prices of flowers.	2.51	6th
7	Export oriented crop.	2.46	7th
8	It is will be better for additional income to cultivate flower	2.44	8th
9	Would you continue with flower cultivation in future	2.41	9th
10	Gives assured income	2.40	10th
11	Demand is increasing day by day.	2.32	11th
12	Better credit facilities are available at present.	2.30	12th
13	Better market facilities are available at present.	2.26	13th
14	Better technical support is available.	2.25	14th
15	In case Govt.provide facilitations would you take up flower cultivation in whole of your Agriculture land	2.24	15th
16	Better input facilities are available.	2.21	16th
17	Low production cost.	2.18	17th
18	Purchasing power of people is increasing.	2.17	18th
19	Easy to produce.	2.10	19th
20	Flower cultivations requires less investment and needless inputs	2.09	20rd

Would you continue with flower cultivation in future, flower cultivation assured income, demand increasing day by day and better credit facilities available at present ,were perceived by the respondents in rank order of 9th (weighted mean 2.41), 10th (weighted mean 2.40), 11th (weighted mean 2.32) and 12th (weighted mean 2.30) .

Better market facilities were available at present and better technical support was available, in case govt. provide facilities would you take up flower cultivation in whole of your agriculture land, better input facilities are available, and low production cost and purchasing power of people was increasing and easy to produce were perceived as prospects in rank order of 13th (weighted mean 2.26), 14th (weighted mean 2.25), 15th (weighted mean 2.24), 16th (weighted mean 2.21), 17th (weighted mean 2.18), 18th (weighted mean 2.17) and 19nd (weighted mean 2.10).The last prospect perceived by farmers is flowers cultivation required less investment and need less inputs and was ranked 20th (weighted mean 2.09).

CHAPTER-V

DISCUSSION

Today there is great demand for floriculture because there are scope of increasing income through flower cultivation. India needs to invest its efforts for generating additional income for the farm family and moving toward rapid economic growth and development. Today, floriculture is considered as a lucrative profession with a great potential of returns per unit area as compared to most of the crops. Different kinds of ornamental plants and flowers are grown for domestic and international trade in developed and developing countries. Flower cultivation is an ancient farm activity with great potential for generating remunerative self employment among small and marginal farmers besides earning the much needed foreign exchange. The cut-flower cultivation in general and floriculture in particular as a potent farm enterprise leading towards diversification of agriculture. The flower market consists of 3 important components viz. temperate flowers, orchids and other lowland flowers. In general, the area of cultivation of cut flowers in India is determined by the climate and topography of the land.

In background characteristics farmers, the majority of respondent's percentage was highest in young age group followed by middle age group. The half of the respondent belongs to medium category of socio economic status where as extension contact, change proneness scienticism where belongs to medium class while land holding was observed in small class and risk orientation was found in high class over to other these finding are in line with findings of Rathod (2009) and Rajnish (2011). Rathod (2009) reported that more than half of the rural youth had medium risk orientation while 20 per cent had high level and remaining had low level of risk orientation respectively. Rajnish (2011) also concluded that the majority of farmer had medium level of education, extension contact and socio economic status.

It shows that regarding flower varieties of floriculture majority of the respondents as analyzed belongs to low level of knowledge class regarding flower varieties. In case of agronomic practices, observed that majority of the respondents were belonging to low level of knowledge. Majority of respondents were belonged to low level of knowledge about fertilizer application. Only two third of the farmers had medium level of knowledge about harvesting and packaging. In case of

precaution and limitation of floriculturist most of the respondents had low level of knowledge about flower cultivation. These findings are similar to Chand (1994) found that the knowledge of farmers regarding rice varieties was low (54.9%). The knowledge of farmers regarding seed treatment, green manouring and plant protection practices was very low. Majority of the farmers (66.0%) had knowledge of more than 50.0 per cent of recommended dose of fertilizers. Farmers' knowledge about seed rate, sowing time and water management was satisfactory. And similarly Ramamurthi *et al*., (1997) reported that (56.7%) farmers had medium level of knowledge followed by low (30.8%) and high (12.5%) on turmeric production and processing. They pointed out that low level of knowledge existed in plant protection (32.73%) and manures and fertilizers (33.0%) while, farmers had high knowledge in seeds processing (81.4%) sowing (67.7%) and weeds (50.3%).

The result of the study indicated that age, education, socio economic status, and extension contact had positively significant in their knowledge level regarding flower cultivation. This result was similar to finding of Ekka (1999) revealed that education, socio - economic status, extension contact, mass media exposure and change proneness showed positive and significant relationship with knowledge of paddy growers. Kumar (2000) reported that education, extension contact, mass media exposure, change proneness and material possession were positively and significantly correlated with knowledge level.

In regression coefficient age, education and risk orientation had positive and highly significant in knowledge level regarding flower cultivation. Similar results were also reported by Kumar (2004) concluded that the risk orientation age, education had positive and significant regression coefficient in use of knowledge about horticulture.

In case of floriculture cultivation practices adopted by floriculturist results indicated that the marigold dominated crop in north Haryana followed by gladiolus and rose, where as procurement of planting material indicated that private sector holds the major share in sale of seed, cutting & corms, and micro propagation. Regarding procurement of organic materials indicated that most of the farmers prepare themselves of organic materials and they used on their field while rest of them purchased organic materials from Gau-shals, farms houses, other decade organic materials etc. It was revealed that purchase of fertilizer farmers still depends on the private sector and the co-operative sector much lagging behind due to.

Result also indicated that the aspect of post harvest packing material was considered very important by researcher as flower is perishable items. So it was show that majority of the farmers were used high corrugated cardboard boxes as

packing material. It indicated that cold storage facilities were also considered very important floriculture as very highly perishable commodity. Regarding methods of sale of flowers nothing changed in aegis open auction in mandi and still going on as reported by respondents. This result was similar to the study conducted by Karthikeyan and Chandrakandan (2001) observed that majority of the cut flower growers 95.23 per cent were lacking in knowledge about post harvest handling of cut flowers, while 85.71 per cent were lacking infrastructure support for post harvest handling of cut flowers and 76.19 per cent were lacking non-availability of regular and reliable export-oriented market information service.

The constraints were perceived by flower growers were, such as non-availability of inputs at proper time at village level, non- availability of quality seeds, high price of pesticides, high labour charges, high cost of transportation for marketing of flowers, lack of finance for purchase of input, were found major constraints because of no specific information about input quality seed and price of pesticides. Similar results observed by Kamboj Moji (2011) that non-availability of quality inputs, high cost of insecticides/pesticides and fungicides inadequate weed control in kinnow production, low production due to unfavourable weather condition, absence of agro processing units and lack of knowledge were major constraints.

The constraints perceived in flower cultivation included, that no support price of flowers, problems of middlemen who pocked till lifted for marketing, absence /scarcity of processing units, problems of storage of flowers, lack of guidance for proper time and place marketing, self marketing is a problems and lack of transport facilities and disposal of flowers. The present study Similar to observed by Devi Nirmala and Manmohan (1998) various constraints analyzed who was observed that the market constraints low price for the produce (74.25%), followed by lack of quick transport facilities (58.59%), lack of storage facilities (51.09%), non-availability by middle man (34.36%) till lifted for marketing and non-availability of processing units in the nearby area (32.26%) constraints.

Constraints related to production of flower cultivation such as, use of seed without treatment, non application of proper and balanced dose of fertilizers, farmers and labours are not skilled in flower cultivation, unfavourable climate condition soil type and difficult maintain the proper moisture in soil, lack of irrigation facilities and non availability of improved implement were major constraints in flower cultivation. Same result was also found by Manju *et al*. (2010) that the majority of the farmers had given the higher score to lack of awareness about large number of varieties for commercial cultivation, followed by labour

intensive, lack of irrigation facilities and unfavourable climatic conditions and lack of quality packing materials.

Constraint related to technical guidance including lack of knowledge of post application, lack of guidance for controlling insect pest and disease, lack of guidance for seed treatments, lack of knowledge of current advances for flower cultivation and lack of knowledge fertilizer application similar constraints were also reported Shrivastava *et al.,* (2010) observed that the lack of knowledge about appropriate selection of fungicides, non availability of plant protection equipments, lack of technical guidance, high cost of fungicides and sale of spurious agrochemicals.

This study revealed that the need of training was felt in the area of plant protection measures, processing of post harvest flower, use of bi-product, application of herbicides in different flower crops. Training was also important for helped the respondent in decision making similar result was found by Sidhu (1992) observed that the need of farmers for training with regard decision making and selection of crop and Saini and Sidhu (1993) also same result was found that training need was high in disease and insect-pest, seed production varieties and fertilizer etc.

The maximum training was need for in techniques for commercial cultivation of flowers, technique of weeding in different flower crops, storage of post harvest flowers, different type of packing techniques, different type of packing materials, transportation of flowers to distant places, grading sorting and standardization of flowers, different types of storage, transplanting material and methods of harvesting. This similar result was also reported by Sanjeev and Singha (2010), the most popular areas of training in which sought maximum training on integrated farming system, integrated pest-disease management and technologies for soil and water conservation.

Study found that need of training was least of in case of type of soil and climate required for cultivation of flower, raising for flower nursery, marketing of flowers selection of flower varieties most suited commercial cultivation and account keeping of flower cultivation respectively. Whereas different method of fertilizer application felt most least important. Similarly result also reported by Rajpravan *et al.,* (2000) observed that farmers need for training in the production of value added products, market oriented gardening, rules and regulation of market and selection of varieties. In cultural practices, farmers required training in weed management, plant protection and fertilizer management.

The specific areas to which the flower growers perceived more bright in relation to prospect of commercial flower cultivation. The weighted mean about different items of prospects, rank order of different item revealed that the floriculturists perceived as flower fetches a good market price, was 1st ranked (weighted mean 2.80) this indicated that respondents perceived floriculture much better in term of price of sale of product. More demand in and outside the India perceived 2nd rank (weighted mean 2.75). Similar manner, best suited climate for flower cultivation; better for only those who is residing near the city and more income in less time were ranked as 3rd (weighted mean 2.65), 4th (weighted 2.61) and 5th (weighted mean 2.57) respectively. High price of flower was perceived by respondents at rank 6th (weight mean 2.51).

Level of prospects as perceived by floriculturists including flowers fetches a good market price, more demand in and outside the India, best suited climate for flower cultivation, more income in less time, high price of flower, export oriented crop, it is will be better for additional income to cultivate flower, gives assured income, quick production, demand is increasing day by day. Similar prospect was also reported by Katyayan (1989) that the flower culture is spreading fast. The demand for flower is rising day by day. Kallo (2003) also reported that the floricultural is gaining popularity day by day in the Indian economy,

As for as prospects as perceived, better credit facilities are available at present, better technical support is available, gives assured income better input facilities are available, low production cost, purchasing power of people is increasing. Easy to produce and flower cultivation requires less investment and needs less inputs. Similarly finding were also observed Dutt (2001) that industry consisting of floriculture, fruits, medicinal and aromatic plants has emerged as an enterprise with best diversification in land utilization and gives assured income.ss

Strategy to promote for commercial flower cultivation

Based on the findings of the study and discussion with the respondents some measures are being suggested for considerations of the planners, administrators, extension personals and decision makers to enhance the prospects reduce problems of commercial flower cultivation:

- Majority of the farmers required more training in the field related to plant protection practices, application of manure fertilizers and post harvest technology. So, accordingly training should be imparted by the officers of Department of Horticulture and KVK Scientists of CCS HAU, Hisar as well as other agencies on priority level. Follow up programme after all kind of such trainings find place to develop a strategy for flower cultivation.
- The most serious problems in bringing required change in floriculture as stated by the farmers were non availability of inputs at proper time, high price of

pesticide, lack of technical guidance, lack of support price and lack of marketing facilities, were the main problems. So skilled personnel should be increased.

- Plant protection measures and seed treatment was also constraint counted by farmer. The extension agencies and other should educate the farmers on all the production aspects in general and plant protection aspects in particular. The printed material on aspects of insect-pest and disease identification and their control should be distributed among farmers. The extension agencies should also start some extension and educational programme regarding the importance of seed treatment. Field trails and result demonstration should also be conducted to aware the floricultural crops growers about the result of sowing of treated seeds.
- Competition in global market can only be faced improving productivity and quality of our flower which will make imperative the adoption of various technologies of hi-tech floriculture like genetically modified crop varieties, micro propagation, fertigation, integrated pest management, high density planting, cold storage and modified climate and fertilizer. So strategy should be accordingly.
- International market is a costly venture involving corporate sector of advanced countries, whereas majority of our farmers are poor with small land holdings. They can only compete in global market when they unite themselves in the form of associations of cooperatives. Such organisation can decide about the acreage for growing a crop in order to avoid market glut, bargin the price and quality of inputs, obtain and utility market news for getting maximum price of the produce.
- Floriculture is one of the most challenging and rewarding field which requires immediate attention of the policy makers and investors not only to earn profit but gain international reputes. The growing demands of flowers in the domestic as well as the export market will require a concerted effort on the part of the government as well as the private entrepreneurs to develop floriculture on scientific lines.
- A campaign should be organized jointly by official of department of horticulture and leading private agency to update the knowledge and skill of the adaptors regarding different aspects of commercial flower cultivation.
- Success stories of farmers should be widely publicized through radio, television, farm magazine and newspapers that are doing successfully commercial flower cultivation and obtaining high productivity to encourage the other farmers towards flower cultivation.
- Inspection team should have skilled professional from various state agriculture university and KVK etc. Field days should be organised at the site of selected demonstration and the maximum farmers should be invited to show the importance of commercial flower cultivation.

CHAPTER-VI

SUMMARY AND CONCLUSION

Floriculture as farm enterprise has emerged one of the most lucrative business profession in many countries having much higher potential of return in comparison to most of the field plantation and horticultural crops. In the recent period of civilization the flower were grown on change in life style and gained economic importance. The uses of flower in home decoration as become integral part of living in home society. The floriculture business is developed very fast in world scenario.

Despite of these advantages India's share in the international trade is less than one percent and this is mainly because of various hurdles in flower cultivation, storage, marketing and exports. The major cultivation constraints are lack of technical knowledge, lack of infrastructural facilities, inadequate production due to poor seed quality, inconsistent supply of planting material and lack of efficient post harvest handling. Non-availability of organized marketing and monitoring system, marketing surveys, lack of sales promotion activities and insufficient cold storage facilities are main marketing constraints. The main storage constraints are lack of standard container, cold room facilities and lack of quality packing materials.

Keeping in the view its importance, the present study was conducted with the following objectives:

Objective

1. To explore the knowledge level of floriculturists.
2. To identify the training needs of floriculturists.
3. To find out the constraints encountered by the floriculturists.
4. To develop a strategy for floriculture cultivation for sustainable development.

The study was conducted in purposively selected Ambala and Karnal districts from North of Haryana state. A random sample of 60 farmers from each district was taken making a total number of 120 farmers for the present study.

The salient findings of study are

Background of respondents

The majority of the respondents belonged to young to meddle age group, having medium level of education, socio economic status, change proneness, extension contact but high level of mass media exposure, and risk orientation.

Knowledge level of floriculturists regarding flower cultivation

Regarding concept, importance, harvesting, packing and marketing of floriculture majority of the respondents had medium level of knowledge. In case of agronomic practices and fertilizer application majority of the respondents belonged to low level of knowledge.

Relationship between respondent's background variables and their knowledge level regarding flower cultivation

To determine the relationship between background variables of respondents and their knowledge regarding flower cultivation correlation co-efficient was calculated. The background (independent) variables age, education, socio-economic status, extension contact, mass media exposure, change proneness, scienticism and risk orientation were found positively and significantly correlated with knowledge of respondents regarding flower cultivation.

Whereas age, education, socio economic status and extension contact were found positively significant at 0.01 level of probability but irrigation facilities, land holding, risk orientation, mass media exposure, change proneness and scienticism were found significant at 0.05 level of probability, which indicated that these variables contribute significantly towards knowledge of flower cultivation.

Regression analysis of respondent's background (independent) variables with knowledge level of floriculturists (dependent)

Regression analysis was carried out to know the contribution of different background variable about knowledge level of flower cultivation. The regression coefficient with their significance found that age, education and scienticism has highly significant effect on knowledge level. The co-efficient of determination R^2 (0.78) showed that the regression equations is capable of explaining 78 % variation in the data. Other variables had showed regression with independent variable such as socio- economic status, extension contact, land holding, mass media exposure, and irrigation facilities as non-significant effect on dependent variables.

Floriculture cultivation practices adopted by floriculturist

Regarding cultivation of flower crop, a marigold dominated in north Haryana 79.17 per cent (95) followed by gladiolus 39.17 per cent (47) and rose 36.67 per cent (44) respectively. Regarding procurement of planting material, such as flowers

seed, cutting, corm and micro-propagation. In case of seed, private sector contributes 41.67 per cent (50), govt. and co-operative sector was contributing equally 16.67 per cent (20) each. In case of procurement of planting materials, cuttings, private sector holds the major share in sale of cutting that 58.34 per cent (70) and co-operative had zero per cent, in case of majority of the corm as planting materials 66.66 per cent (80) from private agency, again zero per cent procurement from co-operative sector. Only a few farmers acquired micro-propagation materials which was mainly 64.16 per cent (77) from private sector and govt. sector 35.84 per cent (43).In procurement of organic materials most of the farmers prepared organic materials themselves and they used on their field 75.00 per cent (90) prepared themselves while 23.33 per cent (28) purchased of organic materials from gau-shals, farms houses, other decade organic materials etc.

Purchase of fertilizer farmers still depends on the private sector (Adatias) 70.83 per cent (85). The co-operative sector much lagging behind 15.00 per cent (18) and Govt 14.17per cent (17).The purchase of pesticides majority of the respondents were dependent on private sector 77.50 per cent (93), co-operative 17.50 per cent (21), 5.00 per cent (6) Govt. sector, similarly, for purchase of micro nutrient 69.17 per cent (83), farmers purchased from private sector followed by 21.66 per cent (26), from co-operative and 9.17 per cent (11) form Govt. Sector. The majority of the farmers 70.00 per cent (84) still use gunny bags as packing materials. Whereas, only 15.00 per cent (18) used corrugated cardboard boxes as packing materials. Cold storage facilities were also considered very important as flowers are very highly perishable commodity. Table 4.6 reveals that there was drastic level of not using cold storage facilities 80.00 per cent (96), hired 16.67 per cent (20), and negligible number of farmers 3.33 per cent (4) using them own cold storage facilities.

Constraints in cultivation of flowers

Constraints related to cultivation of flowers observed that non-availability of inputs at proper time at village level, was rank 1st (weighted mean 2.49), Non-availability of quality seed was rank 2nd (weighted mean 2.43) and high price of pesticides was rank 3rd (weighted mean 2.40) respectively.

The present study observed that no support price of flowers was ranked 1st by all respondents of total sample (weighted mean 2.48) respectively. Problems of middle man who pocked away major share of the profit perceived 2nd rank by all respondents (weighted mean 2.42).The absence / scarcity of processing units was rank 3rd (weighted mean 2.40).In case of constraints related to production, use of seed without treatment was ranked 1st by all respondents (weighted mean 2.50).

Constraints related to technical guidance, lack of knowledge of post harvest technology was ranked 1st by all respondents of total sample (weighted mean 2.67). Lack of guidance for controlling insect pest and disease perceived 2nd rank (weighted mean 2.59) respectively.

Training needs as perceived by floriculturists

To ascertain the training needs as perceived by farmers, three point continuum scale was used the weighted mean was calculated of each item of practices, 21 statement were considered of the total sample (n = 120). Plant protection measures was given 1st rank (weighted mean 1.86) by respondents, processing of post harvest of flower, use of biproduct, application of herbicides in different flowers crops were ranked as 2nd (weighted mean 1.79), 3rd (weighted mean1.75), and 4th (weighted mean 1.73), respectively. The respondents needs for training about use of waste product was given' 5th rank (weighted mean1.69), different method of irrigation for different flower crops was given rank 6th (weighted mean1.65), techniques for commercial cultivation of flower was given rank 7th (weighted mean1.63), technique of weeding in different flower crops was given rank 8th (weighted mean1.61), different type of packing material, transportation of flowers to distant marketing places, grading sorting and standardization of flower, different types of storage & transplanting material method of harvesting were ranked 9th (weighted mean1.53), 10th (weighted mean1.52), 11th(weighted mean1.50), 12th(weighted mean1.49), 13th(weighted mean1.48), 14th (weighted mean 1.45) respectively.

Type of soil and climate required for cultivation of flower, selection of flower nursery, marketing of flower, selection of flower varieties most suited for commercial cultivation, account keeping of flower cultivation were ranked as 16th (weighted mean 1.40), 17th (weighted mean 1.38), 18th (weighted mean 1.36) and 20th (weighted mean 0.97) respectively whereas, different method of fertilizer application felt least important training aspects was rank 21st (weighted mean 0.82).

Prospects of floriculture as perceived by floriculturists

The specific areas which the flower growers perceived more bright as prospect of commercial flower cultivation. The weighted mean about different items of prospects, rank order of different item revealed that the floriculturists perceived as flower fetches a good market price, was 1st ranked (weighted mean 2.80). This indicated that respondents perceived floriculture much better in term of price of sale of product. More demand in and outside the India perceived 2nd rank (weighted mean 2.75). Best suited climate for flower cultivation was also similar manner better for only those who is residing near the city and more income in less time were

ranked as 3rd (weighted mean 2.65), 4th (weighted 2.61) and 5th (weighted mean 2.57) respectively. High price of flower was perceived rank 6th (weight mean 2.51) respectively.

Conclusion

The study was conduct in Ambala and Karnal district of north Haryana, a random sample of 60 farmers from each districts was taken, thus, total numbers of 120 respondents were selected for the present study. The majority of the respondents belonged to young to middle age group, having medium level of education, socio-economic status, change proneness, extension contact and scienticism but high level of mass media exposure and risk orientation.Knowledge about concept, importance, harvesting, packing and marketing of floriculture majority of the respondents had medium level of knowledge. In case of agronomic practices and fertilizer application majority of the respondents belonged to low level of knowledge.

The relationship between background characteristics of respondents and their knowledge regarding flower cultivation correlation co-efficient was calculated, the background (independent) characteristics age, education, socio-economic status, extension contact mass media exposure, change proneness, scienticism and risk orientation were found positively significant correlation with knowledge of respondents regarding flower cultivation. Whereas age, education, socio economic status and extension contact were found positively significant at 0.01 level of probability but irrigation facilities, land holding, risk orientation, mass media exposure, change proneness and scienticism were found significant at 0.05 level of probability which indicated that these characteristics contribute significantly towards knowledge of flower cultivation. Regression analysis was carried out to know the contribution of different background variable about knowledge level of flower cultivation. The regression coefficient with their significance had revealed that age, education and scienticism had highly significant effect on knowledge level. The co-efficient of determination R^2 (0.78) showed that the regression equations is capable of explaining 78 % variable in the data. Other variable have showed regression with independent variable such as socio economic status, extension contact, land holding, mass media exposure, and irrigation facilities and other variables have showed non-significant effect on dependent characteristics.

The present investigation was showed that most of the respondents are facing many constraints about inputs, marketing, production, and technical guidance. Over all result showed that cultivation of flowers in non-availability of inputs on proper time at village level, non-availability of quality seeds, no support price of flower, problems of middle man, use of seed without treatment, lack of

proper balanced fertilizer, lack of knowledge of post harvest application, lack of guidance of insect and pest disease were perceived as major constraints in flower production. Due to lack of knowledge about the propagation, budding, packing, lacking of training courses, financial facilities as serious constraints of floriculture.

The most important training needs about floriculture by the farmers are surplus in plant protection followed by processing of post harvest of flower, use of biproduct, application of herbicides in different crops, use of waste product and storage of post harvest flower etc. Department of Horticulture and related KVKs are present seminar and training courses for promote the flower cultivation.

The prospects as perceived by floriculturists, flower fetches as a good market price was ranked 1st, more demand in outside the India was ranked 2nd but demand of flower are fluctuate in India. It is better for additional income to cultivate flower, high price of flower, gives assured income, quick production, demand is increasing day by day, low production cost, and easy to produce are perceived as major prospects of floriculture.

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ANNEXURE-I

DEPARTMENT OF EXTENSION EDUCATION
CCS HARYANA AGRICULTURAL UNIVERSITY, HISAR

INTERVIEW SCHEDULE

Title of research- Problems and prospects of commercial floriculture in North Haryana

Sr. No. _____ **Date of interview _____**

Name of Farmer_____ **Father's Name _____**

Village_____ **Block _____**

District _____ **Contact No. _____**

PART-I

1. Age _____ (Years)

2. Socio Economic Status (SES)

A. Caste

1	Lower caste	(1)
2	Schedule caste	(2)
3	Artisan caste	(3)
4	Agriculture caste	(4)
5	Prestige caste	(5)
6	Dominant caste	(6)

B. Occupation

1	Labour	(1)
2	Caste occupation	(2)
3	Business	(3)
4	Independent occupation	(4)
5	Cultivation	(5)
6	Service	(6)

C. Social Participation

1	Member of No organization	(1)
2	Member of one organization	(2)
3	Member of more than one organization	(3)
4	Office bearer	(4)

D House type

1	No house	(0)
2	Hut	(1)

	3	kaccha house	(2)
	4	Mixed house	(3)
	5	Paacca house	(4)
	6	Mansion	(5)
E	**Education**		
	1	Illiterate	(0)
	2	Can read only	(1)
	3	Can read and write	(2)
	4	Primary	(3)
	5	Middle	(4)
	6	High School	(5)
	7	Graduate and above	(6)
F	**Family**		
	Type: -	1. Nuclear (1)	**Size**:-1. Up to 5 members (1)
		2. Joint (2)	2. Above 5 members (2)
G	**Land Holding**		
	1	Land less	(0)
	2	Less than one acre	(1)
	3	Up to 5 acres	(2)
	4	6 to 10 acres	(3)
	5	11 to 15 acres	(4)
	6	16 to 20 acres	(5)
	7	More than 20 acres	(6)
H.	**Farm power/mechanization**		
	1	No draft animal	(0)
	2	1-2 draft animal	(1)
	3	3-4 draft animal	(2)
	4	one or more prestige animal	(3)
	5	5-6 draft animal	(4)
	6	Tractor	(5)
I.	**Material possession**		
	1	Cycle	(1)
	2	Bullock cart	(1)
	3	Radio	(1)
	4	Chairs	(1)
	5	Television	(2)
	6	motor cycle	(2)
	7	Improved agricultural implement	(2)

3 Irrigation Facilities

1 Area irrigated none_____Acre (0)

2 Area irrigated through tube well_____Acre (1)

3 Area irrigated through canal_____Acre (2)

4 Area irrigated through Both_____Acre (3)

4. Extension Contact

(i) Do you know the following extension officials of your area? Yes/No

If yes, what is the frequency of your contact with them?

Sr. No	Extension official	frequency of contact					
		Never (0)	weekly (5)	fortnightly (4)	Monthly (3)	2-3 times in year (2)	once only (1)
1	HAU Scientist/KVK						
2	DHO/DDA						
3	SDAO/SMS						
4	BAO/CAO						
5	HDO						
6	ADO						
7	BDPO						
8	Bank Personnel						
9	Any other (specify)						

(ii) Was any method/result demonstration ever organized on your field? Yes/No

If yes, when

(a) Within last 6 months

(b) Between 6 to 1 year

(c) Between 1to 2 year

(iii) Have you ever visited a kisan mela or Farm fair in state Agriculture University or organized by the central/state department of Agriculture or any other Institute or organization? If yes. Then when Yes/No

a) Within one year

b) Between 2 to 3 year

c) Between 3 to 4year

(iv) Did you ever see any method/result demonstration centers on the field of any other farmer? If yes, when Yes/No

(a) Within last 6 months

(b) Between 6 to1 year

(c) Between 1 to 2 year

(v) Did you ever attend any training in the field of Floriculture? If yes, when Yes/No

(a) Within the last one year

(b) Between 1 to 2 year

(c) Never attended

5. Mass Media Exposure

(i) How frequently do you listen *Krishi Programmes* broadcasted in radio?

a) Daily (3)

b) Often (2)

c) Rarely (1)

d) Never (0)

(ii) How frequently do you read the news magazine and newspaper related to floriculture?

a) Daily (3)

b) Often (2)

c) Rarely (1)

d) Never (0)

(iii) Do you subscribe any floriculture related magazine? If yes, then which one?

a) One (3)

b) Two (2)

c) More than two (1)

(iv) How frequently do you watch the *Krishi Programme* on T.V?

a) Daily (3)

b) Often (2)

c) Rarely (1)

d) Never (0)

(v) Have you ever seen any floricultural film show or slide show? If yes. Then when

a) With the last 6 months

b) Between 6 months to one year

c) Between1 to 2 year

6. Risk Orientation Strongly agree (SA), Agree (A) Undecided (UD) Disagree (DA) Strongly Disagree (SDA)

Sr.No	Statements	**SA**	**A**	**UD**	**DA**	**DSA**
	For positive statement	**5**	**4**	**3**	**2**	**1**
	For negative statement	**1**	**2**	**3**	**4**	**5**
(a)	A farmer should adopt the inter cropping to avoid greater risks.					
(b)	It is better for a farmer not to try new farming methods unless most of others have used them with success					
(c)	It is good for a farmer to take risk when he knows his chance of success is fairly high					
(d)	A farmer who is willing to take greater risk than the average, usually do better financially					

(e)	A farmer should rather take more of a chance in making a big profit than to be content with a smaller, but less risking profit					
(f)	Trying an entirely new method in farming by a farmer involves risk, but it is worth using it					

7. Change proneness

Sr. No	**Statements**	**Most Like(2)**	**Least like(1)**
(A)1	I try to keep myself up to date with information of any improved farm practice, but that does not mean that I try out all the new methods on my farm.		
2	I fell restless, till I try out the improved farm practice, I heard about.		
3	They talk of many improved farm practices these days but who knows if they are better than the old one.		
(B)1	I am cautious about trying a new practice.		
2	After all our forefathers were wise about their farm practices and I don't see any reason for changing the old methods		
3	Often improved farm practices are not successful. However, they are promising I would surely like to accept them.		
(C)1	From time to time, I have heard from several improved farm practices and I have tried out most them in last few years,		
2	I usually wait to see what results my neighbhours obtain before I try out the improved farm practices.		
3	Somehow, I believe that the traditional ways of farming are the best.		

8. Scienticism :- Strongly agree (SA), Agree (A) Undecided (UD) Disagree (DA) Strongly Disagree (SDA)

Sr. No.	**Statements**	**Response**				
		SA	**A**	**UD**	**DA**	**DSA**
	For positive statement	**5**	**4**	**3**	**2**	**1**
	For negative statement	**1**	**2**	**3**	**4**	**5**
1	'Mantras' have far reach effects. if one can chant and recite accurately. Right 'Mantras on right occasion, he can produce miraculous effects.					
2	Every event in life has already been settled and determined by the fate.					
3	There can't be any real relationship between massive changes and congregations of eight planets in the same year though some astrologers claim it to be so.					
4	A basic human tragedy is that man proposes but god disposes.					
5	It is better to disbelieve in what is not proved or tested, but when proven it is to be relied on.					
6	Those who say that they have seen ;Ghosts' either distort the truth or tell a lie					

Floriculture Cultivation Practices

1. Which flower crop you cultivated.

Sr.No	Name of crop	Irrigated Area	Unirrigated Area
1	Marigold		
2	Gladiolus		
3	Chrysanthemum		
4	Tuberose		
5	Rose		

2. From where you procure the planting materials

Sr. No.	Planting materials	Sources		
		Govt.Agency (3)	Co-operative (2)	Private (1)
1	Flower Seed			
2	Cuttings			
3	Corms			
4	Micro-propagation			

3. From where you arrange F.Y.M. / organic manure for flower cultivation?

A.	Prepare yourself		(2)
B.	Purchased		(1)
C.	Not using FYM		(0)

4. Source of getting inputs

Sr. No.	Inputs	Sources		
		Govt. (3)	Co-operative (2)	Private (1)
1	Fertilizers			
2	Pesticides			
3	Micro-nutrients			

5. Means of transportation

Sr.No	Vehicles	Owned (2)	Hired (1)	No (0)
1	Cycle			
2	Motorcycle			
3	Bullock cart			
4	Auto rickshaw			
5	Truck			

6. Available packing materials

Sr. No.	Packing Materials	Yes (1)	No (0)
1	Corrugated card board boxes		
2	Bamboo baskets		
3	Gunny bags		
4	Polythene bags		
5	Any others(Specify)		

7. Available storage facilities

Sr.No.	Storage structure	Owned (2)	Hired (1)	No (0)
1	Cold storage			
2	Ice boxes			
3	Room cooling			
4	Per forayed boxes			

8. Marketing of flowers

Sr. No.	Statements	Yes (1)	No (0)
1	**Method of sale of flowers**		
A	Mutual negotiation to wholesaler		
B	Open auction in mandi		
C	Direct to consumer		
2	**Place of market**		
A	District level		
B	Tehsil level		
C	Block level		
D	Local market		

Knowledge statements regarding flower cultivation

Sr. No.	Statement	Yes (1)	No (0)
A	**Concepts and Importance**		
1	What do you understand by floriculture?		
(i)	It is cultivation of flowers on large scale.		
2	Do you know, why it is essential to start flower cultivation project?		
(i)	It has bright future.		
(ii)	To provide more income than tradition crops.		
(iii)	Employment to unemployed youth.		
(iv)	Additional income to Family.		
3	Do you know the importance of flower cultivation?		
(i)	Easy to produce.		
(ii)	Quick production.		
(iii)	More income in less time.		
(iv)	Low production cost.		
(v)	Is there any local market?		
4	Please name the flower which is used as medicine?		
(i)	Marigold		
(ii)	Gladiolus		
(iii)	Chrysanthemum		
(iv)	Tuberose		
(v)	Rose		
5	Mention the different uses of flower		
(i)	Decoration purpose		
(ii)	Religious purpose		
(iii)	Medicinal value		
(iv)	Guldaste or as bouquet/vase		
(v)	Garland/Gajra/veni		
B	**Flowers varieties**		
1	Do you know the varieties of gladiolus grown in Haryana?		
(i)	Apollo, Eurovision		

(ii)	Yellow stone , American Beauty		
(iii)	Friendships, Novalux		
(iv)	Oscar, pets pears		
2	Do you know the varieties of marigold grown in Haryana?		
(i)	African marigold-Pusa Narangi-		
(ii)	Pusa Basanti		
(iii)	French marigold, Hisar jafri		
3	Do you know the varieties of tuberose grown in Haryana?		
(i)	Single		
(ii)	Double Tuberose		
4	Do you know the varieties of rose grown in Haryana?		
	English varieties		
(i)	Hybrid T-jawaher, ganga		
(ii)	Floridinda-Ramakrishna		
	Desi varieties		
(i)	Desi gulab,		
(ii)	Bulgarian gulab		
5	Do you know the varieties of Chrysanthemum grown in Haryana?		
(i)	Jaya,himani		
(ii)	Basanti,purnima		
C (i)	**Agronomic practices**		
1	Do you know what type of soil is suitable for flower cultivation?		
(i)	Sandy loamy soil with well drained quality.		
2	What PH of soil required for floriculture?		
(i)	6-8		
C (ii)	**Sowing/ planting time**		
1	At what time marigold can be grown?		
(i)	July-September		
2	Do you know planting time of gladiolus?		
(i)	1st week of October- 2nd week of November		
3	What is planting time of tuberose?		
(i)	March. - April.		
(ii)	April- July		
4	What is planting time of rose?		
(i)	September-October		

5	At what time chrysanthemum grown		
(i)	February to march		
(ii)	July to August		
C (iii)	**Transplantation**		
1	In tuberose & gladiolus how transplantation is done?		
(i)	By bulb & Corm, Respectively		
2	In chrysanthemum how Transplantation is done.		
(i)	By terminal cutting		
3	In marigold transplanting is done by which method.		
(i)	Seed.		
(ii)	Root cutting		
4	In rose, how transplanting is done?		
(i)	Root		
(ii)	Stem cutting &Budded plant		
C (iv)	**Sowing/Planting method**		
1	Do you know what bulb size, spacing and depth of planting is required for highest yield of gladiolus?		
(i)	Corms having 4.6- 5.00cm diameter, at the depth of 5-7 cm and at a distance of 15x30cm.		
2	Tube rose		
(i)	Bulb size of 2.5-3.0 cm in diameter, planting depth of 5 cm and spacing of 20×20 cm.		
3	Do you know the planting distance of marigold?		
(i)	30 X 40 cm		
4	Do you know the planting distance of rose?		
(i)	60x30 cm		
C (v)	**Irrigation method**		
(i)	Flooding method		
(ii)	Drip irrigation		
(iii)	Raised bed		
(iv)	Furrow		
D	**Fertilizer application (kg per ha)**		
1	Gladiolus		
(i)	FYM- 50 tones		
(ii)	600kg Urea in 2 split. 625 kg phosphorous and 160 kg potassium each per hectare?		

2	Marigold		
(i)	FYM- 40 tones per ha		
(ii)	600 kg urea in 2 split 1250 kg phosphorus and 160 kg potassium each per hectare?		
3	Tuberose		
(i)	FYM- 50 tones per ha		
(ii)	400 kg urea in 2 split 375 kg phosphorous and 112 kg potassium each per hectare.		
4	Chrysanthemum		
(i)	FYM- 30-40 tones per ha		
(ii)	200 kg urea in 2 split. 200 kg phosphorus and 100 kg potassium each per hectare.		
5	Rose		
(i)	FYM-50 tones per ha		
(ii)	800 kg urea per ha 1250 kg phosphorus and 320 kg potassium each per hectare?		
E	**Harvesting, packing and marketing**		
1	Do you know at what stage harvesting of tuberose is done?		
(i)	When 4-5 flowers on spike open.		
(ii)	When 2-3 flowers on spike open.		
(iii)	When first flower on spike open.		
2	Do you know when chrysanthemum is harvesting?		
(i)	It starts for early 90-100 days after planting?		
(ii)	It starts for late120-130 days after planting?		
(iii)	It starts 90 days after planting?		
3	Do you know when flowers are harvested from gladiolus?		
(i)	Harvesting of gladiolus is done when leaves2-3 florets on spike starts opening.		
(ii)	Harvesting of gladiolus is done when all florets on spike opens.		
(iii)	Harvesting of gladiolus is done when basal florets on spike opening.		
4.	Do you know when pruning of rose is done?		
(i)	When the stem of rose is colorful		
5	Do you know when flower are harvested from marigold?		

(i)	Harvesting of marigold flower from 60-80 days of planting.		
6.	Do you know how harvesting of flowers is done?		
(i)	With a sharp edged Darati.		
(ii)	With a sharp edged scatear.		
(iii)	With sharp edged knife.		
7.	Do you know when harvesting of flower is done?		
(i)	It is done in the noon.		
(ii)	It is done in the evening.		
(iii)	It is done early in the morning		
8	After harvesting how flower are packed and marketed.		
(i)	Flowers stem is dipped in water immediately after harvesting.		
(ii)	If they have to keep for long time then kept their temperature below 10°C and at the shortest time transported to market.		
2	Do you know why flowers require quick selling?		
(i)	Because it is highly perishable.		
F	**Critical precautions and limitations in flower cultivation**		
1	Do you know what precautions one has to take while doing flower cultivation?		
(i)	Soil in which water logging is there should not be selected for flower cultivation.		
(ii)	Flower weed control use atrazine 3 kg per hectare.		
(iii)	Flower should be harvested early in the morning and stem should be deeped in water in order to have more flowers and of good quality remove one or two leaf from to stem and pinch the top branches plant.		
2	Do you know the limitation of flower cultivation?		
(i)	It needs to be sold on the same day other wise quality gets deteriorated.		
(ii)	Market problem is there.		
(iii)	Lack of physical facilities like cold storage transport and packing.		
(iv)	High cost of gladiolus ,lilium etc cultivation		

Constraints in flower cultivation

Sr. No.	Constraints	Very Serious (3)	Serious (2)	Not Serious (1)
A	**Constraints related to inputs**.			
1	Non-availability of quality seed.			
2	High price of pesticides.			
3	Lack of finance for purchase of inputs.			
4	Non-availability of inputs on proper time at village level.			
5	High labour charges.			
6	High cost of transportation for marketing of flowers			
B	**Constraints related to marketing**			
1	Absence/ scarcity of processing units.			
2	Lack of guidance for proper time and place for marketing			
3	No support price of flowers			
4	Lack of transport facilities and disposal of flowers			
5	Problem of middleman who pocked away major share of the profit.			
6	Problems of storage of flower till lifted for marketing.			
7	Self marketing is a problem			
C	**Constraints related to production**			
1	Unfavorable climatic condition, soil type and difficult & maintain the proper moisture in soil.			
2	Farmers and labours are not skillful in flower cultivation.			
3	Use of seed without treatment			
4	Lack of proper and balanced fertilizers and time of application.			
5	Non-availability of improved implements			
6	Lack of irrigation facilities			
D	**Constraints related to Technical guidance.**			
1	Lack of knowledge of current advances for flower cultivation			
2	Lack of guidance for seed treatment.			
3	Lack of guidance for controlling insect pest and disease and			
4	Lack of knowledge of post harvest technology.			
5	Lack of knowledge of fertilizers application.			

Training needs on flower cultivation

.. Very necessary (VN), Necessary (N), Not necessary (NN)

S. No	Trainings	VN	N	NN
1	Raising of flower nursery.			
2	Selection of flower varieties most suited for commercial cultivation.			
3	Techniques for commercial cultivation of flowers.			
4	Type of soil and climate required for cultivation of flowers.			
5	Different methods of fertilizer application			
6	Different methods of irrigation for different flower crops			
7	Plant protection measures disease management			
8	Technique of weeding in different flower crops			
9	Application of Herbicides in different flower crops			
10	Methods of Harvesting			
11	Grading, sorting and standardization of flowers			
12	Storage of post harvested flowers			
13	Different types of storage & transplantation material			
14	Different type of Packing techniques			
15	Different types of packing material			
16	Transportation of flowers to distant places			
17	Marketing of flowers			
18	Account keeping of flower cultivation			
19	Uses of biproduct			
20	Uses of waste product			
21	Processing of post harvest of flower			

Prospects of flower cultivation

Level of prospects: There are few statements please indicate against each, whether you Agree (A), undecided (UD) or disagree (DA) with them.

Sr. No.	Items	A	UD	DA
1	High prices of flower.			
2	Demand is increasing day by day.			
3	Better technical support is available.			
4	Better credit facilities are available at present.			
5	Purchasing power of people is increasing.			
6	Better market facilities are available at present.			
7	Better input facilities are available.			
8	Better for only those who is residing near the city?			
9	Easy to produce.			
10	More income in less time.			
11	Export oriented crop.			
12	Low production cost.			
13	More demand in and outside the India.			
14	Flower fetches a good market price.			
15	Best suited climate for flower cultivation.			
16	It is will be better for additional income to cultivate flower.			
17	Would you continue with flower cultivation in future.			
18	Gives assured income.			
19	In case Govt.provide facilities would you take up flower cultivation in whole of your Agriculture land.			
20	Flower cultivations require less investment and needless inputs.			

ABSTRACT

Title of thesis	:	"**Problems and Prospects of Commercial Floriculture in North Haryana**"
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Admission No.	:	2010A35M
Title of degree	:	Master of Science
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Degree awarding University/ Institute	:	CCS Haryana Agricultural University, Hisar, Haryana (India)
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The study entitled 'Problems and Prospects of Commercial Floriculture in North Haryana', was undertaken with specified objectives:-to explore the knowledge level of floriculturists; to identify the training needs of floriculturists; to find out the constraints(problems) encountered by the floriculturists and to develop a strategy for flower cultivation for sustainable development. The present study was conducted in Ambala and Karnal districts from north zone of Haryana state with randomly taken sample of 60 farmers, from each district The study revealed that majority of respondents belonged to young to middle age group, had medium level of education, socio-economic status, change proneness, extension contact and scienticism but high level of mass media exposure and risk orientation. Overall knowledge level of floriculture was medium. Knowledge about concept, importance, harvesting, packing and marketing in floriculture, majority of the respondents had medium level of knowledge. In case of flower varieties, agronomic practices and fertilizer application majority of the respondents had low level of knowledge. It was noted that variable viz. age, education, socio economics status and extension contacts were highly significant and positively associated with knowledge level of floriculturists. The land holding, mass media exposure, irrigation facilities, change proneness, scienticism were found positively and significant related. Further the study highlighted that age, education and scienticism were found significantly and positively associated with the knowledge level of flower cultivation. Whereas remaining background characteristics were found significantly. Procurement of planting materials and purchase of fertilizer, pesticides and micronutrients by farmers were mostly obtained from the private sector followed by co-operative sector. In flower crops cultivation, marigold is the dominate crop in north Haryana followed by gladiolus and rose. The flower growers mostly had to hire vehicle to sale of flowers. The most felt training needs as perceived by farmers were plant disease management, followed by post harvest handling of flowers, use of biproduct and application of herbicides. The major constraint in flower cultivation as perceived by farmers were non-availability of inputs at proper time at village level, non-availability of quality seeds, no support price for flowers, problems of middle men in marketing, use of seed without treatment, lack of guidance about insect's pests and diseases. As far as the prospects of flower cultivation, flower fetches good market price was ranked 1st, more demand outside the India was ranked 2nd, better for additional income, high price of flowers, gives assured income, quick production, demand is increasing day by day, low production cost and easy to produce, were reported as major prospects of floriculture. Reports and studies reliably indicate that export potential of flowers and consumption, within India, will increase as trend indicates, as not only the aesthetics uses but medicinal value of flowers had also been realised, so the prospects of flowers are bright.

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