# COMMUNICATION GAP AND CONSTRAINTS IN KINNOW PRODUCTION TECHNOLOGY

**BY**

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## CERTIFICATE – I

This is to certify that this dissertation entitled, **"Communication gap and constraints in kinnow production technology"** submitted for the degree of **Master of Science** in **Agriculture** in the subject of **Extension Education** to the Chaudhary Charan Singh Haryana Agricultural University, Hisar, is a bonafide research work carried out by **Mr. Moji kamboj** under my supervision and that no part of this thesis has been submitted for any other degree.

The assistance and help received during the course of investigation have been fully acknowledged.

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## CERTIFICATE – II

This is to certify that this dissertation entitled **"Communication gap and constraints in kinnow production technology"** submitted by **Mr. Moji Kamboj** to the Chaudhary Charan Singh Haryana Agricultural University, Hisar in partial fulfillment of the requirements 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.

**MAJOR ADVISOR**

**HEAD OF THE DEPARTMENT**

**DEAN, POSTGRADUATE STUDIES**

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**Date:**

**Place: Hisar** **MOJI KAMBOJ**

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# CHAPTER – I

## INTRODUCTION

Agriculture is a way of life, a tradition that, for centuries has shaped the thought, the outlook, the culture and the economic life of people of India. India's record of progress in agriculture over the past four decades has been quits impressive. Contribution of agriculture growth to overall progress has been wide spread. Increased productivity has helped to feed the poor, enhanced farm income and provided opportunities for both direct and indirect employment. The success of India's agriculture is attributed to a series of steps that led to availability of farm technologies, which brought about dramatic increase in agriculture growth. Future growth needs to be more rapid, more widely distributed and better targeted. Almost 2/3rd of Indian population and our rural population which is a majority of total population completely depend on Agriculture (Anonymous 2011). Indian Agriculture is the largest contributor to the Indian Economy and it also plays an important role in the growth of socio-economic sectors of India. Horticulture has proved to be a boon for small and marginal farmers. The diversity of physiographic, climate and soil characteristics enables India to grow a large variety of horticultural crops- fruits, vegetable, flowers, spices, aromatic and medicinal plants, plantation crops etc.

India is the second largest producer of Fruits after China, with a production of 44.04 million tonnes of fruits from an area of 3.72 million hectares (Economic Times, 2011). A large variety of fruits are grown in India, of which mango, banana, citrus, guava, grape, pineapple and apple are the major ones. Apart from these, fruits like papaya, sapota, Aonla, phalsa, jackfruit, ber, pomegranate are in tropical and sub-tropical group and peach, pear, almond, walnut, apricot and strawberry are in the temperate group which also grown in a sizeable area. Although fruit is grown throughout of the country, the major fruit growing states are Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh, Bihar, Uttar Pradesh and Gujarat.

Citrus occupies a prominent position in fruits industry of the world. Botanically, Citrus is a name for a genus in the in the family Riutaceae. Citrus fruit ranks 3rd in area and production accounting for About 12 and 10.4 per cent of the total area and production, respectively. Lime, lemons, sweet oranges and mandarin cover bulk of the area under these fruits and are grown mainly in Maharashtra, Andhra Pradesh. Karnataka, North-Eastern States, Punjab, Orissa and Madhya Pradesh. It is grown in more than 125 countries in a belt

within 35-degree latitude north and south of the equator. Citrus grows well under any rainfall regime provided that adequate soil moisture can be maintained.

Citrus fruits are the first fruit crop in international trade in terms of value. A major development over the last two decades of the 20th century was the growth in trade in small citrus fruits. Interestingly while India is the sixth largest producer of citrus fruits accounting for 5 per cent of global production but it has no place in world citrus trade which is due to its sticking to its old varieties with little introduction of new varieties where, for instance, mandarins are now seedless while India yet continues to stick to mandarins which have hardly any market with global consumers. This is due to lack of quality control, which plays an important role in exports, little encouragement of international standards and poor marketing practices. Thus, unless these handicaps are removed there is little chance for increasing its share in world demand.

Before the introduction of kinnow, citrus fruit was not a major crop. The traditional "Santra' varieties and some sweet oranges were scatter grown at some places. Kinnow plant has vigorous growth and heavy yield with favourable growing conditions in orchards and sufficient irrigation. It has attractive fruit colour, size and good eating quality, flesh colour deep yellowish orange, juicy and rich, aromatic and distinctive flavour. Kinnow fruit production is intended for fresh fruit market.

Kinnow is refreshing, scented and mouth-watering because of its taste, its ease of peeling and juice content unequalled by any other citrus fruit anywhere else in the world. With the popularity of Kinnow, the area and production of citrus fruits expands dramatically and total production of citrus jumped from 88 thousand tonnes in 1960 to 1830.3 thousand tones fn 2002.

According to 2005-06 statistics, in Haryana the citrus is grown on an area of 5041 ha with a production of 69558 MT (Beniwal *et al*. 2007). It is extensively grown in the districts of Srisa, Hisar, Bhiwani, Mahendergarh and Ambala. In Haryana state, Sirsa is the most famous district for producing the kinnow crop and it has become the front ruuner in the production of kinnow with the output of this citrus fruit likely to touch 40,000 metric tones this year. Kinnow is grown on over 7,000 hectares in the district this year (Singh, 2010). The state government has recently started a kinnow grading and packing plant at Abubshahar in the district and would soon set up a food processing plant there. Enumerating various development works initiated by the government, krishi vyapaar kendras would be opened in all districts to give a boost to the export of horticulture crops. These centres would also disseminate information related to traditional as well as horticulture crops. Recently, such centres had been set up in Hisar and Abubshahar. Under the National Horticulture Mission,

assistance is provided for creating water sources through construction of community tanks, farm ponds reserves with plastic lining. The assistance is limited to Rs.10.00 lakh per unit for an area of 10 ha to be taken up on community basis. Maintenance of the water sources will be the responsibility of the community or farmers. The National Horticulture Mission also envisages coverage of large areas under improved varieties of horticulture crops. The assistance for cultivation spreads over a period of three years in the ration of 50:30:20 in the first, second and third year. Assistance for second year is subject to 75% survival of new gardens and for the third year the assistance is subject to 90% survival of plants. (Anonymous, 2008)

The improved technologies for maximizing kinnow production are being made available to farmers through different types of extension agencies. Even then the yield of kinnow has not increased to a considerable extent. One of the important reasons for low yield of kinnow may be the partial adoption/non-adoption/different adoption behaviour in respect of the recommended practices because of the communication gap. It is well known that there exists a wide gap in what the extension workers advocate and what the farmers adopt. The establishment of technology and knowledge gaps based on the research evidences is indicative of communication gap due to which the technology and knowledge gaps existed. Therefore, this calls for a through probing of the possible constraints responsible for communication gap, which might be hindering the adoption of recommended operations to fullest possible extent. With this idea in mind, the present study was carried with following objectives:

1. To study the communication behaviour of kinnow growers.
2. To assess the constraints in kinnow production.
3. To establish relationship between socio-personal traits of kinnow growers and their communication behaviour.

**Scope of the Study:** The present study has generated useful information not only on various aspects related to horticulture but as well as learning difficulties of different tasks related to kinnow farming. It would help in identifying the farm related needs with which kinnow farmers can perform their tasks more efficiently and scientifically.

The present study was an attempt in direction of highlighting the existing communication gap and constraints in kinnow production and shall prove useful for farmers and field functionaries. The findings from the present study would serve as guidelines for planners, trainers and extension workers etc. So that they can pay required attention in minimizing the existing communication gap and constraints of kinnow farmers through well planned and monitored need based training programmes.

**Limitations of the Study:** Being a student's research project, the study was carried out with following limitations:

1. The study had all those constraints of time, money and resources at disposal of research, which a student research project is prone to.
2. The area of the study was limited to Hisar and Sirsa districts. Therefore, the conclusions drawn are area and crop specific. However, the findings may be applicable to other areas under similar agro-climatic conditions.

# CHAPTER – II

## REVIEW OF LITERATURE

A comprehensive review of the literature is an essential part of any scientific investigation. This chapter deals with the review of the work done by the scientists on the related problem in order to identify the gaps in approaches, consequences and conclusion. At the same time, it facilitates to provide an insight into the methods and procedures adopted by other scientists and form a basis for interpretation of results in relation to the findings of other investigations. Some of these studies have been reviewed here in the two main headings:

1. Communication behaviour, its association with socio-personal traits of kinnow growers and Communication Gap.
2. Constraints faced by the farmers.

### 2.1 Communication Behaviour, its association with socio-personal traits of kinnow growers and Communication Gap.

Randhawa (1991) descried the communication behaviour of rural women in terms of activities performed by them for reading, processing, utilizing, disseminating and feedback of household and
home-based farm related messages published in the scientific farm magazines and newspapers.

Singh and Tyagi (1992) noticed that the communication behaviour of farmers increased significantly with increase in the land holding size and nearly 50 per cent of the respondents had medium communication behaviour whereas low and high communication behaviour was equally shared by the remaining respondents.

Khandekar and Khandekar (1995) revealed that opinion leaders were the most important source of information on animal husbandary practices. Family education, status, farm size, group activity participation, family norms and innovativeness were highly associated with communication behaviour of farm women.

Chand (1995) conducted a study on 21 farm families which were beneficiaries of the lab to land programme. Communication behaviour as influenced by personal traits was measured on the basis of inward and outward exposure.

Bhaskaran and Sethu Rao (1995) revealed that the overall analysis showed the emergence of the influence of some typical extension variables such as mass media participation, extension orientation and management orientation on the interpersonal behaviour efficiency of the farmers in the progressive and non progressive villages.

Jha and Chauhan (1999) conducted a study on communication behaviour of rice farmers in North Bihar. It was found that age, land holding, herd size and socio-economic status were directly related with the inter-personal communication behaviour of farmers to the greater extent whereas social participation and family size and type had no such relationship.

Singh *et al.* (2001) concluded that for reducing the communication gap between Buxa tribal farmers and farming practices communication strategy, which combines indigenous and modern media of communication, was suggested to support the development of the tribal community.

Mahmud *et al.* (2002) in his study concluded that 55% of the respondents had a neutral attitude towards the cultivation of hybrid rice as compared to 30% who had an unfavourable attitude and 15% who had a favourable attitude. 80% of the respondents had medium to high communication exposure. Among the selected characteristics of the respondents, age and a 'cosmopolitan' outlook were positively and significantly related to attitude.

Latha (2002) observed that the age of farmwomen found to have positive and significant association with knowledge. Education and mass media exposure had negative and non significant association with the knowledge of respondents regarding cotton production technology.

Maraddi and Verma (2003) conducted a study on cotton production technologies in Malaprabha Command Area. Results showed that among the background variables that had positive and significant relationship with the knowledge level of recommended practices of cotton crop are: education; material possession; farm power; social participation; family education; land holding; extension contact; mass media exposure; and risk orientation of the respondents.

Deshmukh and Chole (2003) found that majority of respondents had medium level of communication behaviour. About 21.33 per cent of them had high level of communication behaviour where as 15.34 per cent respondent had low level of communication behaviour in progressive village of Parbhani district of Maharashtra.

Sharma and Kaur (2004) concluded that in northern India RRBs (regional rural bank) was not succeeded in satisfying their customers fully, mainly due to communication gap and

also because of unattractive loan packages. Further, illiteracy was the main hindrance in generating awareness among customers.

Singh *et al.* (2006) found that majority of the respondents (73.52%) were more than 21 years of age; 65.80% of them came from rural areas; 94.11% were males; every three out of five (61.86%) students came from service families; nearly half (44.11%) of the respondents came from families who did not own any land; about one-third of the undergraduate students (30.39%) came from families of high education level; as high as 89.21% of the respondents participate in games as extracurricular activities; 16.67% of the students have more than 70% marks; nearly half (48.03%) of the respondents expressed their view that they want to go for higher education; and about two-thirds (66.67%) of the respondents have low level of participation in social works clubs in case of undergraduate agriculture students.

Akanksha (2006) concluded in her study that training like mushroom cultivation, kitchen gardening and seed production have significant association of knowledge of participants with independent variables like family size.

Singh and Dhillon (2006) conduct study on Communication Behaviour of ADOs of Six randomly selected districts of Punjab. Results showed that majority of the respondents attended training programmes, consulted farm literature, attended expert lectures and farmer fairs, and consulted university scientists to obtain the latest agricultural information. Very few respondents frequently listen to farm radio broadcasts and view farm telecasts. Majority of the respondents evaluated the information before dissemination to farmers, compared it against their past experience and discussed it with colleagues and specialists.

Om-Prakash and Katiyar (2007) conducted a study to determine the communication behaviour of farmers in watershed and non-watershed areas in Bundelkhand region of Madhya Pradesh, India. Results showed that major sources of communication utilized by the farmers in watershed areas were agricultural scientists (76%) followed by soil conservation officers (68%), whereas in non-watershed areas, major sources of communication were sarpanch (53%), and progressive farmers (46%).

Ashutosh and Basu (2008) found that there were significant difference in technological gap between Kalyanpur and Ghoragacha guava growers except market information and post harvest technology. The most needed training areas for Kalyanpur were soil test (98.57%), insect pest and disease management (95.71% each). In Ghoragacha, the most needed areas of training were disease management (89.23%), soil test (87.69%), insect pest management (86.15%), manure and fertilizer management in the main field (76.92%), manure and fertilizer application before planting in pits (73.85%).

Patnam *et al.* (2009) revealed that higher percentage of the (41-45%) rural teenage girls were assessed to have either average or low levels of self esteem irrespective of their socio economic status. It was found that SES, type, size and social, status of family and parental age and education significantly influenced the self esteem of rural teenage girls irrespective of their socio economic status.

George *et al.* (2009) found that exploring alternate employment and income generating activities such as animal husbandry in order to improve the socio economic conditions of these women since the family background variables have a vital role in the development of personality traits in children which could affect quality of human capital in the future generation of the Wayanad district in the south Indian state of Kerala.

## 2.2 Constraints faced by the farmers

Mallareddy and Kumar (1990) revealed that there was lack of storage facilities, poor transport and the absence of a cooperative marketing structure for product. There were also unpredictable fluctuations in price for oranges.

Mohan *et al*. (1991) found that income in the citrus cultivation did not attain reasonable level because most of citrus orchards suffered from multiple defects like poor layout, lesser use of fertilizers and chemicals, occasional pruning, rare fencing, attack by various pests and diseases like citrus die back.

**S**hehrawat *et al.* (1993) found that number of constraints encountered by the farmers for non-adoption or partial adoption of improved agricultural technology for cotton crop in Hisar zone: the high cost of pesticides (77.7%), poor quality of insecticides (89.7%), lack of knowledge about use of weedicide (97.7%), lack of irrigation facilities (28.8%) especially, scarcity of labour (18.6%) and non application of fertilizers at sowing time due to fear of less water (76.4%).

Shaikh *et al.* (1993) reported that non availability of improved varieties/ grafted plants, lack of irrigation facilities, attack of mealy bugs, sudden changes in price, problem of transportation of fruit to the market, irregular visits of extension workers, no regular information on scientific cultivation through radio, television, newspaper etc. were some of the main constraints encountered by the farmers in growing custard apple.

Bhattacharjee (1994) reported that non availability of seed of improved varieties was one of the reasons for poor productivity of oilseeds.

Shrivastava and Shrivastava (1995) pointed out that poor plant protection measures, insufficient availability of good quality seeds and poorly adopted cultivators were major constraints in chickpea production.

Sharma (1996) reported that lack of irrigation facilities, non-availability of critical inputs, lack of knowledge and technical guidance, less profitability, financial problem and traditional attitude of farmers as the recommendations of maize cultivation practices.

Patel (1996) concluded that main problem in banana marketing process is picking, grading, assembling, packing and transportation.

Dass (1996) found that high cost of farm inputs, adulteration in seeds, fertilizer and insecticides and low support price of farm produce were most serious constraints pointed out by the farmers. Failure of crop due to unfavourable weather conditions was also a serious constraint.

Chandra *et al.* (1996) observed that non-availability of improved seeds and lack of technical knowledge regarding package of practices in small land holding were the major constraints for adopting soybean over a large area.

Gill (1996) reported that lack of knowledge, financial problems, shortage of labour and inappropriate soil conditions were the main reasons responsible for non-adoption of recommendation litchi cultivation practices. He further reported that lack of knowledge, non availability of chemicals, financial problems, high cost of fungicides and sub-standard fungicides, lack of technical guidance, wrong advice of dealers and neighbour were main reasons for partial adoption of plant protection in American cotton crop.

Desai *et. al.* (1997) pointed out that non-availability of improved implements (45%), inadequate capital for the purchase of seed and fertilizers (31.75%) and non-availability of improved seed in time (33%) were the main constraints in the adoption of new technology.

Devi and Manoharan (1998) had seen that among the market constraints, low price of the produce (74.25%) was ranked as most serious constraint followed by lack of quick transport facilities (58.59%) and lack of storage facilities (51.09%).

Pant and Ahlawat (1998) revealed that Ring spot disease is one of the major constraints in citrus production in India and widely distributed in citrus plantation in Punjab, Haryana, Rajasthan, Uttar Pradesh, Andhra Pradesh and Karnataka with an incidence ranging from 10-100%.

Singh (1999) perceived low support price of produce, and found that of cooperative organization were being perceived almost serious constraints by the farmers in adoption of sunflower cultivation.

Magd (2000) revealed that main problems facing by female extension agents of Cairo were: their job had risks of exposure to infection with pesticides and diseases, non-availability of transportation facilities and farmers' unfavourable attitudes to their work.

Sakiliba *et al.* (2000) revealed that in marketing of fruits and vegetables quality control, including the absence of norms, lack of suitable control equipments, poor packing, and low level of trainings were the major constraints.

Jana (2000) reported that high cost of plant protection chemicals (56%) followed by lack of technical guidance (53%), more time consuming (29%) and adulteration in chemicals (18%) were the main problems in the adoption of seed treatment.

Paul *et al.* (2001) in his study he 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 cultivation.

Jaiswal *et al.* (2002) concluded that the main reasons for partial adoption of improved soybean production practices were various factors namely economic constraints, situational factors and communication gap with respect to plant protection, seed treatment and fertilizer doses.

Manjunath and Balasubramanya (2002) observed the irregularity of the farm magazines and non-availability of farm magazines in rural areas as the most important reason coming in the way of reading and better utilization of kannada farm magazines. It was followed by formula type articles, lack of seasonableness of information, incomplete and brief articles, use of difficult terms, article not oriented towards average farmers, no illustrations, poor quality printing, and addresses of the authors not given.

Passos *et al.* (2002) found that the unsuitable soil and plant management, inadequate organization of citrus producers, lack of research regarding use of clones and rootstocks in the region and absence of public policies were major constraints in Brazil.

Sivanarayana *et al.* (2002) conduct a study on training needs and sources of information utilised by the Agricultural Extension Officers (AEOs) of Warangal District and result showed that lack of transport facility, no provision for motor cycle loan, and insufficient refresher training courses, were the major problems perceived by the respondents. It was also evident that the majority of respondents expressed training needs on different farming aspects.

Sharan and Singh (2002) examined the pattern of sale of kinnow mandarin as well as the marketing costs and margins in Ganganagar district of Rajasthan, India. Results showed that the producers share of the consumers rupee is higher in direct sale as compared to contract sale. The marketing costs and margins indicate that the producer's share of the consumer's rupee may be increased by decreasing the number of intermediaries in the

existing marketing system. Lack of support price and lack of organization were the major problems faced by the growers in marketing their produce.

Azzam (2004) revealed that extension pamphlets. Irrigation, drainage, lack of extension services, and high input prices were perceived by the respondents as their main problems faced by farmers of Beni-Suef Governorate.

Bolorunduro (2004) observed that

the awareness of disseminated livestock production technologies ranged from 5.4-70.9%, and the adoption from 1.4-60.1%. In fisheries awareness and adoption levels of 5.0-72% and 2.5-50.0% were recorded respectively. The ADPs were farmers' most important sources of information on production recommendations, while radio and village extension agents (VEAs) were the most important channels of communication to livestock farmers (24.5%) and fisher folks (97.5%), respectively. Method demonstration was the most popular approach for technology dissemination that most farmers were familiar with (33.7% of livestock farmers and 87.5% fisher folks), and was equally rated as the most effective. Whereas the major constraints to adoption by farmers included high cost of inputs, in-sufficient awareness, and inadequate interactions with village extension agents, the major problems of RIs and ADPs were poor funding and poor staffing situation, reflecting in low mobility of field staff, poor job motivation and ill-equipped technology demonstration centers in adoption levels of livestock and fisheries technologies in Nigeria.

Tahir (2005) concluded that over 45 percent of citrus fruits were lost annually because of ineffective marketing practices; inadequate storage, non-technical picking and handling contribute high post harvest losses of citrus fruit in Pakistan.

Muhammad *et al.* (2007) found that in Pakistan mango yield was quite low due to lack of technical knowledge on the part of mango growers and resultant non-adoption of improved mango production technology by them.

Lodhi *et al.* (2007) concluded that yield of mango is low in Pakistan due to non-adoption of plant protection, harvesting and post-harvest technologies by mango growers. These factors not only affect the yield but the quality of the fruit.

Kashid *et al.* (2007) observed that major constraints identified by farmers were improper information system (61.67%), lack of awareness about market among farmers (54.16%), complicated information (23.33%) and illiteracy of farmers (15.00%) in APMC, Pune, Maharashtra, India.

Oyekunle *et al.* (2007) found that main constraints to farmers' use of extension guide were ranked according to their severity as follows: illiteracy, irregular supply by extension

agents, lack of fund and bad eye sight. It was however recommended that literate farmers should be encouraged to read and utilize the content of extension guides and that the guides should be distributed to such farmers without change. Illiterate farmers should be encouraged to attend out-of-school adult education programmes and use other means of agricultural information like radio and television.

Chianu *et al.* (2008) Found that other services provided by agro-dealers are input information (75% respondents), credit (13%), bulk breaking (8%), and spraying (4%). Inputs selling price increased with distance to markets; long distances to market disconnect villages from input 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 faced by agro-dealers of western Kenya.

Usman *et al.* (2008) concluded that high price of inputs; lack of irrigation water and lack of finance were perceived to be the topmost input related problems faced by the growers in citrus production. Lack of focus on citrus in TV and radio broadcasts was perceived to be the topmost information related problem faced by citrus growers.

Gill (2009) kinnow production has suffered due to scanty rain as the size of kinnow is small. It is a major constraint in kinnow production.

Shrivastava *et al.* (2010) found that lack of knowledge about appropriate selection of fungicides, non availability of plant protection equipments locally, lack of technical guidance from agricultural university scientists, high cost of fungicides and sale of spurious agrochemicals were some of the common problems listed by the rice farmers of Dhamtari district.

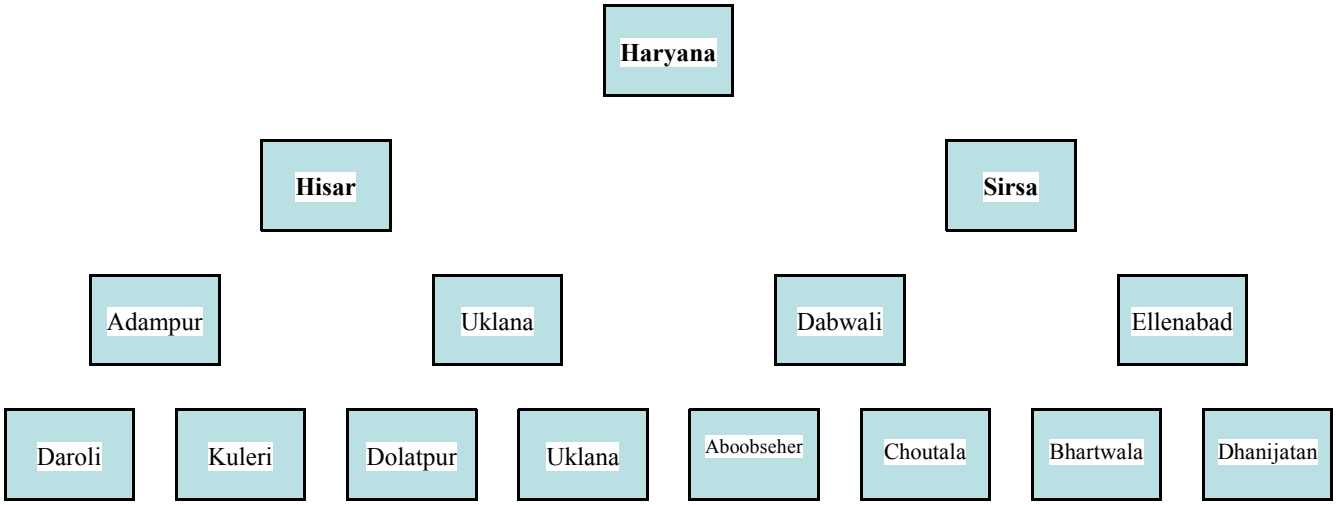
# CHAPTER – III

# MATERIALS AND METHODS

Research methodology is the foundation for carrying out any research programme. This provides the outline of different methods and techniques which was followed in research work.

### 3.1.1 Locale of the study

For the present study, Sirsa and Hisar districts of Haryana state were selected purposively because these two districts of Haryana state have higher number of kinnow growers and the maximum area under kinnow production.




### 3.1.2 Selection of Blocks and Villages

Two blocks from each district were selected purposively i.e. Dabwali and Ellenabad from Sirsa district and Adampur and Uklana from Hisar district. These blocks were selected because of maximum area under kinnow orchards which is due to the efforts made by DHO and its officials under National Horticulture Mission in the state.

Further, two villages from each block were selected by using the simple random sampling technique. The villages happened to be Daroli and Kuleri from Adampur block, Daulatpur and Uklana from Uklana block, Aboobseher and Choutala from Dabwali and Bhartwala and Dhanijatan from Ellenabad block, respectively.

### 3.1.3 Selection of Respondents

The functional heads of the farming families, who have developed kinnow orchards on their farms, were taken as respondents of the study. In each village a comprehensive list of kinnow growing farmers was prepared with the help of district horticulture office, sarpanch and some key persons of the respective villages. Keeping in view the number of kinnow growers, a manageable sample size of 10 farmers from each village were randomly selected. Thus, a total number of 80 farmers constituted the sample for the purpose of the study.

### 3.1.4 Tool of Data collection

Well-Structured interview schedule was constructed keeping in view all the dependent and independent variables of the study selected for the study (Appendix-I).

**Variables and their measurements**

The experience, casual every day observations and researches carried out indicated that background characteristics of farmers play a significant role in either widening or bridging the communication gap. Based on the several past studies and discussion with experts, an exhaustive list of independent variables which could influenced communication behaviour of respondents were considered for further probing. The details of measurement mechanism followed for the independent and dependent variables taken up for the studies have been contained in the following methodological text.

## 3.2 Measurement Variables

**Independent Variables**

An exhaustive list of independent variables which may lead to the precision of the communication gap was prepared on the basis of the a detailed review of literature, empirical evidences, discussion with farmers and experts. The variables which were found and considered to be very significant on the basis of empirical evidences and as per objectives were included in the study. These were: age, caste, education, land holding, socio-economic status, communication sources, irrigation facility and change proneness of the respondent.

1. **Age:** It refers to chronological age of the respondent at the time of data collection. It was measured by direct questioning. The respondents were categorised into following three categories for the purpose of analysis.

| Category | Age group |
|---|---|
| Young | Upto 35 yrs |
| Middle | 36-50 yrs |
| Old | above 50 yrs |

**B. Caste:** Caste refers to the class of distinct hereditary order in society. Mainly, three categories of caste were taken to measure the status of the respondents in the society. In the backward caste category, backward class scheduled caste, artisan caste and agriculture caste were included, while in the prestige caste category, the farmers who enjoyed a good status in the society but who were other than the dominating caste of the area were included and the dominating caste included the farmers who were from major/prominent caste of the area.

| Categories | Score |
|---|---|
| Backward Caste | 0-4 |
| Prestige Caste | 5 |
| Dominant Caste | 6 |

**C. Education:** Education was operationalized as the number of the years of formal schooling completed by respondents. Scores assigned to different categories were as follow:

| Categories | Score |
|---|---|
| 1. Illiterate | 0 |
| 2. Can read only | 1 |
| 3. Can read and write | 2 |
| 4. Primary | 3 |
| 5. Middle | 4 |
| 6. High | 5 |
| 7. Graduate & Above | 6 |

**D. Land holding:** It refers to the land in acres possessed by the respondent's family. Following categories of the respondents were made on the basis of land holding and the score were assigned as follow:

| Categories | Score |
|---|---|
| 1. No land | 0 |
| 2. Less than 1 acre | 1 |
| 3. 1-5 acre | 2 |
| 4. 5-10 acre | 3 |
| 5. 10-15 acre | 4 |
| 6. 15-20 acre | 5 |
| 7. More than 20 acre | 6 |

**E. Socio-economic status**

It is the position an individual or the family occupies with reference to the prevailing standard of cultural position, effective income, material possession and participation in group activity of the community (Singh, 1983). However, for the purpose of this study it refers to the position of the respondents in the society as determined by various social and economic variable viz. education, size of land holding, caste, occupation, number and type of houses, type and size of family, extent of social participation, strength of farm power, material possession etc. For measuring this variable the socio-economic status scale developed by Trivedi (1963) was adopted with some modifications which has been presented in Annexure-I. The equidistant method classification was used to categorise the respondents into low, medium and high categories of SES.

| Categories | Score range |
|---|---|
| 1. Low | upto 40 |
| 2. Medium | 41-50 |
| 3. High | above 50 |

**F. Communication sources**

It was operationalized as the communication sources used by the farmers for getting information. The scoring procedure was mentioned below

| Categories | Score range |
|---|---|
| 1. Low | upto 9 |
| 2. Medium | 10-15 |
| 3. High | above 15 |

**G. Irrigation Facilities**

The source of irrigation utilized by the farmers for irrigation were classified into five groups

| Categories | Score |
|---|---|
| 1. Tubewell | 1 |
| 2. Canal | 2 |
| 3. Both | 3 |
| 4. Water Tank | 4 |
| 5. None | 0 |

**H. Change Proneness**

Change proneness means the behavioural pattern of individual who have interest in and desire to seek changes in farming techniques and to introduce such changes into their operation if found practical and feasible. To measure change proneness Moulik's (1965) Self Rating Innovation Proneness scale was used. The weighted cumulative frequency method

was followed to categorise the change proneness of the farmers that is Low, medium and high.

**I. Extension contact**

The frequency of contact with extension workers is likely to affect the knowledge, understanding and communication behaviour of the respondents for kinnow cultivation. Keeping this fact in view the information about extension contact of respondents was also collected. It has been operatonalized as the frequency of contact with extension personnel of the state department of horticulture, scientists of CCSHAU, Hisar, non-official change agents and the input dealers. This was measured through a scale developed for the purpose by Singh (1983). The respondents were asked that how frequently they use to contact the extension personnel. Whether it was 'once in a month', 'once in 3 month', 'once in 6 month', 'once in a year', and 'after a year'. The weightage given to these response categories were 5, 4, 3, 2 and 1.

**Dependent Variables**

The Communication behaviour of the respondents was taken as a dependent variable. A comprehensive list of communication sources was prepared on the basis of the review of literature, discussion with farmers and experts. Only nine sources of communication were selected for the study which were considered to be very significant. Those sources were 1) Extension Workers (DHO/HDO), 2) non-official agents, 3) University Scientists, 4) Input dealers, 5) Radio, 6) Television, 7) Farm literature, 8) Fellow farmers, friends and relatives and 9) Cyber communication.

**Communication behaviour**

The major thirst of the study was upon the communication behaviour of the farmers in relation to getting information for scientific cultivation of kinnow crop. This information was collected with regards to major practices of kinnow cultivation. In the first instance, the farmers were asked to check the sources of information from which they got information on different aspects of kinnow cultivation, for the first time. The respondents were also enquired whether they continued to utilise the same source subsequently or they later shifted to some other source.

To measure the communication behaviour as such was not possible, its being an abstract proposition. Therefore, the communication behaviour was divided into observable and measurable components which included nine parts pertaining to each communication source in the study. To measure the intensity and extent of the contact of respondents with extension workers (DHO /HDO), non-official and semi- government change agents, university scientists, input dealers and fellow farmers, friend and relatives, a schedule was specially developed containing the different items on each communication source. Further to

measure that how frequently respondents had been listening to the farm radio broadcasts how frequently he had been viewing the "Krishi Darshan" programme on television and how frequently he had been reading the farm literature magazines. The items developed on the above mentioned three sources of communication were a part of the schedule. The usefulness of some of the communication sources was also measured. To which extent the respondent perceived farm radio broadcast "Kisan Vani", telecast "Krishi Darshan" and farm literature useful to him was measured with help of specially developed items for this purpose. All these items differ in nature, extent and intensity of contact of the respondents as per the requirement of each communication source. Therefore, these were measured on different continuum ranging from '0' to '5', the 0 or somewhere 1 had been assigned to the minimum possible frequency of the contact whereas 3, 4 or 5 was assigned to the maximum possible frequency of contact of the respondent with different communication sources as per nature of the item. The scoring procedure of each item has been given below along with them.

**How frequently you have been contacting/consulting the following sources of information**

| **Sr. No.** | **Information Sources** | **Interval of Contact** | | | | |
|---|---|---|---|---|---|---|
| | | **Once in a month** | **With in three months** | **With in Six months** | **Once in a Year** | **More than a Year** |
| | | **(5)** | **(4)** | **(3)** | **(2)** | **(1)** |
| 1 | HDO/DHO | | | | | |
| 2 | Non-official change agents | | | | | |
| 3 | University Scientists | | | | | |
| 4 | Input dealers | | | | | |
| 5 | Fellow Farmers/ Friend/ Relatives | | | | | |

**How frequently you listen to different farm programmes broadcast on radio?**

| Sr. No. | Name of the programme | Frequency of listening | | | |
|---|---|---|---|---|---|
| | | Daily (3) | Mostly (2) | Sometimes (1) | Never (0) |
| 1 | Kisan Vani | | | | |
| 2 | Agriculture Based (CRS HAU) | | | | |
| 3 | Phone in Karya Karam | | | | |

**How much useful these programmes have been to your farming?**

| Sr. No. | Name of the programme | Usefulness | | |
|---|---|---|---|---|
| | | Most useful (3) | Useful (2) | Least Useful (1) |
| 1 | Kisan Vani | | | |
| 2 | Agriculture Based (CRS HAU) | | | |
| 3 | Phone in Karya Karam | | | |

**a) How frequently you read news related to agriculture**

Daily (3)/ Mostly (2)/ Sometimes (1)/ Never (0)

**b) Do you subscribe any farm magazine?**

Yes (3)/No (0)

**c) How much useful has been the information from this magazine to you?**

Most Useful (3)/ Useful (2)/ Least Useful (1)

**d) How frequently you have been viewing the "Krishi Darshan" Programme?**

Daily (3)/ Mostly (2)/ Sometimes (1)/ Never (0)

**e) How much useful the programmes has been to your farming?**

Most Useful (3)/ Useful (2)/ Least Useful (1)

**Information Source credibility in general**

Before attempting the information source preference pattern amongst the kinnow growers for getting information on kinnow cultivation, It was considered relevant to know the information source preference pattern among farmers in general. The respondents were asked to list five sources of information that they would like to utilise for getting scientific information on farming. Data so collected were quantified by allotting 5, 4, 3, 2 and 1 scores for first, second, third , fourth and fifth preference, respectively and finally weighted source credibility score was worked out.

**Information Source preference pattern for Kinnow Cultivation**

Once the general preference for information sources utilisation was known, it was thought in the fitness of things to investigate as to what was the preference pattern among farmers in choosing the information sources for getting information on different operations on Kinnow cultivation. The respondents were asked to give their preference of information source for each of the Kinnow cultivation operation under the hypothetical condition where in all the sources of information were available to them, for utilizing the one they liked.

**Level of Satisfaction derived from different information sources**

In view of this it was considered relevant to know the extent to which the farmers derived satisfaction from these sources in getting information on Kinnow and also on different operation of Kinnow Cultivation. The farmers were asked to give their perceptions for level of satisfaction on a three point continuum of ‘most satisfied', 'satisfied', and 'Least satisfied'. The data so obtained was quantified by assigning score of 3, 2, and 1 for 'most satisfied', ‘satisfied’, and 'Least satisfied', respectively. Subsequently, the weighted mean satisfaction score of different sources was worked out.

**Trustworthiness of information sources**

To work out the trustworthiness index the farmers were asked to check different information sources on a four point continuum with a score of 4, 3, 2, and 1 for “maximum trustworthy”, “trustworthy”, “somewhat trustworthy” and “least trustworthy”. This exercise provided the trustworthiness score information source -wise which was subsequently converted in to trustworthiness index. The trustworthiness index (TWI) was operationalised as the trustworthiness score obtained by a source x 100 divided by the maximum obtainable trustworthiness score by the source.

**The extent of use of the communication sources and communication gap**

The extent of the use of sources of information is the degree to which the farmers has actually used/ consulted a particular source of information. When the extent of use equals the idealised level, the use is recognised as maximum and full score are assigned to it, but when the extent is at the lowest level, the minimum scores are assigned to it as per the procedure.

The difference between the idealised score and the score obtained by the respondent has been conceptualised as a communication gap in this study. The formula to work out the communication gap is:

$$100 - \frac{\text{Obtainable Score}}{\text{Maximum obtainable score}} \times 100$$

**Farmer's perception about problems/constraints in use of information sources**

In order to know the problems perceived by farmers in relation to the use of various sources of information, a schedule was developed. In this schedule, 6 problems related to extension workers, 5problems related to input dealers, 6 problems related to radio, 7 problems related to television, 4 problems related to cyber communication, 7 problems related to non official change agents and 4 problems related to farm literature were enlisted on the basis of review of literature and social sciences. The respondents were asked to check the problems as per their judgment. The relative importance was ascertained by comparing the percentage of farmer who perceived that problem.

**Constraints faced by the kinnow growers**

In the simple language constraint can, therefore, be described as any condition or situation which impede, restrict or activity to find out the probable constraints hinder the adoption of improved practices of kinnow, an inventory of constraints was prepared on the basis of available literature, personal experience, discussion with experts and farmers growing kinnow. A list of constraints was prepared and the farmers were asked to speak out their responses against each constraint whether it was “very serious”, “serious” and “not so serious”. Wightage given to these response categories were 3, 2 and 1 respectively. Aggregate total was calculated scores; mean scores were obtained which were ranked according to their maximum to minimum ranks for assessing the seriousness of constraints. The maximum score so obtained was given the rank Ist and the next subsequent one was given the rank IInd and so on in the descending order.

**Data collection**

The data was collected by the researcher personally in the direct interview of farmers with the help of well structured schedule developed for this purpose. The schedule contained the measurement scales of extent of use of information sources, their usefulness and various independent variables included in the study. The interview schedule also included questions on general information about respondents and sources of information. The whole schedule was pre-tested on a randomly selected 10 farmers who were different from the main sample of the study and on the basis of their reply; alterations were made to make the schedule more effective and functional.

**Analytical procedure used**

The quantification of qualitative data was done in acceptance with standardised methods laid down in previous section of this chapter. Data thus collected was tabulated to draw meaning inferences. The frequency, percentage, range, mean, and coefficient of correlation were used in the analytical procedure.

# CHAPTER – IV

## EXPERIMENTAL RESULTS

The present chapter deals with the findings of the study which have been properly interpreted after processing and systematically arranging the data. To have a better comprehension of the results, these have been presented under the following subheads.

4.1 Socio- economic profile of kinnow growers.

4.2 To deal with different dimensions of credibility of information sources, in general, as well as in relation to kinnow cultivation practices.

4.3 The association of different socio-economic indicators with the information source credibility.

4.4 The constraints as perceived by the respondents in the use of different communication sources and in the adoption of recommended farm practices for kinnow cultivation.

**Section – 1**

### 4.1 Socio-economic profile of kinnow growers

The profile of the respondents was ascertained with regard to age, caste, socio-economic status, size of operated land holding, occupation, literacy level, type and size of family, income, source of irrigation and change proneness.

#### 4.1.1 Age

The data in the Table 4.1 revealed that almost half of the respondents i.e. 51.25 per cent were in the middle age group followed by the young 28.75 per cent and old age group 20 per cent, respectively. This indicates that age-wise the distribution of respondents is quite natural. The working farmers normally belong to the middle age group.

#### 4.1.2 Caste

Caste-wise, the respondents were found to be dominated by Jat community with 77.50 per cent of the respondents falling in this group. The prestige caste was another group which included Punjabi, Bania and other higher castes of the area with 8.75 per cent of respondents. The remaining 13.75 per cent of the respondents belonged to scheduled caste and backward classes, the service class of the village.

**Table 4.1: Socio-Economic Profile of Kinnow Growers**

| Sr. No. | Trait | Category | Score Range | Frequency | Percentage |
|---|---|---|---|---|---|
| 1. | Age (years) | Younger | Up to 35 | 23 | 28.75 |
| | | Middle | 36-50 | 41 | 51.25 |
| | | Older | Above 50 | 16 | 20.00 |
| 2. | Caste | Backward | 1-3 | 11 | 13.75 |
| | | Prestige | 4-5 | 7 | 8.75 |
| | | Dominant | 6 | 62 | 77.50 |
| 3. | SES | Low | 30-40 | 7 | 8.75 |
| | | Medium | 41-50 | 35 | 43.75 |
| | | High | 51-60 | 38 | 47.50 |
| 4. | Occupation | Low | 1-3 | 14 | 17.50 |
| | | Medium | 4-5 | 61 | 76.25 |
| | | High | 6 | 5 | 6.25 |
| 5. | Education | Low | 0-3 | 15 | 18.75 |
| | | Medium | 4-5 | 52 | 65.00 |
| | | High | 6 | 13 | 16.25 |
| 6. | Landholding | Low | Up to 10 | 16 | 20.00 |
| | | Medium | 11-20 | 38 | 47.50 |
| | | High | Above 20 | 26 | 32.50 |
| 7. | Family type | Nuclear | 1 | 34 | 42.50 |
| | | Joint | 2 | 46 | 57.50 |
| 8. | Family size | Small | 1 | 31 | 38.75 |
| | | Large | 2 | 49 | 61.25 |
| 9. | Family income | Low | Less than 5,000 | 5 | 6.25 |
| | | Medium | 5,000-10,000 | 22 | 27.50 |
| | | High | Above 10,000 | 53 | 66.25 |
| 10. | Change proneness | Low | Up to 15 | 18 | 22.50 |
| | | Medium | 15-16 | 48 | 60.00 |
| | | High | Above 16 | 14 | 17.50 |
| 11. | Communication sources (Extent of use) | Low | 3-9 | 18 | 22.50 |
| | | Medium | 10-15 | 30 | 37.50 |
| | | High | 16-21 | 32 | 40.00 |

### 4.1.3 Socioeconomic status

Table 4.1, indicated that a slight less than half of respondents (47.50 per cent) had high socio economic status, 43.75 per cent respondents were belonging to medium socio-economic status category while only 8.75 per cent were having low socio-economic status. This shows that majority of the farmers had medium or high socio economics status.

### 4.1.4 Landholding

As may be seen from the table, more than 80 per cent of the respondents operated more than 10 acres of land. Another 20 per cent had upto 10 acres of operated land holding. Thus the majority of kinnow growers were either medium or large farmers.

### 4.1.5 Occupation

Occupation-wise agriculture was found to be the mystery of the respondents. Almost three-fourth i.e.76.25 per cent of the respondents were having farming as their main occupation. Though remaining 23.75 per cent although in business or service, their subsidiary occupation was found to be agriculture and this should not be surprising as the study demanded sampling only farmers maintaining a kinnow orchard which requires only management on the part of owners and the farmers could easily manage their orchards as their subsidiary occupation.

### 4.1.6 Education

Literacy wise also the villages were found to be favorably placed with only 18.75 per cent respondents being educated up to primary. Most of the respondents i.e. 65 per cent were educated up to high school. Only 16.25 per cent of the respondents were graduate or above. In fact, the sample respondents, on account of bigger size of land holding and medium and high SES were expected to be more literate.

### 4.1.7 Family type

The respondents mainly came from joint families (57.50 per cent) and with more than five members (61.25 per cent) in the family. This is the common feature in this part of the country. The joint family system has not so far loosened its grip in the countryside particularly in the villages dominated by Jats.

### 4.1.8 Income

As far as income of the respondents is concerned it was observed that 2/3$^{rd}$ of the respondents i.e. 66.25 per cent had high income whereas 27.50 per cent farmers had medium level of income. Only 6.25 per cent farmers had low level of income.

### 4.1.9 Change proneness

The table further revealed that 3/5$^{th}$ of respondents (60 per cent) had medium category of change proneness followed by low and high category of the change proneness to the extent of 22.50 and 17.50 per cent, respectively.

Conclusively, the respondents were found to be well to do, well educated, belonging to joint families and having medium degree of change proneness.

## Section -2

### 4.2 Information source credibility pattern

One of the major indicators of communication behaviour of the farmer is the pattern of utilization of different sources of information. This indirectly also reflects on the credibility of different sources of information with the farmers. The information source credibility was studied with respect to the kinnow crop in particular and other crops in general. The credibility in information sources was also studied with regard to different operations of kinnow cultivation along with the level of satisfaction and trustworthiness attributed to these sources, comparatively.

### 4.2.1 Information source credibility in general

Before attempting the information source preference pattern amongst the kinnow growers for getting information on kinnow cultivation, it was considered relevant to know the information source preference pattern among farmers, in general.

Table 4.2.1 presented the source-wise preference pattern and the weighted source credibility score for each of the listed nine sources. A glance at the table reveals that DHO and its officials were most preferred source of information with a weighted source credibility score of 325, followed by fellow farmers/relatives/friends, university scientists and television with a score of 277, 247 and 133, respectively. Farm literature, cyber communication and input dealers were found popular at third level with 86, 53 and 27 weighted mean credibility score, respectively. Conclusively, it can be said that official change agents (DHO/HDO and University scientists), fellow farmers and television were the major sources preferred by the farmers for getting scientific information on farming in general.

**Table 4.2.1: Information Source Credibility among Respondents in General**

| Sr. No. | Information Source | Preference Pattern | | | | | Weighted source credibility score |
|---|---|---|---|---|---|---|---|
| | | First | Second | Third | Fourth | Fifth | |
| 1. | DHO/HDO | 38 (47.50) | 31 (38.75) | 3 (3.75) | 1 (1.25) | - | 325 |
| 2. | University scientist | 21 (26.25) | 21 (26.25) | 17 (21.25) | 3 (3.75) | 1 (1.25) | 247 |
| 3. | Radio | - | - | 5 (6.25) | 7 (8.75) | 7 (8.75) | 36 |
| 4. | Television | 3 (3.75) | 3 (3.75) | 7 (8.75) | 39 (48.75) | 7 (8.75) | 133 |
| 5. | Cyber communication | 1 (1.25) | 2 (2.50) | 1 (1.25) | 9 (11.25) | 19 (23.75) | 53 |
| 6. | Fellow farmers/relatives/friends | 9 (11.25) | 19 (23.75) | 45 (50.25) | 7 (8.75) | 7 (8.75) | 277 |
| 7. | Agricultural magazines/literature | 7 (8.75) | 3 (3.75) | 2 (2.50) | 7 (8.75) | 19 (23.75) | 86 |
| 8. | Non-official change agents | - | 1 (1.25) | - | 2 (2.50) | 8 (10.00) | 16 |
| 9. | Input dealers | 1 (1.25) | - | - | 5 (6.25) | 12 (15.00) | 27 |

### 4.2.2 Information source preference pattern for kinnow cultivation

The major thirst of the research was to study the communication behaviour of the farmers in relation to getting information for various kinnow cultivation practices. This information was collected with regard to twelve major practices of kinnow cultivation. The data on these aspects is given in table 4.2.2. A look at the table will reveal that farmers got information from different sources differently from aspect to aspect. The DHO/HDO, university scientists, fellow farmers and relatives were the major sources of information for almost all the aspects of kinnow cultivation with a varying percentage of respondents. The farm magazines, television, cyber communication, input dealers and radio were the least preferred sources for various practices of kinnow growing practices. These results are in conformity with the Indian institute of Mass Communication (IIMC) report (1968).

**Table 4.2.2: Information Source Preference Pattern for Kinnow Cultivation**

(Practice-wise)

| Sr. No. | Information source | Selection of site | Land preparation | Orchard planning | Pit preparation for planting | Time of planting | Planting material | Inter cropping | Application of fertilizer | Irrigation | Agronomic practices | Plant protection | Training and pruning |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | DHO/HDO | 45 (56.65) | 43 (53.75) | 63 (78.75) | 67 (83.75) | 46 (57.50) | 51 (63.75) | 5 (6.25) | 47 (58.75) | 33 (41.25) | 51 (63.75) | 61 (76.25) | 63 (78.75) |
| 2. | University scientist | 3 (3.75) | 7 (8.75) | 3 (3.75) | 9 (11.25) | 15 (18.75) | 17 (21.25) | 11 (13.75) | 15 (18.75) | 17 (21.25) | 13 (16.25) | 15 (18.75) | 15 (18.75) |
| 3. | Radio | - | - | - | - | - | - | - | - | - | 1 (1.25) | - | - |
| 4. | Television | - | - | - | - | - | - | - | 1 (1.25) | - | 2 (2.50) | - | - |
| 5. | Cyber communication | - | - | 1 (1.25) | - | 1 (1.25) | - | - | 1 (1.25) | 1 (1.25) | 1 (1.25) | - | - |
| 6. | Fellow farmers/relatives/ Friends | 7 (8.75) | 3 (3.75) | 5 (6.25) | 1 (1.25) | 7 (8.75) | 9 (11.25) | 11 (13.75) | 3 (3.75) | 7 (8.75) | 5 (6.25) | 2 (2.50) | 1 (1.25) |
| 7. | Agricultural magazines/ Literature | - | - | - | - | 5 (6.25) | - | - | - | - | - | - | - |
| 8. | Non-official change agents | - | - | - | - | 1 (1.25) | - | - | - | - | - | - | - |
| 9. | Input dealers | - | - | - | - | - | - | - | - | - | - | - | - |
| 10. | Self | 25 (31.25) | 27 (33.75) | 8 (10.00) | 3 (3.75) | 4 (5.00) | 3 (3.75) | 53 (66.25) | 13 (16.25) | 22 (27.50) | 7 (8.75) | - | - |

Practice wise DHO and its officials was the most preferred source of information for selection of site, land preparation, orchard planning, pit preparation, time of planting, planting material, application of fertilizers, agronomic practice, plant protection and training and pruning with 56.65, 53.75, 78.75, 83.75, 57.50, 63.75, 58.75, 63.75, 76.25 and 78.75 per cent, respectively. However, for time of planting, planting material, application of fertilizers, irrigation, plant protection and training and pruning, about 19 per cent farmers in each case got information from the university scientists.

Almost 30 per cent of the kinnow growers took decision on their own regarding selection of site, land preparation and irrigation and 2/3$^{rd}$ majority (66.25per cent) of kinnow growers decided themselves for intercropping.

**4.2.3 Level of satisfaction derived from different information sources**

The situation obtained is that the farmer are being exposed to farm information through different media or we may say that the farmers are utilizing different sources for obtaining information on different aspects of farming in general and kinnow cultivation in particular. In view of this it was considered relevant, to know the extent to which the farmers derived satisfaction from these sources in getting information on kinnow and also on different operations of kinnow cultivation. Table 4.2.3 clearly reveals that on the whole the level of satisfaction derived by the farmers from different information media was above average level of satisfaction. Comparatively, university scientists topped the list of information sources with a weighted mean satisfaction score of 2.39 out of a maximum obtainable score of 3.00. The fellow farmers and relatives and television were the other source which offered high level of satisfaction to farmers, the weighted mean satisfaction score being 2.30 and 2.25, respectively. The DHO/HDO and farm literature and magazines, these two sources were placed at 4$^{th}$ rank with a weighted mean score of 2.13 as far as the level of satisfaction was concerned.

The cyber communication, input dealers and non official change agents were placed at 6$^{th}$, 7$^{th}$ and 8$^{th}$ ranks with a weighted mean satisfaction score of 2.12, 1.76 and 1.75, respectively. However, the radio was kept at bottom with a weighted mean score of only 1.66 thereby providing least satisfaction to the kinnow growers. This might be because of either the Radio programmers not broadcasting information related to kinnow cultivation and if broadcasting might not be in an effective manner. The farmers drew maximum satisfaction from the university scientists perhaps due to the fact that they used to be the first source of information and provided first hand genuine information to the farmers without any ambiguity.

**Table 4.2.3: Level of Satisfaction Derived by Kinnow Growers from Different Information Sources**

Mean satisfaction score (practice-wise)

| S r . No. | Information source | Selection of site | Land preparation | Orchard planning | Pit preparation for planting | Time of planting | Planting material | Inter-cropping | Application of fertilizer | Irrigation | Agronomic practices | Plant protection | Training and pruning | Weighted mean | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | DHO/HDO | 2.61 | 2.52 | 2.50 | 2.39 | 2.40 | 1.46 | 1.80 | 2.00 | 2.33 | 1.93 | 1.62 | 2.00 | 2.13 | IV |
| 2. | University scientist | 2.40 | 2.51 | 2.75 | 2.25 | 2.67 | 2.11 | 2.16 | 2.57 | 2.50 | 2.21 | 2.11 | 2.5 | 2.39 | I |
| 3. | Radio | - | - | - | - | - | - | - | 1.5 | - | 1.5 | 2.00 | - | 1.66 | VIII |
| 4. | Television | - | - | - | - | - | - | - | 2.5 | - | 2.5 | 2.52 | 1.5 | 2.25 | III |
| 5. | Cyber communication | - | - | - | - | 3.00 | - | 1.5 | 2.5 | - | - | 1.55 | - | 2.12 | V |
| 6. | Fellow farmers/relatives/friends | 2.5 | 2.00 | 2.40 | 2.37 | 2.85 | 2.33 | 2.33 | - | 2.00 | - | - | 2.00 | 2.30 | II |
| 7. | Agricultural magazines/literature | - | 2.25 | - | 2.52 | 2.00 | 1.75 | 2.00 | 3.00 | 2.66 | 1.66 | 1.5 | 2.00 | 2.13 | IV |
| 8. | Non-official change agents | - | - | - | - | - | - | - | 2.00 | 1.5 | - | - | - | 1.75 | VII |
| 9. | Input dealers | - | - | - | - | - | - | - | 1.52 | 2.00 | - | - | - | 1.76 | VI |

### 4.2.4 Trustworthiness of information sources

Once the level of satisfaction has been determined at face value, there hardly appears any logic in finding out the trustworthiness of information sources among the kinnow growers. However, how much trust a farmer would have on an information source will depend on how much faith he has on the accuracy and reliability of the information given by that particular source. At times, a source which is otherwise giving high satisfaction may not be trustworthy with the farmer if the source had not developed rapport with the farmers. Table 4.2.4 which present trustworthiness index information source wise clearly reveals that the sources which provided highest level of satisfaction were considered maximum trustworthy except radio.

**Table 4.2.4: Trustworthiness of Information Sources among Kinnow Growers**

| Sr. No. | Sources | Trustworthiness Index (per cent) |
|---|---|---|
| 1. | DHO/HDO | 92.18 |
| 2. | University scientist | 89.18 |
| 3. | Radio | 82.81 |
| 4. | Television | 83.43 |
| 5. | Cyber communication | 86.00 |
| 6. | Fellow farmers/relatives/friends | 90.63 |
| 7. | Agricultural magazines/literature | 92.18 |
| 8. | Non-official change agents | 42.80 |
| 9. | Input dealers | 38.33 |

A look at the table 4.2.4 as expected reveals that the kinnow growers deposed highest trust in DHO/HDO and farm literature and lowest in input dealers. The first five sources in descending order of trustworthiness as indicated by the trustworthiness index (TWI) were found to be DHO/HDO and farm literature (TWI: 92.18), fellow farmers and relatives (TWI: 90.63), university scientists (TWI: 89.18) and cyber communication (TWI: 86.00). And the lowest trustworthiness index was found in the case of input dealers (TWI: 38.33) and non official change agent (TWI: 42.80). Almost an ideal situation would be when the sources providing high level of satisfaction should also be highly placed on the ladder of trustworthiness scale. This calls for a promotional strategy on the part of change agents which established good rapport with the farmers. The findings clearly revealed that the sources which topped from the point of view of level of satisfaction were also placed on top from the point of trustworthiness and the input dealers and non official change agents were on the bottom both from the point of view of level of satisfaction and trustworthiness. In this way an ideal situation has been found but there was only one source of information i.e. Radio which provided high level of trustworthiness but was placed at the lowest rank from the point

of view of satisfaction. This might be because of the fact that radio now a days has become obsolete due to the availability of other advanced sources of information like television, cyber communication (internet facilities). Moreover, the farmers might not be getting the specific information on kinnow crop from the radio.

### 4.2.5 Information seeking pattern of kinnow growers for guiding fellow farmers

As an off shoot of source credibility with the farmers, the respondents were enquired if they helped their fellow farmers in their farming by giving them the needed advice. As many as 77.50 per cent farmers reported that they did educate their fellow farmers regarding development of kinnow orchards in the event of need. However, only 29.03 per cent felt that they had the full information of the technology about which they were advising their fellow farmers but 70.97 per cent farmers felt that they otherwise knew more about the technology than the farmer seeking their advice. As many as 74 farmers out of 80 farmers felt that they preferred to seek additional information from some of the other information source before guiding the fellow farmers. This group of 74 farmers was further probed for the source they utilized in getting the additional information. Table 4.2.6 gives the source wise frequency and percentage of farmers utilizing different sources in such a situation.

A look at the table clearly reveals that DHOs, fellow farmers, university scientists and the farm literature were four major sources utilized by 40.54, 18.92, 12.16 and 12.16 per cent farmers, respectively. The preference for these sources appears to be natural as these are the sources which provide them first hand information which helps them in guiding their fellow farmers.

**Table 4.2.5: Information Seeking Pattern of Kinnow Grower for Guiding Fellow Farmers** **N=74**

| Sr. No. | Source | Frequency | Percentage |
|---|---|---|---|
| 1. | DHO/HDO | 30 | 40.54 |
| 2. | University scientist | 9 | 12.16 |
| 3. | Radio | 2 | 2.70 |
| 4. | Television | 5 | 6.76 |
| 5. | Cyber communication | 3 | 4.05 |
| 6. | Fellow farmers/relatives/friends | 14 | 18.92 |
| 7. | Agricultural magazines/literature | 9 | 12.16 |
| 8. | Non-official change agents | - | - |
| 9. | Input dealers | 2 | 2.70 |

### 4.2.6 Distribution of respondents as per their levels of extension contacts

The minimum gap was observed in case of input dealers followed by DHO, university scientists and non official change agents i.e. 17.75, 18.50, 46.75 and 73.75 per cent, respectively. A large communication gap of the respondents with the university scientists might be due to reluctance of the farmers to come to the university for seeking information off and on and on the other side the responsibility of the transfer of technology at the grass root level was of the department of horticulture and not of the university scientists. Moreover, the university scientists do not have any infrastructure at the village level for the transfer of technology. After a deep probing, the common feeling prevailing among the farmers was that it was difficult for them to contact the university scientist as and when needed. Further, most for the farmers reported that university itself is a very big organization and the farmers did not know to whom to consult for a particular problem. The narrow communication gap in case of the input dealer and DHO/HDO might have been due to the input providing function of these sources and their easy availability to the farmers as and when needed.

**Table 4.2.6: Distribution of Respondents as per their Level of Extension Contact**

| Sr. No. | Extension workers | Weighted mean extension contact | Extension contact index (per cent) | Communication gap (per cent) |
|---|---|---|---|---|
| 1. | DHO/HDO | 4.07/5.00 | 81.50 | 18.50 |
| 2. | University scientist | 2.66/5.00 | 53.25 | 46.75 |
| 3. | Non-official change agents | 1.31/5.00 | 26.25 | 73.75 |
| 4. | Input dealers | 4.11/5.00 | 82.25 | 17.75 |
| | Overall | 12.15/20.00 | 60.81 | 39.19 |

### 4.2.7 Distribution of Information Media as per their Popularity and Usefulness Status

There are three programmes on radio namely 'Kisan Vani', 'Agriculture Based (CRS,HAU)' and 'Phone in Karyakaram' relating to farm broadcast and one programme namely 'Krishi Darshan' on television relating to farm telecast. In the first instance, the farmers were asked about the extent to which they listened/viewed these programmes and the extent to which they found these programmes useful. The findings revealed that almost all the three radio programmes were equally popular and found useful by the farmers. The popularity index for the three programmes came out to be 20.83, 26.66 and 22.50 for 'KisanVani', 'Agriculture Based (CRS,HAU)' and 'Phone in Karyakaram', respectively. While taking all the three programmes together, the overall popularity index came out to be 23.33 per cent leaving a very wide gap of 76.67 per cent. The usefulness index, similarly, was perceived to be 43.75, 37.50 and 38.33 per cent, respectively, for the above three programmes while overall usefulness index came out to be 39.86. The 'Krishi Darshan' programme was found to have a popularity index of 44.37 and the usefulness index as 62.50. The popularity and useful index in case of farm magazine and literature was 35.00 and 33.75, respectively. Thus, it can be said that a largest communication gap of 76.67 was found in case of radio among all the sources of information followed by farm literature and television with a communication gap of 65.00 and 55.63, respectively (table 4.2.7).

**Table 4.2.7: Distribution of Information Media as per their Popularity and Usefulness Status**

| Sr. No. | Mass media | Popularity index | Usefulness index | Communication gap |
|---|---|---|---|---|
| 1. | Radio | | | |
| | Kisan vani | 20.83 | 43.75 | 76.67 |
| | Agriculture based (CRS, HAU) | 26.66 | 37.50 | |
| | Phone in karyakaram | 22.50 | 38.33 | |
| | Overall | 23.33 | 39.86 | |
| 2. | Television | | | |
| | a. Krishi darshan | 44.37 | 62.50 | 55.63 |
| 3. | Literature | | | |
| | a. Subscribed magazine | 35.00 | 33.75 | 65.00 |

## 4.3 Association of information source credibility with different socio-economic traits of kinnow growers

To examine whether the information source credibility varied caste wise, education wise, family type wise, change proneness wise and socio-economic status wise, the association of the above factors with the source credibility perception of farmers was studied. The results on these aspects are presented below:

For this purpose the data was analyzed in terms of extent to which a particular information source was utilized. The extent of use of different information sources varied according to caste, literacy level, family type, degree of change proneness and the level of socio economic status of the kinnow growers. To know about this extent of use and to establish a relationship (whether positive or negative) between various communication sources and the farmers' socio- economic traits, the correlation coefficient was worked out.

The data have been presented in the table 4.3 which clearly indicates that the caste of kinnow growers did not lay any impact on the use of various sources of information except input dealers which was found to be negatively significant at 5 per cent level which means that higher caste farmers did not show any interest to contact input dealers to gain knowledge regarding kinnow production practices.

Education was the another trait which was found to be having negative and significant correlation with input dealers but it showed a positive and significant correlation with the university scientists and cyber communication as the sources of information. It means the farmers who were more literate and have acquired high level of education were interested in university scientists to seek knowledge on kinnow production.

The type of family whether joint or nuclear was not having any kind of correlation with any of the sources of information means the farmers gained guidance from various sources irrespective of the fact, they belonged to joint family or nuclear family.

The table further revealed that change proneness was having a significant and positive relationship with DHO/HDO and a highly significant and positive relationship with university scientists meaning thereby that the farmers who were in regular contact of DHO/HDO and the university scientists were having high degree of change proneness.

A significant and positive correlation was found between socio-economic status and university scientists while a significant and negative correlation was observed with fellow farmers/relatives which indicates that the kinnow producing

**Table 4.3: Association of information source credibility with different socio- economic traits of kinnow growers**

| Variable | DHO/HDO $X_6$ | University Scientist $X_7$ | Radio $X_8$ | T.V $X_9$ | Cyber Communication $X_{10}$ | Fellow farmers /Relatives $X_{11}$ | Farm literature $X_{12}$ | Non official agent $X_{13}$ | Input dealer $X_{14}$ |
|---|---|---|---|---|---|---|---|---|---|
| Caste ($X_1$) | $0.074^{NS}$ | $-0.016^{NS}$ | $-0.003^{NS}$ | $-0.100^{NS}$ | $0.136^{NS}$ | $-0.035^{NS}$ | $0.047^{NS}$ | $0.147^{NS}$ | $-0.228^{*}$ |
| Education ($X_2$) | $0.030^{NS}$ | $0.263^{*}$ | $-0.153^{NS}$ | $-0.063^{NS}$ | $0.232^{*}$ | $-0.137^{NS}$ | $0.100^{NS}$ | $-0.049^{NS}$ | $-0.251^{*}$ |
| Family type ($X_3$) | $0.038^{NS}$ | $-0.136^{NS}$ | $-0.165^{NS}$ | $0.002^{NS}$ | $-0.022^{NS}$ | $0.182^{NS}$ | $0.016^{NS}$ | $-0.069^{NS}$ | $0.146^{NS}$ |
| Change proneness ($X_4$) | $0.242^{*}$ | $0.287^{**}$ | $-0.186^{NS}$ | $-0.200^{NS}$ | $-0.067^{NS}$ | $-0.130^{NS}$ | $0.013^{NS}$ | $0.206^{NS}$ | $0.064^{NS}$ |
| Socio-Economic Status ($X_5$) | $0.033^{NS}$ | $0.243^{*}$ | $-0.081^{NS}$ | $-0.049^{NS}$ | $0.125^{NS}$ | $-0.249^{*}$ | $0.086^{NS}$ | $0.019^{NS}$ | $-0.030^{NS}$ |

*Significant at 5 per cent level

**Significant at 1 per cent level

NS Non-significant

farmers who were enjoying high socio-economic status opted for university scientists and did not prefer fellow farmers/relatives as the source of information.

The above results are obvious, because the higher caste farmers do not consider 'input dealers' a reliable source of information and therefore did not seek any information on kinnow cultivation. The well educated farmers consider university scientists a more reliable source and therefore seized to opt for input dealers as the source of information. No difference was found as far as information source credibility was concerned among nuclear and joint family. Further the kinnow growers with high socio-economic status and high degree of change proneness rely more on university scientists and discarded the fellow farmers as the source of information. This trend appears to the natural because the affluent farmers had batter access to the university scientists and a good risk bearing capacity which is involved in the change proneness.

**Section 4**

## 4.4 Constraints perceived by the respondents in the use of information sources

The use of different information sources was probed further in detail to know the extent to which these sources were found useful and the perception of farmers about the problems/constraints in getting information from these sources. The data on these aspects for the major sources is given under this section. The source wise description is given below:

### 4.4.1 Radio and television as the sources of information

A detailed analysis of the constraints in the use of radio and television as a source of information has been given in Table 4.4.1. The major constraints in using radio as a source of information, as may be seen from the table, experienced by the farmers were that most of the programmes broadcasted from the radio did not relate to their farming system with 88.37 per cent. The other two reasons given by the farmers were that the source had no provision for interpersonal communication and the experiences of the speakers did not apply to their farming with 79.07 and 74.41 per cent, respectively. Another important reason reported by the farmers was that the time of broadcast did not suit them.

As regards television as many as 53.75 per cent farmers reported that the programmes are not related to our farming system. The other three reasons given by 51.25, 46.25 and 41,25 per cent farmers were that the time of programme does not suit us, the experience of the speaker do not apply to our farming system and no possibility of interpersonal communication.

**Table 4.4.1: Constraints in using Radio as the source of Information**

**N = 43**

| Sr. No. | Radio as the source of information | Frequency | Percentage |
|---|---|---|---|
| 1. | Time of the programme does not suit us | 17 | 39.53 |
| 2. | We cannot understand the programme due to Jargon | 5 | 11.62 |
| 3. | The programme are not useful, therefore, we do not listen | 4 | 9.3 |
| 4. | The source has no provision for interpersonal communication | 34 | 79.07 |
| 5. | The programme are not related to our farming system | 38 | 88.37 |
| 6. | The experience of the speaker do not apply to our farming system | 32 | 74.41 |

**Table 4.4.2: Constraints in using Television as the source of Information**

**N=80**

| Sr. No. | Television as the source of information | Frequency | Percentage |
|---|---|---|---|
| 1. | Time of the programme does not suit us | 41 | 51.25 |
| 2. | We cannot understand the programme due to Jargon | 3 | 3.75 |
| 3. | The programme are not useful, therefore, we do not listen | 5 | 6.25 |
| 4. | The source has no provision for interpersonal communication | 33 | 41.25 |
| 5. | The programme are not related to our farming system | 43 | 53.75 |
| 6. | The experience of the speaker do not apply to our farming system | 37 | 46.25 |
| 7. | To buy a T.V set is costly affair | 5 | 6.25 |

Whereas the validity of the programme contents through radio or television is a serious matter and should be an eye opener for the planners of the radio and television programmes for farmers, the impossibility of interpersonal communication is the built in limitation of these two sources except in certain cases where a provision is made for the

audience for the telephonic conversation. A good number of studies are available to indicate the suitable timings of broadcast/telecast. Such studies should provide a feedback to the planners in deciding the timings. However, this might differ from region to region and during different crop seasons. A through analysis on this aspect is called for.

### 4.4.2 Cyber Communication as the source of information

Cyber communication is a high-tech source of information. Only 32 out of 80 respondents were using the cyber communication for getting the information on kinnow cultivation.

A detailed analysis of the constraints in the use of cyber communication as a source of information is given in table 4.4.3. The major constraints experienced by the farmers in the using cyber communication, as may be seen from the table, were the poor knowledge about using the source (78.12 per cent) and using of this source is costly affair (75.00 per cent).

**Table 4.4.3: Constraints in using Cyber Communication as the source of Information**

N = 32

| Sr. No. | Cyber communication as the source of information | Frequency | Percentage |
|---|---|---|---|
| 1. | Using this source is costly | 24 | 75.00 |
| 2. | Too much detail are there which we cannot practice | 17 | 53.12 |
| 3. | The source has no provision for interpersonal communication | 21 | 65.61 |
| 4. | Poor knowledge about using the source | 25 | 78.12 |

### 4.4.3 Farm literature and magazines as the source of information

A detailed probing was done with regard to extent to which the farmers read farm literature including farm journals. Only 32 out of 80 farmers (40.00 per cent) reported that they subscribed to some or the other farm journal. The farmers were probed to the extent they read the farm literature either by subscribing to it or getting it free of cost from some other source. The popularity index worked out came out to be 35.00 for farm literature and farm journal thus leaving a very wide gap of 65.00 per cent. The farmers were also probed as to what extent they found the farm journals useful. The usefulness index thus finally worked out came out to be 33.75. Although only 40.00 per cent were subscribing to or using farm literature as the source of information but 33.75 per cent of them found such a literature useful (table 4.2.7).

As regards constraints in order of importance were: we did not get the farm journal in time (71.87 per cent), the information in the literature was too much in detail and complicated that the farmers could not act upon them (46.86 per cent), subscribing to farm journal was costly affair (34.37 per cent) and very little information relevant to their farming system was available in such farm magazines (21.87 per cent).

**Table 4.4.4: Constraints in using Farm Literature and Magazines as the source of Information N= 32**

| Sr. No. | Farm literature and magazine as the Source of Information | Frequency | Percentage |
|---|---|---|---|
| 1. | Subscribing to the journal is a costly affair | 11 | 34.37 |
| 2. | We do not get the farm journals in time | 23 | 71.87 |
| 3. | Too much details are there which we can not practice | 15 | 46.86 |
| 4. | There is very little information related to our farming system | 7 | 21.87 |

The above constraints can very easily be manipulated to make the farm journals and literature more useful to the farmers. Timeliness can be ensured, cost can be reduced by subsidizing and providing of location specific information only of practical utility could take care of other two constraints. One such magazine, as it happens to be published from my own university which has been able to overcome all the above four constraints given by the farmers. The magazine is 'Haryana Kheti' a monthly Hindi farm journal published by the CCS Haryana Agricultural University which is subscribed by as many as 5000 farmers and extension workers.

### 4.4.4 DHO/HDO as the source of information

HDO was found to be a major and important source of information for the farmers regarding kinnow production. The farmers were probed on the constraints faced by them and the table 4.4.5 provides information on this aspect. In all the farmers perceived six constraints in using HDO as an important source. However, the first three constraints as reported by about 2/5$^{th}$ of the respondents were: HDO was not always available (40.00 per cent), he has got poor knowledge of horticulture (41.25 per cent) and his headquarter was located far off (40.00 per cent). The other three constraints faced by the kinnow growers were that whenever, the farmers posed any problem he referred them to other persons specially the university scientists rather then solving the problem at his own level (11.25 per cent), HDO had scanty knowledge of horticulture (16.25) and the farmers did not know the person to be consulted for a particular work (26.25 per cent).

Although non-availability of HDO or the DHO/HDO headquarter being at a far off place is not relevant because in Haryana, HDO has a fixed programme of work and his headquarter has been fixed at the block level but it seems that the farmers are not aware of this fact. Moreover, the HDO might be contacting only the influential person and village leaders and not the ordinary farmers. The other constraints faced by the farmers also become irrelevant after the trainings have been made an important part and pre-requisite of HDO's curriculum and he is expected to be up to date and know the subject matter thoroughly. However, the hindrances implementing the programme should be removed by the higher officials of the horticulture department.

**Table 4.4.5: Constraints in using DHO/HDO as the source of Information**

**N = 80**

| Sr. No. | DHO/HDO as the Source of Information | Frequency | Percentage |
|---|---|---|---|
| 1. | Not always available | 32 | 40.00 |
| 2. | He has got poor knowledge of horticulture | 33 | 41.25 |
| 3. | He can not express the subject matter properly | 13 | 16.25 |
| 4. | His head-quarter/office is far off | 32 | 40.00 |
| 5. | We do not know the person to be consulted for a particular work | 23 | 26.25 |
| 6. | When ever we pose any problem to him, he refer us to other | 9 | 11.25 |

### 4.4.5 University Scientists as the source of information

Although the scientists were not found to be a major source of information by the farmers yet they were found to be the most reliable source of information by the farmers. This source was also found to be used by affluent farmers. The respondents were asked to list the problems in using university scientists as the source of information. The farmers came out with the seven important constraints. A high majority of farmers (70.00 per cent) perceived that it was very difficult to visit the university only to get information. The three other major reasons given by the farmers were that even when they visited university, it was difficult to contact the scientist (53.75 per cent), only few scientists have got expertise on kinnow production (46.25 per cent) and the scientists recommended too much which a farmer could not practice (40.00 per cent). Another three reasons reported by 36.25, 28.75 and 26.25 per cent farmers were that for simple information they had to contact different scientists as one scientist could not solve all or most of their problems, it was difficult to understand the advice given by the scientists, and most of time scientists are not available, respectively

(table 4.4.6). It is obvious that the constraints reported above are the built in constraints, particularly, because it is era of specialization and in such a higher seat of learning and research, the scientists specialize not at the level of its discipline but at the level of the crop within a discipline.

**Table 4.4.6: Constraints in using University Scientists as the source of Information**

**N = 80**

| Sr. No. | University Scientists as the Source of Information | Frequency | Percentage |
|---|---|---|---|
| 1. | It is difficult to visit the university | 56 | 70.00 |
| 2. | If we visit the university, it is difficult to locate the scientists | 43 | 53.75 |
| 3. | We can not comprehend their talk | 23 | 28.75 |
| 4. | Only few scientists have got expertise on kinnow production | 37 | 46.25 |
| 5. | They recommended too much, which we cannot practice | 32 | 40.00 |
| 6. | For simple information, we have to contact different scientists | 29 | 36.25 |
| 7. | Not always available | 21 | 26.25 |

As a result of it a 'wheat pathologist' may not be able to answer pathological problems of 'gram' or 'bajra'. Obviously, the farmers will have to contact different scientists for different problems. The main job of scientists is to conduct research and therefore, they may not be available easily to the farmers.

### 4.4.6 Input dealers as change agents

Of late, input dealers have also come up and started playing the role of change agents; however, they do educate the farmers by way of popularizing their own product as good salesman. The farmers happened to be in contact with them in the process of buying inputs particularly the seeds, fertilizer and the pesticides. The farmers were asked to express their opinion about the use of input dealers as information source. Table 4.4.7 lists the problems with their respective frequency and 71.25 per cent of farmers reported that the input dealers provide the information about the products they sell, educating only on the plus points of the product. Another problem reported by 61.25 per cent farmers was that this source could be utilized only when the farmers bought something from input dealers. The two other reasons reported were that it was very difficult to believe the input dealers (53.75

percent) and the information, given by them was not adequate and complete (54.99 per cent). The fifth constraint was that for getting information the farmers had to travel to the city (21.25 per cent) because most of the input dealers trade from the cities.

**Table 4.4.7: Constraints in using Input Dealers as the source of Information**

**N = 80**

| Sr. No. | Input Dealers as the Source of Information | Frequency | Percentage |
|---|---|---|---|
| 1. | They provide information only on the plus point of the product which they sell | 57 | 71.25 |
| 2. | They provide information only, when we buy something from them | 49 | 61.25 |
| 3. | It is difficult to believe the input dealers | 43 | 53.75 |
| 4. | Information given by them is not adequate and complete | 44 | 54.99 |
| 5. | It is very difficult to go to the city to contact them | 17 | 21.25 |

The above reasons were the obviously expected one in fact the input dealers are not change agents but only good salesman and they could not act as change agents as hardly anyone of them is expected to be trained in subject matter and the art of communication.

**Constraints perceived by the respondents in kinnow cultivation**

Considering the objectives of the study, it was felt necessary to know the constraints perceived by the farmers in kinnow cultivation.

**4.4.7 Constraints related to inputs**

On the basis of weighted cumulative frequency score, all the 8 constraints related to inputs faced by the farmers were ranked in the descending order in Table 4.4.8. The table revealed that non -availability of quality inputs ranked at the top with the mean score of 2.74. The 'high cost of insecticides/ pesticides and fungicides' was considered as next commonly experienced constraint with mean score of 2.52.

On the basis of mean score method 'the adulterated sub-standard inputs', 'non-availability of trained labour', 'inadequate credit facilities for purchasing inputs', 'non-availability of inputs at proper time', 'non -availability of inputs at village level', and 'inadequate fencing facilities', were ranked on Illrd, lVth, Vth, Vlth, Vllth and Vlllth position, respectively.

**Table 4.4.8: Constraints related to inputs**

| S r . No. | Constraints | Degree of seriousness | Frequency | Weighted frequency | Mean score | Rank order |
|---|---|---|---|---|---|---|
| 1. | Non-availability of quality plant material | Most serious (3) | 61 | 183 | 2.74 | I |
| | | Serious (2) | 17 | 34 | | |
| | | Not so serious (1) | 2 | 2 | | |
| 2. | High price of weedicides, pesticides and Fungicides | Most serious (3) | 44 | 132 | 2.52 | II |
| | | Serious (2) | 34 | 68 | | |
| | | Not so serious (1) | 2 | 2 | | |
| 3. | Adulterated and sub-standard inputs | Most serious (3) | 25 | 75 | 2.28 | III |
| | | Serious (2) | 52 | 104 | | |
| | | Not so serious (1) | 3 | 3 | | |
| 4. | Non-availability of trained labour | Most serious (3) | 14 | 42 | 2.18 | IV |
| | | Serious (2) | 54 | 108 | | |
| | | Not so serious (1) | 12 | 24 | | |
| 5. | Inadequate credit facilities for purchase of inputs | Most serious (3) | 16 | 48 | 1.95 | V |
| | | Serious (2) | 44 | 88 | | |
| | | Not so serious (1) | 20 | 20 | | |
| 6. | Non-availability of plant fertilizers, weedicides and pesticides at required time | Most serious (3) | 16 | 48 | 1.89 | VI |
| | | Serious (2) | 39 | 78 | | |
| | | Not so serious (1) | 25 | 25 | | |
| 7. | Non-availability of inputs at village level | Most serious (3) | 11 | 33 | 1.78 | VII |
| | | Serious (2) | 40 | 80 | | |
| | | Not so serious (1) | 29 | 29 | | |
| 8. | Inadequate fencing facility | Most serious (3) | 8 | 24 | 1.45 | VIII |
| | | Serious (2) | 20 | 40 | | |
| | | Not so serious (1) | 52 | 52 | | |

### 4.4.8 Constraints related to production

The results presented in Table 4.4.9, highlight that 'inadequate weed control in kinnow production' ranked first on the basis of highest mean score with a value of 2.14. The problem of 'low production due to unfavorable weather condition' ranked second as per the mean score of 1.98. The constraints like 'poor drainage facility', 'inadequate training and pruning' and 'inter-cropping' were ranked Illrd, IVth and Vth, respectively, as perceived by the kinnow growers.

**Table 4.4.9: Constraints related to production**

| S r . No. | Constraints | Degree of seriousness | Frequency | Weighted frequency | Mean score | Rank order |
|---|---|---|---|---|---|---|
| 1. | Inadequate weed control in kinnow production | Most serious (3) | 29 | 87 | 2.14 | I |
| | | Serious (2) | 32 | 64 | | |
| | | Not so serious (1) | 20 | 20 | | |
| 2. | Low production due to unfavorable weather conditions | Most serious (3) | 28 | 84 | 1.98 | II |
| | | Serious (2) | 22 | 44 | | |
| | | Not so serious (1) | 30 | 30 | | |
| 3. | Poor drainage facility | Most serious (3) | 20 | 60 | 1.78 | III |
| | | Serious (2) | 22 | 44 | | |
| | | Not so serious (1) | 38 | 38 | | |
| 4. | Inadequate training and pruning | Most serious (3) | 13 | 39 | 1.56 | IV |
| | | Serious (2) | 19 | 38 | | |
| | | Not so serious (1) | 48 | 48 | | |
| 5. | Inter-cropping | Most serious (3) | 9 | 27 | 1.41 | V |
| | | Serious (2) | 15 | 30 | | |
| | | Not so serious (1) | 56 | 56 | | |

### 4.4.9 Constraints related to marketing

The results presented in Table 4.4.10 show that 'absence or scarcity of agro-processing units' was perceived as most important constraint as perceived by the farmers/kinnow growers and obtained first rank in ranking order. The problem of 'lack of marketing education' ranked second on the basis of mean score. The problem of 'low price of produce', lack of storage facilities', lack of transport facilities', 'lack of cooperative organizations for marketing of produce', 'immediate sale being perishable commodity', 'lack

of grading system', and 'lack of procurement price by government for fruits' were ranked IIIrd, IVth, Vth, lVth, VIIth VIIIth and IXth in descending order, respectively.

**Table 4.4.10: Constraints related to marketing**

| Sr. No. | Constraints | Degree of seriousness | Frequency | Weighted frequency | Mean score | Rank order |
|---|---|---|---|---|---|---|
| 1. | Lack of processing plant | Most serious (3) | 30 | 90 | 2.14 | I |
| | | Serious (2) | 31 | 62 | | |
| | | Not so serious (1) | 19 | 19 | | |
| 2. | Lack of marketing education | Most serious (3) | 26 | 78 | 2.05 | II |
| | | Serious (2) | 32 | 64 | | |
| | | Not so serious (1) | 22 | 22 | | |
| 3. | Low price of produce | Most serious (3) | 16 | 48 | 1.95 | III |
| | | Serious (2) | 44 | 88 | | |
| | | Not so serious (1) | 20 | 20 | | |
| 4. | Lack of storage facilities | Most serious (3) | 18 | 54 | 1.94 | IV |
| | | Serious (2) | 36 | 72 | | |
| | | Not so serious (1) | 26 | 26 | | |
| 5. | Lack of transport facility | Most serious (3) | 18 | 54 | 1.92 | V |
| | | Serious (2) | 38 | 76 | | |
| | | Not so serious (1) | 24 | 24 | | |
| 6. | Lack of cooperative organization for marketing of produce | Most serious (3) | 17 | 51 | 1.89 | VI |
| | | Serious (2) | 37 | 74 | | |
| | | Not so serious (1) | 26 | 26 | | |
| 7. | Immediate sale being perishable commodity | Most serious (3) | 14 | 42 | 1.75 | VII |
| | | Serious (2) | 32 | 64 | | |
| | | Not so serious (1) | 34 | 34 | | |
| 8. | Lack of grading system | Most serious (3) | 4 | 12 | 1.51 | VIII |
| | | Serious (2) | 13 | 26 | | |
| | | Not so serious (1) | 83 | 83 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9. | Lack of procurement price by government for fruits | Most serious (3) | 5 | 15 | 1.33 | IX |
| | | Serious (2) | 16 | 32 | | |
| | | Not so serious (1) | 59 | 59 | | |

### 4.4.10 Constraints related to technical guidance

The data in Table 4.4.11 revealed that 'lack of knowledge of current advances for kinnow production' was considered the most serious constraints by the kinnow growers and ranked first with a mean score of 2.41. The problem of 'lack of guidance for controlling insect pests/diseases and application of pesticides and fungicides' was ranked second in order of importance. The data also revealed that 'lack of guidance of plant treatment and proper marketing place' was ranked lIlrd and lVth, respectively, also play a pivotal role in kinnow cultivation. The problem of 'lack of guidance of post harvesting', 'lack of guidance for fertilizer application and chemical weedicides' and 'lack of guidance about propagation' were ranked Vth ,Vlth and VIIth, with a mean score of 1.64, 1.50 and 1.36, respectively. All these constraints can be minimized by providing trainings to the farmers and by distributing literature regarding technical know- how to the farmers as it requires specialized skills in certain operations. The facility of modern communication technology can also play an important role in mitigating these constraints.

**Table 4.4.11: Constraints related to technical guidance**

| Sr. No. | Constraints | Degree of seriousness | Frequency | Weighted frequency | Mean score | Rank order |
|---|---|---|---|---|---|---|
| 1. | Lack of knowledge of current advance for kinnow production | Most serious (3) | 41 | 123 | 2.41 | I |
| | | Serious (2) | 32 | 64 | | |
| | | Not so serious (1) | 6 | 6 | | |
| 2. | Lack of guidance for controlling insect-pests and application of pesticides and fungicides | Most serious (3) | 30 | 90 | 2.19 | II |
| | | Serious (2) | 35 | 70 | | |
| | | Not so serious (1) | 15 | 15 | | |
| 3. | Lack of guidance for plant treatment | Most serious (3) | 28 | 84 | 2.15 | III |
| | | Serious (2) | 36 | 72 | | |
| | | Not so serious (1) | 16 | 16 | | |
| 4. | Lack of guidance for proper marketing place | Most serious (3) | 12 | 36 | 1.78 | IV |
| | | Serious (2) | 38 | 76 | | |
| | | Not so serious (1) | 30 | 30 | | |
| 5. | Lack of guidance of post harvesting | Most serious (3) | 11 | 33 | 1.64 | V |
| | | Serious (2) | 29 | 58 | | |
| | | Not so serious (1) | 40 | 40 | | |
| 6. | Lack of guidance for fertilizer application and chemical weedicides | Most serious (3) | 8 | 24 | 1.50 | VI |
| | | Serious (2) | 19 | 38 | | |
| | | Not so serious (1) | 58 | 58 | | |
| 7. | Lack of guidance of about propagation | Most serious (3) | 4 | 12 | 1.36 | VII |
| | | Serious (2) | 17 | 34 | | |
| | | Not so serious (1) | 63 | 63 | | |

# CHAPTER – V

## DISCUSSION

The findings revealed that majority of the farmers were from middle aged group and from the dominant caste, having high socio economic status and more than 10 acres of land, educated up to high school, having farming as their main occupation and they mainly came from joint family setup. They were found to be from the high income group and medium category of change proneness. These characters are somewhat correlated with each other because the farming family with joint family setup, having large land holding with a good income, must be enjoying high socio-economic status and being economically sound it's members are expected to be good educated and act as village leaders in the eyes of small and marginal farmers. Akanksha (2006) conducted a study on socio-economic profile of the respondents and concluded that maximum numbers of respondents were belonging to middle aged group 36-50 years, involved in farming occupation and having high socio-economic status.

As far as the use of information sources, credibility as well as trustworthiness of information sources as perceived by the kinnow growers is concerned, the data revealed that the DHO and its officials were the most preferred source for the almost all the operations of kinnow cultivation with a maximum credibility and trustworthiness, the input dealers and non official change agents were on the bottom as far as their credibility and trustworthiness was concerned. The DHO and its officials being the first preference of kinnow growers regarding information on the kinnow production practices was because of the fact that the farmers used to meet them frequently and were already in contact with them. Moreover, DHO/HDO were the key persons who motivated the farmers for diversification and to develop the kinnow orchards.

The above situation appeared after the initiation of National Horticulture Mission (NHM) in Haryana and some other states by the ministry of horticulture, Govt. of India. Being initials stage or the first phase of NHM the personnel of the department worked with whole of their dedication and devotion and accordingly they became successful in motivating/convincing many of the farmers for diversification/change of their farming pattern and to convert their farms into kinnow orchards. The above farmers who were on the adoption stage i.e. the last and final of the five stages of the adoption process and were

already in contact of the DHO and its officials, started seeking for more and more information on kinnow production practices from them. In addition to it, the horticulture department provided the incentives or the monetary benefits in the form of subsidy for various aspects of developing orchards. This might be an important reason behind the farmers' first preference for DHO/HDO as a source of information.

The findings further revealed that 30 per cent of the kinnow growers took discussion on their own regarding selection of site, land preparation, irrigation and for intercropping. This might be because, the farmers considered these operations of kinnow growing, quite a easy task and the farmers were very much confident that the guidance/suggestion given by other sources of information can not be better than their own decision.

However the university scientists topped the list of information sources from the point of view of level of satisfaction derived by the kinnow growers followed by fellow farmers/relatives/friends, television and the DHO/HDO on the 2nd, 3rd and 4th rank, respectively. Again, non official change agents and input dealers including radio were kept at bottom from point of view of level of satisfaction provided by these sources to the kinnow growers. Radio, however provided the least satisfaction, the reason behind this might be that radio did not provide the facility of interpersonal communication and also there is no provision of feedback except in one programme i.e. phone in karyakaram because the inter-personal communication provides the maximum satisfaction to the audience. There appeared a positive view point of the farmers towards the university scientists because the farmer now a days are very much aware and they knew the fact that the university scientists are more literate, more responsible and they provide the research based and logical information to the farmers. The kinnow growers/farmers might have approached the university scientists only when the DHO/HDO recommended the kinnow growers to the university scientists to seek certain specific information regarding the crop because within the discipline they have got crop-wise specialization after making a deep and continuous research. This may also be one reason that the farmers derived maximum satisfaction from university scientists. Secondly, the farmers might have visited the university simply for the sake of soil and water testing which is compulsory feature before raising an orchard and during their visit for the above mentioned simple reason, they might have contacted the scientists who have got specialization on this aspect and are capable of giving complete information to the best satisfaction of the farmers.

Ansari and Singh (2005) found that agriculture scientists, demonstration, television and village level workers were recognized as the most credible sources of information among televiewer farmers. Where as agriculture scientists, progressive farmers, demonstration,

friends and relatives were considered as the credible sources of farm information among non-viewer farming group.

Om-Prakash and Katiyar (2007) conducted a study to determine the communication behaviour of farmers in watershed and non-watershed areas in Bundelkhand region of Madhya Pradesh, India. Results showed that major sources of communication utilized by the farmers in watershed areas were agricultural scientists (76%) followed by soil conservation officers (68%), whereas in non-watershed areas, major sources of communication were sarpanch (53%), and progressive farmers (46%).

Almost an ideal situation would be when the sources providing high level of satisfaction should also be highly placed on the ladder of trustworthiness scale. The findings clearly revealed that the sources which topped from the point of view of level of satisfaction were also placed on top from the point of trustworthiness but input dealers and the non-official change agents were on the bottom both from the point of view of level of satisfaction and trustworthiness. In this way an ideal situation has been found. There was only one source of information i.e. Radio which provided high level of trustworthiness but was placed at the lowest rank from the point of view of satisfaction. This might be because of the fact that radio now a days has become obsolete due to the availability of other advanced sources of information like television, cyber communication (internet facilities). Moreover, the farmers might not be getting the specific information on kinnow crop from the radio.

Mehta *et al.* (1996) concluded that radio which topped the ladder from the point of view of level of satisfaction was fifth from the point of view of trustworthiness and the fellow farmers which were on the bottom from the point of view of level of satisfaction were placed at the top form the point of view of trustworthiness by the cotton growers.

Regarding communication gap which is the main objective of the study, it is to be reported that a large communication gap between the respondents and the university scientists might be due to reluctance of the farmers to come to the university for seeking information off and on and on the other side the responsibility of the transfer of technology at the grass root level was of the department of horticulture and not of the university scientists. Moreover, the university scientists do not have any infrastructure at the village level for the transfer of technology. After a deep probing, the common feeling prevailing among the farmers was that it was difficult for them to contact the university scientists as and when needed. Further, most for the farmers reported that university itself is a very big organization and the farmers did not know to whom to consult for a particular problem. The narrow communication gap in case of the input dealer and DHOs might have been due to the input providing function of these sources and their easy availability to the farmers as and when

needed. However, the largest communication gap of 76.67 was found in case of radio among all the sources of information followed farm literature with a communication gap of 65.00, respectively. Radio and farm literature with largest communication gap may be due to fact that these are the two sources which do not provide any scope for the feedback, thus putting the farmers at loss in seeking clarifications on the point of doubts/incomplete massage.

Mehta *et al.* (1996) further revealed that there exists a wide communication gap of 44.90 % when all the extension agents are taken into account. However, the gap was quite low in case of input dealers, ADOs and non-official change agents. Jahagirdar and Balasubramanya, (2008) revealed that almost three-fourth majority i.e.76 per cent of the government extension personnel were found in 'medium communication behaviour' category.

While establishing the relationship between socio-personal traits of the farmers and their communication behaviour, it was found that: Caste of kinnow growers showed a negative and significant correlation with input dealers. Education had positive and significant correlation with university scientists and cyber communication. The type of family was not having any kind of correlation with any of the sources of information. The change proneness of the farmers showed a significant and positive correlation with DHO/HDO and highly significant positive relationship with university scientists. The socio-economic status of the farmer also showed a positive and significant correlation with university scientists but negative correlation with fellow farmers.

The above results are obvious, because the higher caste farmers do not consider ‘input dealers’ a reliable source of information and therefore did not seek any information on kinnow cultivation. The well educated farmers consider university scientists a more reliable source and therefore seized to opt for input dealers as the source of information. Further the kinnow growers with high socio-economic status and high degree of change proneness rely more on university scientists and discarded the fellow farmers as the source of information. This trend appears to the natural because the affluent farmers had batter access to the university scientists and a good risk bearing capacity which is involved in the change proneness. Singh and Tyagi, (1992) noticed that the communication behaviour of farmers increased significantly with increase in the land holding size and nearly 50 per cent of the respondents had medium communication behaviour whereas low and high communication behaviour was equally shared by the remaining respondents.

Maraddi and Verma (2003) conduct a study on cotton production technologies in Malaprabha Command Area. Results showed that that more than half of the respondents had medium level of knowledge. Among the independent (background) variables that had positive and significant relationship with the knowledge level of recommended practices of

cotton crop are: education; material possession; farm power; social participation; family education; land holding; extension contact; mass media exposure; and risk orientation of the respondents.

The major constraints in using radio as a source of information, as may be seen from the table, experienced by the farmers were that most of the programmes broadcasted from the radio and television did not relate to their farming system. Whereas the validity of the programme contents through radio or television is a serious matter and should be an eye opener for the planners of the radio and television programmes for farmers, the impossibility of interpersonal communication is the built in limitation of these two sources except in certain cases where a provision is made for the audience for the telephonic conversation. A good number of studies are available to indicate the suitable timings of broadcast/telecast. Such studies should provide a feedback to the planners in deciding the timings. However, this might differ from region to region and during different crop seasons. A thorough analysis on this aspect is called for. Krishnamurthy *et al.* (2009) revealed that lack of leisure time was the major problem encountered by majority of the farmers in listening and viewing the farm programmes regularly on radio. Regarding the suggestions, most of the respondents suggested to increase the time of the farm programmes. The above finding is in conformity with the findings of Kamath (1973).

Mishra, (2008) found that radio was most popular medium for agricultural information among farmers but Inability to read, inability to subscribe, lack of time, poor supply of electricity and adverse affect on children were the major factors responsible for less utilization of mass media by the farmers. Usman *et al.* (2008) found that lack of focus on citrus in television and radio broadcasts was perceived to be the topmost information related problem faced by citrus growers.

Constraints regarding the use of cyber communication were found to be the ‘poor knowledge about use of this source’ and ‘using this source is costly’ because the ordinary farmers have no access to computer and to purchase a computer is very costly affair for them. These constraints can be tackled by providing computer with internet facility to the farmers at some common places in the villages, thereby also organizing trainings for the farmers, on computer applications.

Regarding constraints in the use of farm literature and magazines, the farmers complained about untimeliness of the farm journal, the high cost of farm journals and the excessive literature which is either not relevant to their farming system or which cannot be practically utilized. The above constraints can very easily be manipulated to make the farm journals and literature more useful to the farmers. Timeliness can be ensured, cost can be reduced by subsidizing and providing of location specific information only of practical utility

could take care of other two constraints. One such magazine published from hmy own university which has been able to overcome all the above four constraints given by the farmers. The magazine is ‘Haryana Kheti’ a monthly Hindi farm journal published by the CCS Haryana Agricultural University which is subscribed by as many as 5000 farmers and extension workers.

Manjunath and Balasubramanya, (2002) observed that majority of the respondents reported that irregularity of the farm magazines and non-availability of farm magazines in rural areas as the most important reasons coming in the way of reading and better utilization of farm magazines.

The important constraints faced by the kinnow growers in utilizing DHO/HDO as the source of information were regarding the availability of farmers, poor knowledge of horticulture and a distant location of their office. HDO has a fixed programme of work and his headquarter has been fixed at the block level but it seems that the farmers are not aware of this fact. Moreover, the HDO might be contacting only the influential person and village leaders and not the ordinary farmers. The other constraints faced by the farmers also become irrelevant after the trainings have been made an important part and pre-requisite of HDO’s curriculum and he is expected to be up to date and know the subject matter thoroughly. However, the hindrances implementing the programme should be removed by the higher officials of the horticulture department.

The farmers came out with seven important constraint regarding university scientists but the important among were that it was difficult to visit the university then it was difficult to contact the scientist, a few scientists have expertise on kinnow crop and they are asked to contact different scientists for a simple problem. It is obvious that the constraints reported above are the built in constraints, particularly, because it is era of specialization and in such a higher seat of learning and research, the scientists specialize not at the level of its discipline but at the level of the crop within a discipline. As a result of it a ‘wheat pathologist’ may not be able to answer pathological problems of ‘gram’ or ‘bajra’. Obviously, the farmers will have to contact different scientists for different problems. The main job of scientists is to conduct research and therefore, they may not be available easily to the farmers.

The farmers when happened to be in contact with the input dealers faced the following constraints: that input dealers provide information only on the plus points of the product they sell that also when they purchase something from them, it was very difficult to believe the input dealers and the information provided by them was not adequate and complete. The above reasons were the obviously expected one, in fact the input dealers are not change agents but only good salesman and they could not act as change agents as hardly anyone of them is expected to be trained in subject matter and the art of communication.

‘Non -availability of quality inputs’ ranked at the top and the 'high cost of insecticides/ pesticides and fungicides' was considered as next commonly experienced

constraint. These findings derive support from the study of Mehta, (1982) and Singh *et al.* (1999). It is therefore, suggested that constraints like, 'non -availability of quality inputs', 'high cost of insecticides/ pesticides and fungicides' and adulterated sub-standard inputs' can be taken care of with meticulous planning and by providing technical support from the experts to the farmers through organizing extension programme etc.

'Inadequate weed control in kinnow production' ranked first and the problem of 'low production due to unfavorable weather condition' ranked second. The constraints like 'poor drainage facility', 'inadequate training and pruning' and 'inter-cropping' were ranked Illrd, IVth and Vth, respectively, as perceived by the kinnow growers. These findings are in conformity with the study of Sharma and Gupta (1992) and Singh *et al.* (1999). The farmers should be properly guided about the technical aspects of these problems and training should be given at village level in order to meet the constraints by the respondents.

The 'absence or scarcity of agro-processing units' was perceived as most important constraint and the problem of 'lack of marketing education' was next to it. The constraints 'lack of knowledge of current advances for kinnow production' was considered the most serious constraint by the kinnow growers and the problem of 'lack of guidance for controlling insect pests/diseases and application of pesticides and fungicides' was ranked second in order of importance. All these constraints can be minimized by providing trainings to the farmers and by distributing literature regarding technical know-how to the farmers as it requires specialized skills in certain operations. The facility of modern communication technology can also play an important role in mitigating these constraints. These findings derive support from the study of Tiwari and Kapoor (1988), Shehrawat and Kharub (1993) and Dass (1996).

## CHAPTER – VI

## SUMMARY AND CONCLUSION

Agriculture is a way of life, a tradition that, for centuries has shaped the thought, the outlook, the culture and the economic life of people of India. The success of India’s agriculture is attributed to a series of steps that led to availability of farm technologies, which brought about dramatic increase in agriculture growth. Almost 2/3rd of Indian population and our rural population which is a majority of total population completely depend on Agriculture. India is the second largest producer of Fruits after China, with a production of 44.04 million tonnes of fruits from an area of 3.72 million hectares. Citrus occupies a prominent position in fruits industry of the world. Interestingly, India is the sixth largest producer of citrus fruits accounting for 5 per cent of global production. Before the introduction of kinnow, citrus fruit was not a major crop. Kinnow is refreshing, scented and

mouth-watering because of its taste, its ease of peeling and juice content unequalled by any other citrus fruit anywhere else in the world.

In Haryana state, Sirsa is the most famous district for producing the kinnow crop with the output of this citrus fruit likely to touch 40,000 metric tones this year. The state government has recently started a kinnow grading and packing plant at Abubshahar and would soon set up food processing plants in Hisar and Sirsa districts. The improved technologies for maximizing kinnow production are being made available to farmers through different types of extension agencies. Even then the yield of kinnow has not increased to a considerable extent. One of the important reasons for low yield of kinnow may be the partial adoption/non-adoption/different adoption behaviour in respect of the recommended practices because of the communication gap. It is well known that there exists a wide gap in what the extension workers advocate and what the farmers adopt. Therefore, this calls for a through probing of the possible constraints responsible for communication gap, which might be hindering the adoption of recommended operations to fullest possible extent. With this idea in mind, the present study was carried with following objectives:

1. To study the communication behaviour of kinnow growers.
2. To assess the constraints in kinnow production.
3. To establish relationship between socio-personal traits of kinnow growers and their communication behaviour.

For the present study, Sirsa and Hisar districts of Haryana state were selected purposively because these two districts of Haryana state have higher number of kinnow growers and the maximum area under kinnow production. Two blocks from each district were selected purposively. Further, two villages from each block were selected by using the simple random sampling technique. Keeping in view the number of kinnow growers, a manageable sample size of 10 farmers from each village were randomly selected. Thus, a total number of 80 farmers constituted the sample for the purpose of the study. The major thirst of the study was upon the communication behaviour of the farmers in relation to getting information for scientific cultivation of kinnow crop.

The findings revealed that majority of the farmers were from middle aged group and from the dominant caste, having high socio economic status and more than 10 acres of land, educated up to high school, having farming as their main occupation and they mainly came from joint family setup. They were found to be from the high income group and medium category of change proneness. As far as the use of information sources, credibility as well as trustworthiness of information sources as perceived by the kinnow growers is concerned, the data revealed that the DHO and its officials were the most preferred source for the almost all the operations of kinnow cultivation with a maximum credibility and trustworthiness, the input dealers and non official change agents were on the bottom as far as their credibility and trustworthiness was concerned. The DHO and its officials being the first preference of

kinnow growers regarding information on the kinnow production practices was because of the fact that the farmers used to meet them frequently. The findings further revealed that 30 per cent of the kinnow growers took discussion on their own regarding selection of site, land preparation, irrigation and for intercropping. This might be because, the farmers considered these operations of kinnow growing, quite a easy task

The university scientists topped the list of information sources from the point of view of level of satisfaction derived by the kinnow growers followed by fellow farmers/relatives/friends, television and the DHO/HDO on the 2nd, 3rd and 4th rank, respectively. There appeared a positive view point of the farmers towards the university scientists because the farmer now a days are very much aware and they knew the fact that the university scientists are more literate, more responsible and they provide the research based and logical information to the farmers.

Regarding communication gap which is the main objective of the study, it is to be reported that a large communication gap of 46.75 between the respondents and the university scientists might be due to reluctance of the farmers to come to the university for seeking information off and on and on the other side the responsibility of the transfer of technology at the grass root level was of the department of horticulture and not of the university scientists. The narrow communication gap in case of the input dealers (17.75) and DHO/HDOs (18.50) might have been due to the input providing function of these sources and their easy availability to the farmers as and when needed. However, the largest communication gap of 76.67 was found in case of radio among all the sources of information followed by farm literature with a communication gap of 65.00, respectively. Radio and farm literature with largest communication gap may be due to fact that these are the two sources which do not provide any scope for the feedback, thus putting the farmers at loss in seeking clarifications on the point of doubts/incomplete massage.

While establishing the relationship between socio-personal traits of the farmers and their communication behaviour, it was found that: Caste of kinnow growers showed a negative and significant correlation with input dealers. Education had positive and significant correlation with university scientists and cyber communication. The type of family was not having any kind of correlation with any of the sources of information. The change proneness of the farmers showed a significant and positive correlation with DHO/HDO and highly significant positive relationship with university scientists. The socio-economic status of the farmer also showed a positive and significant correlation with university scientists but negative correlation with fellow farmers. These results were obvious, because the higher caste and well educated farmers consider university scientists a more reliable source and therefore seized to opt for input dealers as the source of information. Further the kinnow growers with high socio-economic status and high degree of change proneness rely more on university scientists and discarded the fellow farmers as the source of information.

The major constraints in using radio and television as a source of information, as may be seen from the table, experienced by the farmers were that most of the programmes broadcasted from the radio and television did not relate to their farming system. Whereas the validity of the programme contents through radio or television is a serious matter and should be an eye opener for the planners of the radio and television programmes for farmers. Constraints regarding the use of cyber communication were found to be the 'poor knowledge about use of this source' and 'using this source is costly' because the ordinary farmers have no access to computer and to purchase a computer is very costly affair for them.

Regarding constraints in the use of farm literature and magazines, the farmers complained about untimeliness of the farm journal, the high cost of farm journals and the excessive literature which is either not relevant to their farming system or which cannot be practically utilized. The above constraints can very easily be manipulated to make the farm journals and literature more useful to the farmers. Timeliness can be ensured, cost can be reduced by subsidizing and providing of location specific information only of practical utility could take care of other two constraints.

The important constraints faced by the kinnow growers in utilizing DHO/HDO as the source of information were regarding the availability of farmers, poor knowledge of horticulture and a distant location of their office. HDO has a fixed programme of work and his headquarter has been fixed at the block level but it seems that the farmers were not aware of this fact. Further, the farmers came out with seven important constraint regarding university scientists but the important among were that it was difficult to visit the university then it was difficult to contact the scientist, a few scientists have expertise on kinnow crop and they are asked to contact different scientists for a simple problem. It is obvious that the constraints reported above are the built in constraints, particularly, because it is era of specialization and in such a higher seat of learning and research, the scientists specialize not at the level of its discipline but at the level of the crop within a discipline.

The farmers when happened to be in contact with the input dealers faced the following constraints: that input dealers provide information only on the plus points of the product they sell that also when they purchase something from them, it was very difficult to believe the input dealers and the information provided by them was not adequate and complete. The above reasons were the obviously expected one, in fact the input dealers are not change agents but only good salesman and they could not act as change agents as hardly anyone of them is expected to be trained in subject matter and the art of communication.

'Non-availability of quality inputs' ranked at the top and the 'high cost of insecticides/ pesticides and fungicides' was considered as next commonly experienced constraint by the farmers and can be taken care of, with meticulous planning and by providing technical support from the experts to the farmers through organizing extension programme etc.

'Inadequate weed control in kinnow production' ranked first and the problem of 'low production due to unfavorable weather condition' ranked second. The constraints like 'poor drainage facility', 'inadequate training and pruning' and 'inter-cropping' were ranked IIIrd, IVth and Vth, respectively, as perceived by the kinnow growers.

The 'absence or scarcity of agro-processing units' was perceived as most important constraint and the problem of 'lack of marketing education' was next to it. The constraints 'lack of knowledge of current advances for kinnow production' was considered the most serious constraint by the kinnow growers and the problem of 'lack of guidance for controlling insect pests/diseases and application of pesticides and fungicides' was ranked second in order of importance. All these constraints can be minimized by providing trainings to the farmers and by distributing literature regarding technical know-how to the farmers as it requires specialized skills in certain operations. The facility of modern communication technology can also play an important role in mitigating these constraints.

# BIBLIOGRAPHY

Akanksha. 2006. Appraisal of trainings under central sector scheme "Women in Agriculture". M.Sc. Thesis (unpublished), CCS HAU, Hisar.

Anonymous. 2011. Cultivation in India. www.Ezinearticle.com.

Anonymous. 2008. NHM Guidelines, Published by the Dept. of Horticulture Haryana, 3/23.

Ansari, M.N. and Singh, A.K. 2005. Information source credibility among televiewer and non-televiewer farmers. *Journal-of-Interacademicia.* **9**(4): 606-613.

Ashutosh, Das and Basu, D. 2008. Differential training need of guava growers in two agro-climatic zones of West Bengal. *Environment-and-Ecology.* **26**(4C): 2326-2331.

Azzam, A.A. 2004. Agricultural knowledge on wheat production of graduates turned - farmers in two newly reclaimed regions of Beni-Suef Governorate. *Bulletin-of-Faculty-of-Agriculture,-Cairo-University*. **55** (3): 363-374.

Beniwal. L.S.; Godra, R.K.; Saharan, H.S.; Saini, R.S. and Goyal, R.K. 2007. Nimbuvargia Phal-Utpadan and Pakistan;Pul.

Bhaskaran, C. and Sethu Rao, M.K. 1995. Correlates of interpersonal communication behaviour of farmers in differentially progressive villages. *Indian-Journal-of-Extension-Education* **21** (3 & 4) : 16-22.

Bhattacharjee, K. 1994. Problems and prospects of oilseed production in Choota Nagpur. *Agricultural-Extension-Review* **6** (4) : 27-29.

Bolorunduro, P.I.; Iwuanyanwu, I.E.J.; Aribido, S.O. and Adesehinwa, A.O.K. 2004. Effectiveness of extension dissemination approaches and adoption levels of livestock and fisheries technologies in Nigeria. *Journal-of-Food,-Agriculture-and-Environment* . **2** (1): 298-302.

Chand, M. 1995. Influence of personal traits on communication behaviour of lab to land programme beneficiaries in Himachal Pradesh. *Agricultural-Science-Digest.* **15** (1): 19-22.

Chandra, N.; Bisht, K.K.S. and Prakash, V. 1996. Constraints in adoption of soybean technology by the hill farmers of U.P. *Annals-Agricultural-Research* **17** (4) : 342-346.

Chianu, J.N.; Mairura, F.; Ekise, I. and Chianu, J.N. 2008. Farm input marketing in western Kenya: challenges and opportunities. *African-Journal-of-Agricultural-Research.* **3** (3): 167-173.

Dass, Rameshwar. 1996. Sorghum production technology : Technological gap and constraints analysis with special reference of Haryana. M.Sc. Thesis (Unpublished), CCSHAU, Hisar.

Desai, B.R., Girase, K.A. and Patil, R.P. 1997. Constraints faced by contact farmers in adoption of new technology. *Agricultural-Extension-Review-March,* 1997. pp. 14-16

Deshmukh, K.A. and Chole, R.R. 2003. Social stratification and communication behaviour of farmers in progressive and non-progressive villages. *Journal-of-Research.* **31** (2) : 75-79.

Devi, Nirmala, M. and Manoharan, M. 1998. Constraints encountered by guava growers. *Journal-of-Extension-Education* **9** : 2.

George, P.R.; Dinesh, C.N.; Shibu Simon and Balakrishnan, P.P. 2009. Socio economic profile of rural women and the role of animal husbandry intervention in a suicide affected district of Kerala. *Journal-of-Human-Ecology.* **27**(1): 41-44.

Gill, G. 1996. Adoption gap between farmers' practices and recommended practices of PAU for layout and management of litchi orchards in Gurdaspur district of Punjab. M.Sc. Thesis (Unpublished), PAU, Ludhiana.

Gill, G. 2009. Kinnow farming attracting punjab farmers. hptt//www.thehindu.com.

Jahagirdar, K.A. and Balasubramanya, A.S. 2008. A study on feedback behaviour of extension personnel of Karnataka State Department of Agriculture. *Karnataka-Journal-of-Agricultural-Sciences.* **21**(1): 89-91.

Jaiswal, A.N.; Lanjewar, D.M.; Murkute, A.A. and Dorkar, A.R. 2002. Reasons for partial adoption of soybean production technology. *Journal-of-Soils-and-Crops.* **12**(2): 335-337.

Jana, H.L. 2000. Knowledge and adoption of recommended plant protection practices of paddy growers in West Bengal. M.Sc. Thesis (Unpublished) Deptt. of Extension Education, CCSHAU, Hisar.

Jha, P.K. and Chauhan, J.P.S. 1999. Correlates of interpersonal communication behaviour of dairy farmers in North Bihar. *Journal-of-Dairying-Food-and-Home-Science* **18** (1) : 55-57.

Kamath, M.G. 1973. Television and social change: role of television in agriculture. *Ag. Communication no*. **3** pp. 19-22.

Kashid, R.S.; Chavai, A.M. and Tarde, V.J. 2007. Use of "Marknet" in dissemination of market information. *Journal-of-Maharashtra-Agricultural-Universities.***32** (2): 288-289.

Khanderkar, N. and Khanderkar, P. 1995. Communication patterns among farm women in live stock enterprise. *Indian-Journal-of-Animal-Sciences.* **65** (1) : 91-95.

Krishnamurthy, A.T.; Nataraju, M.S. and Naik, S.C. 2009. Study on problems and suggestions of audience towards farm broadcast and telecast programmes. *Mysore-Journal-of-Agricultural-Sciences.* **43**(1): 122-124.

Latha, P.S.2002. Perceived training needs of farm women for cotton production technology in Andhra Pradesh. M.Sc. Thesis (unpublished), CCS HAU, Hisar.

Lodhi, T.E.; Sher, Muhammad and Muhammad, Saifullah. 2007. Communication gap regarding plant protection, harvesting and post-harvest technologies among the mango growers. *Pakistan-Journal-of-Agricultural-Sciences*. **44**(4): 654-659.

Magd, Z.H.H. 2000. Attitude of female extension agents (F.E.A.) towards working with rural women in the area of crop production. *Bulletin-of-Faculty-of-Agriculture,-University-of-Cairo*. **51** (3): 267-282.

Mahmud, M.A.; Islam, M.S. and Mahmud, M.T. 2002. Farmers' attitude towards hybrid rice cultivation in Goalanda Upazila under Rajbari District. *Bangladesh-Journal-of-Training-and-Development.* **15**(1/2): 47-52.

Mallareddy, R. and Kumar, H.S.V. 1990. Problems and prospects of marketing of sweet orange in Prakasam District Andhra Pradesh. *Karnatka-Journal-of-Agricultural-Sciences* **6** : 41-44.

Manjunath, L. and Balasubramanya, A.S. 2002. Problems of readers of kannada farm magazines and their suggestions. *Karnataka-Journal-of-Agricultural-Sciences.* **15**(4): 740-742.

Maraddi, G.N. and Verma, N.S. 2003. Knowledge of farmers on cotton production technologies in Malaprabha Command Area. *Karnataka-Journal-of-Agricultural-Sciences.* **16**(1): 72-76.

Mehta, S.K., Sardana, P. and Mehta, V.P. 1996. Communication behaviour of cotton growing farmers in Haryana. *Crop Research*. **11**(1): 120-127.

Mehta, Chandan 1982. Mangerial practices and problems of mushroom farms: A study MBA dissertation, PAU, Ludhiana.

Mishra, Y.D. 2008. Factors affecting utilization of mass media by the farmers. *Pantnagar-Journal-of-Research*. **6**(1): 173-175.

Mohan, B., Subbanarraiah and Vinkata Narainah, P. 1991. Citrus fruit cultivation in Andra Pradesh – A study. *Agricultural- Situation-in-India*. **22** : 77-79.

Moulik, T.K. 1965. A study of predictive values of some factors of adoption of nitrogenous fertilizers and the influence of source on the adoption behaviour. Ph. D. Thesis (unpublished), IARI, New Delhi.

Muhammad, Saifullar; Sher, Muhammad and Lodhi, T.E. 2007. Communication gap regarding mango production technology among the farmers of tehsil Muzaffargarh. *Pakistan-Journal-of-Agricultural-Sciences.* **44** (4): 670-673.

Om Prakash and Katiyar, V.S. 2007. Impact of communication behaviour of farmers of watershed and non-watershed areas in Bundelkhand region. *Range-Management-and-Agroforestry*. **28**(2B): 384-385.

Oyekunle, O.; Apantaku, S.O.; Adebayo, K. and Azeez, T.A. 2007. Farmers' use of extension guide as a medium of agricultural information in Ogun State, Nigeria. *ASSET-Series-C:-Humanities-and-Social-Sciences.* **2** (1): 68-77.

Pant, R.P. and Ahlawat, Y.S. 1998. Partial characterization of a filamentous virus associated with ringspot disease of citrus. *Indian-Phytopathology.* **51**(3): 225-232.

Passos, O.S.; Cunha, Sobrinho, A.P. da and Soares, Filho, W. dos, S. 2002. Sour lime 'Tahiti': an alternative for citrus production in the Brazilian North-east. *Documentos-Embrapa-Mandioca-e-Fruticultura.* **101**: 20 pp.

Patel, V.M. 1996. Emerging problems of agricultural marketing (A case study of Banana in Gujrat) pp. 104 Research study Agro Economics Research Center, Sardar Patel University.

Patnam, V.N.; Shinde, V.D. and Bhalerao, V.S. 2009. Association between self esteem of rural teenage girls and their family background variables. *Asian-Journal-of-Home-Science*. **4**(1): 81-85.

Paul, N.; Panjabi, N.K and Paul, S. 2001. Constraints of mushroom cultivation. *Agricultural-Extension-Review.***13** (2): 26-31.

Randhawa, R. 1991. Communication behaviour of rural women in relation to household message through selected print media. Ph.D. Dissertation, PAU, Ludhiana, India.

Sakiliba, M.; Bridier, B. (ed.) and Rawski, C. 2000. Constraints and strategies related to the marketing and quality of transformed products : Fruits and vegetables in Mali. Organizations locales et appui aux petites enterprises agroalimentaries en Afrique de I Quest et du Centre : Actes de I atelier, Dakar, Senegal, 20 novembre-3 decembre, 1999, pp. 127-130.

Shaikh, A.M.; Bajaj, S.S. and Gondkar, P.P. 1993. A study of adoption of custard apple technology by the growers. *Maharashtra-Journal-of- Extension-Education.* **12** : 55-58.

Sharan, S.P. and Singh, V.K. 2002. Marketing of kinnow in Rajasthan. *Agricultural-Marketing.* **45**(3): 2-4.

Sharma, S.R. and Gupta, Yesh (1992). Mushroom production in India: A broad perspective. *Agricultural- Science-India.* 4: 825-834

Sharma, V. 1996. Extent and level of adoption gap in the package of practices for maize crop in Kandi area of Hoshiarpur (Punjab). M.Sc. Thesis, P.A.U., Ludhiana.

Sharma, R.D. and Gurjeet, Kaur. 2004. Strategy for customer satisfaction in rural banks - a case study of Shivalik Kshetrya Gramin Bank, Hoshiarpur. *National-Bank-News-Review-Mumbai,* **20**(2/3): 74-94.

Shehrawat, P.S. and Kharab, R.K. 1993. Adoption of Improved Agricultural Technology for cotton crop in Hisar district. *Parasarika-Rajasthan-Journal-of-Extension-Education.* **3** (1): 38-40.

Shrivastava, R. and Shrivastava, K.K. 1995. Analysis of problems faced by the farmers in adoption of control measures. *Journal-of-Agricultural-Research.* **3**(3): 167-173.

Shrivastava, R.; Shrivastava, K.K.; Sarkar, J.D. and Shrivastava, P. 2010. Analysis of problems faced by the farmers in adoption of control measures of diseases of rice. *Journal-of-Inter academicia*. **14** (2): 260-266.

Singh, D. and Dhillon, D.S. 2006. Communication behaviour of agricultural development officers of Punjab. *Annals-of-Biology*. **22**(1): 67-74.

Singh, K. 1997. The potential and problems for Horticulture Crops:in Haryana. In: Course manual agrotechniques in Horticulture Crops, Dec 15-30. *Academy of Agriculture research and education management.* CCS HAU, Hisar., pp1-13.

Singh, K.N. 1983. Models of extension and communication with farmers. *Journal-of-rural-development*. **6** (2):187-212.

Singh, R. and Tyagi, K.C. 1992. A study of the communiaiton behaviour of dairy farmers. *Indian J. Dairy Sci.* **45** 98) : 405-408.

Singh, S. 1999. Technology gap in adoption of sunflower (*Helianthus annus)* cultivation. M.Sc. Thesis (Unpublished), Department of Ext. Edu., CCSHAU, Hisar.

Singh, Sube., Makhija, V.K. and Singh, S. 1999. Knowledge and adoption of mushroom cultivation in Haryana. *Mushroom-Research.* **8**(2): 53-56.

Singh, A.K.; Mishra, O.P. and Kumar, M. 2001. Communication strategy for tribal development in India: a blend of modern and indigenous communication media. *Indian-Journal-of-Social-Development.* **1**(1): 127-133.

Singh, R.S. 2010. Kinnow export target**.**hptt//www.thehindu.com.

Singh, S.P. and Dalal, R.S. 2006. Extension contact and mass media exposure among buffalo owners. *Indian-Journal-of-Dairy-Science.* **59**(3): 191-195.

Sivanarayana, G.; Reddy, P.R. and Reddy, T.B. 2002. Training needs and sources of information utilised by the Agricultural Extension Officers (AEOs) of Warangal District. *Journal-of-Research-ANGRAU.* **30** (1): 101-105.

Tahir Ali. 2005. Reducing post harvest losses of citrus fruits in Pakistan through effective marketing practices: An overview, *International-Journal-of-Biology-and- Biotechnology*. **2**: 801-805.

Tiwari, S.C. and Kapoor, Pankaj 1988. mushroom cultivation: An economic Analisis. Mittal Publication, Delhi.

Trivedi, G. 1963. Measurement and analysis of socio-economic status of rural families. Ph.D thesis (unpublished). IARI, New Delhi.

Usman, Ghafoor; Sher, Muhammad and Mehmood Ch, K. 2008. Constrains in availability of inputs and information to citrus (Kinnow) growers of Tehsil Toba Tek Singh. *Pakistan-Journal-of-Agricultural-Sciences.* **45**(4): 520-522.

www. Economictimesindia.com.2011.

# ANNEXURE

## DEPARTMENT OF EXTENSION EDUCATION
## COLLEGE OF AGRICULTURE
## CCS HARYANA ARGICULTURAL UNIVERSITY

## INTERVIEW SCHEDULE

**Title of the Research: "Communication Gap and Constraints in Kinnow Production Technology"**

**S. No…… Date……. Name of Farmer…… Father's Name ……..**

**Village…….. Block …….Tehsil ……District……. Age……**

### PART I

### Background Information

**1. Socio-economic status**

**1.1) Caste**

| | | |
|---|---|---|
| a) | Schedule Caste | (1) |
| b) | Lower Caste | (2) |
| c) | Artisan Caste | (3) |
| d) | Agriculture Caste | (4) |
| e) | Prestige Caste | (5) |
| f) | Dominant Caste | (6) |

**f).2) Occupation**

| | | |
|---|---|---|
| a) | Labour | (1) |
| b) | Caste Occupation | (2) |
| c) | Business | (3) |
| d) | Independent Profession | (4) |
| e) | Cultivation | (5) |
| f) | Service | (6) |

f).3) **Education**

| | |
|---|---|
| a) Illiterate | (0) |
| b) Can read only | (1) |
| c) Can read and write | (2) |
| d) Primary | (3) |
| e) Middle class | (4) |
| f) High school | (5) |
| g) Graduate and above | (6) |

f).4) **Social Participation**

| | |
|---|---|
| a) Member of non- Organization | (1) |
| b) M ember of one Organization | (2) |
| c) Member of more than one organization | (3) |
| d) Office holder | (4) |
| e) Distinctive Feature | (5) |

e).5) **Land Holding**

| | |
|---|---|
| a) No land | (0) |
| b) Less than one area | (1) |
| c) 1-5 acre | (2) |
| d) 5-10 acre | (3) |
| e) 10-15 acre | (4) |
| f) 15-20 acre | (5) |
| g) More than 20 acre | (6) |

**g).6) Farm power**

| | |
|---|---|
| a) No draft animal | (0) |
| b) 1-2 draft animal | (1) |
| c) 3-4 draft animal | (2) |
| d) Camel only | (3) |
| e) Tractor | (4) |

e).7) **House**

| | |
|---|---|
| **a) Type** | |
| 1. No house/hut | (0) |
| 2. Kachha | (1) |
| 3. Mixed | (2) |
| 4. Pacca | (3) |
| **b) Number** | |
| 1. One house | (1) |
| 2. Two house | (2) |
| 3. Three or more than three | (3) |

**3.8) Material Possession**

| | |
|---|---|
| 1) Cycle | (1) |
| 2) Bullock Cart | (1) |
| 3) Radio | (1) |
| 4) Chairs | (1) |
| 5) Improved Agril. Implements | (2) |
| 6) T.V. | (2) |
| 7) Refrigerator | (2) |

| | |
|---|---|
| 8) Tokka | (3) |
| 9) Any other Vehicle | (3) |

**3.9) Family**

| | |
|---|---|
| **Type** | |
| 1. Nuclear | (1) |
| 2. Joint | (2) |
| **Size** | |
| 1. Up to 5 members | (1) |
| 2. Above 5 member | (2) |
| 3. Distinction Features | (3) |

**3.10) Family income**

| | |
|---|---|
| a) Less than Rs. 5000 | (1) |
| b) Rs. 5000-10,000 | (2) |
| c) More than Rs. 10,000 | (3) |

**2) Communication Sources** **Extent of Use**

| **Sources** | **Mostly (3)** | **Oftenly (2)** | **Sometime (1)** | **Never (0)** |
|---|---|---|---|---|
| a) Radio | | | | |
| b) T.V. | | | | |
| c) Magazine/ newspaper | | | | |
| d) Other printed circulated material | | | | |
| e) Contact with any HDO | | | | |
| f) Contact with any Extension Worker Agri. | | | | |
| g) Any other sources | | | | |

**3) Irrigation Source**

| | |
|---|---|
| i) Tube well | (1) |
| ii) Canal | (2) |
| iii) Both | (3) |
| iv)None | (0) |

**a) Irrigation of Orchard/fruit Plants?**

**i) Through Drip Irrigation**

**ii) Through Flood Irrigation**

| **4) Change Proneness** | **Most like** | **Least like** |
|---|---|---|
| 1) I try to keep my self up t with information on new farm practices, but that does not mean that I try out all the new methods on my farm(s). | | |
| 2) I feel restless till I try out a new farm practices, I have heard about.<br>3) They talk of many new farms practices these days but who knows if they are better than the old ones. | | |
| B) 1) From time to time I have heard of new farm practices and I have tried out most of them in last two years. | | |
| 2) I usually wait to see what results my neighbors obtain before I try out the new farm practices. | | |
| 3) Some how I believe that traditional ways of farming are best. | | |
| C) 1) I am cautions about a new practices | | |
| 2) After all our forefathers were wise on their farming practices and I do not see any reason for changing the old methods. | | |
| 3) Often new farm Practices are not successful, however If they are promising I would surely like to adopt them. | | |

## PART II

### Communication Behaviour

1. When did you established your orchard_____ (month and year).

2. Where from you got the very first information about the following Kinnow practices and also tell that to what extent you felt satisfied with this information.

| **S r . no** | **Practices** | **Source** | **Level of satisfaction** | | |
|---|---|---|---|---|---|
| | | | **Most Satisfied (3)** | **Satisfied (2)** | **Least satisfied (1)** |
| 1. | Selection of site | | | | |
| 2. | Land preparation | | | | |
| 3 . | Orchard planning | | | | |
| 4. | Pit preparation for planting | | | | |
| 5. | Time of planting | | | | |
| 6. | Planting material | | | | |
| 7 . | Intercropping | | | | |
| 8. | Application of fertilizer | | | | |
| 9. | Irrigation | | | | |
| 10. | Agronomic practice | | | | |
| 11. | Plant protection | | | | |
| 12. | Training and Pruning | | | | |

### Extension contact

1. How frequently do you contact with the following sources of information.

| **S r . no.** | **Name of the sources** | **Interval of the meeting** | | | | |
|---|---|---|---|---|---|---|
| | | **Once in a month (5)** | **Once in 3 months (4)** | **Once in 6 months (3)** | **Once in a year (2)** | **After a year (1)** |
| 1. | DHO/HDO | | | | | |
| 2. | University scientist | | | | | |
| 3. | Non-official change agent | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4. | Input dealers | | | | | |

2. Keeping in view all the sources of information, please tell that for obtaining information on kinnow and general which source you think is more credible, please indicate your ranking 1,2,3,4&5.

| | |
|---|---|
| 1. | 5 |
| 2. | 4 |
| 3. | 3 |
| 4. | 2 |
| 5. | 1 |

3. Radio: Do you own radio?

**i. How frequently you listen to different farm Programmes broadcast on Radio?**

| **Sr. No.** | **Name of the programme** | **Frequency of listening** | | | |
|---|---|---|---|---|---|
| | | **Daily (3)** | **Mostly (2)** | **Sometimes (1)** | **Never (0)** |
| 1 | Kisan Vani | | | | |
| 2 | Agriculture Based (CRS HAU) | | | | |
| 3 | Phone in Karya Karam | | | | |

**ii. How much useful these programmes have been to your farming?**

| **Sr. No.** | **Name of the programme** | **Usefulness** | | |
|---|---|---|---|---|
| | | **Most useful (3)** | **Useful (2)** | **Least Useful (1)** |
| 1 | Kisan Vani | | | |
| 2 | Agriculture Based (CRS HAU) | | | |
| 3 | Phone in Karya Karam | | | |

4. Television:

a) How frequently you have been viewing the "Krishi Darshan" Programme?

Daily(3)/ Mostly(2)/ Sometimes(1)/ Never(0)

b). How much useful the programme has been to your farming?

Most Useful(3)/ Useful(2)/ Least Useful(1)

c) Any other programme related to agriculture which you have been viewing? Yes/No

i). If yes, then name of the programme.

5. Cyber Communication:

a) Are you using the Cyber Communication? Yes/No

If yes, then name of the Cyber Communication.

i). Internet Surfing (3)

ii). SMS (2)

iii). E-mail (1)

6. Literature:

a). How frequently you read news related to agriculture?

Daily (3)/ Mostly (2)/ Sometimes (1)/ Never (0)

b). Do you subscribe any farm magazine?

Yes (3)/No (0)

c) If yes, then name of the subscribed magazine.

d). How much useful has been the information from this magazine to you?

Most Useful (3)/ Useful (2)/ Least Useful (1)

7. Trustworthiness

**Keeping in view the following sources of information, please tell how trustworthy these are:**

| **Sr. No.** | **Name of the Source** | **Level of the trustworthiness** | | | |
|---|---|---|---|---|---|
| | | **Maximum trustworthy ( 4)** | **Trustworthy(3)** | **Somewhat trustworthy (2)** | **Least trustworthy (1)** |
| 1 | DHO/HDO | | | | |
| 2 | University scientist | | | | |
| 3 | Radio | | | | |
| 4 | Television | | | | |
| 5 | Cyber communication | | | | |
| 6 | Fellow farmers/ relatives/ friends | | | | |
| 7 | Agricultural magazines/literature | | | | |
| 8 | Non-official change agents | | | | |
| 9 | Input dealers | | | | |

i). Do you give advice related to agriculture to your fellow farmers? Yes/No

Ii). If yes, please name three persons whom you usually advice.

a.

b.

c.

iii). While giving advice to your fellow farmers, do you fell that:

a) You have full information of the technology.

b) You think that you definitely know more than the farmer seeking your advice.

iv). Do you ever feel that before guiding the fellow farmers, you, yourself should seek more information?

a) If yes, then whom do you consult in that situation?

1. DHO/HDO
2. University scientist
3. Radio
4. Television
5. Cyber communication
6. Fellow farmers/Friends/Relatives
7. Agricultural magazine and literature
8. Non-official change agents
9. Input dealers

b) If not then why?

**Constraints in the use of information sources**

1. DHO/HDO:
   a. Not always available
   b. He has got poor knowledge of horticulture
   c. He cannot express the subject matter properly
   d. His headquarter/office is far off
   e. We do not know the person to be consulted for a particular work
   f. Whenever we pose any problem to him, he refers us to others.
2. University scientists:
   a. It is difficult to visit the university
   b. If we visit the university, it is difficult to locate the scientist
   c. We cannot comprehend their talks
   d. Only few scientists have got expertise on kinnow production.
   e. They recommend too much, which we cannot practice
   f. For simple information, we have to contact different scientists
   g. Not always available

3. Radio:
    a. Time of the programmes do not suit us
    b. We cannot understand the programme due to jargon
    c. The programmes are not useful, therefore, we do not listen
    d. The source has no provision for interpersonal communication
    e. Mostly the programmes are not related to our kinnow production
    f. The experience of the speakers do not apply to our farming system
4. Television:
    a. Time of the programmes do not suit us
    b. We cannot understand the programme due to jargon
    c. The programmes are not useful, therefore, we do not listen
    d. The source has no provision for interpersonal communication
    e. Mostly the programmes are not related to our kinnow production
    f. The experience of the speakers do not apply to our farming system
5. Agricultural magazines and literature:
    a. Subscribing to farm journal is a costly affair
    b. We do not get the journal in time
    c. Too much details are there which we cannot practice
    d. There is very little information related to our farming system
6. Cyber communication:
    a. Using this source is costly
    b. Too much details are there which we cannot practice
    c. The source has no provision for interpersonal communication
    d. Poor knowledge about using the source
7. Input dealers:
    a. They provide information, only on the plus point of the product which they sell
    b. They provide information only, when, we buy something from them
    c. It is difficult to believe the input dealers
    d. Information given by them is not adequate and complete
    e. It is very difficult to go to the city to contact tem

## PART-III

**Constraints faced in kinnow Production Technology**

You may be encountering some constraints in the production of kinnow. Indicate the degree of seriousness of each of the constraints which I shall read out to you clearly specifying whether you perceive it as very serious, serious or not so serious constraints.

| Sr. no | Constraints | Degree of seriousness | | |
|---|---|---|---|---|
| | | Very Serious (3) | Serious (2) | Not so serious (1) |
| **A. Constraints related to input** | | | | |
| 1. | Non-availability of inputs at village level | | | |
| 2. | Adulterated and sub- standard inputs | | | |
| 3. | Non-availability of seedling fertilizers, weedicides, pesticides at the required | | | |
| 4. | High price of weedicides, pesticides and Fungicides | | | |
| 5. | Non-availability of quality seedling | | | |
| 6. | Non-availability of quality seedling, fertilizers, weedicides and pesticides in required quantity | | | |
| 7. | Inadequate credit facilities for Purchase of inputs | | | |
| 8. | Inadequate fencing facilities | | | |
| **B. Constraints related to production** | | | | |
| 1. | Low production due to unfavourable weather conditions | | | |
| 2. | Lack of irrigation facilities | | | |
| 3. | Poor drainage facility | | | |
| 4. | Inadequate weed control in kinnow production. | | | |
| 5. | Inadequate training and pruning | | | |

| | | | | |
|---|---|---|---|---|
| **C. Constraints related to marketing** | | | | |
| 1. | Low price of produce | | | |
| 2. | Lack of cooperative organization for marketing of produce | | | |
| 3. | Immediate sale being perishable commodity | | | |
| 4. | Lack of procurement price by government for fruites | | | |
| 5. | Lack of storage facilites | | | |
| 6. | Lack of marketing education | | | |
| 7. | Lack of grading system | | | |
| 8. | Lack of transport facility | | | |
| **D. Constraints related to technical guidance** | | | | |
| 1. | Lack of guidance for proper marketing place | | | |
| 2. | Lack of guidance for controlling insect-pests and application of pesticides and fungicides | | | |
| 3. | Lack of guidance for seedling treatment | | | |
| 4. | Lack of knowledge of current advance for kinnow production | | | |
| 5. | Lack of guidance for fertilizer application and chemical weedicides | | | |
| 6. | Lack of guidance of post harvesting | | | |
| 7. | Lack of guidance of about propagation | | | |

## ABSTRACT

| | | |
|---|---|---|
| Title of thesis | : | **"Communication gap and constraints in kinnow production technology"** |
| Name of degree holder | : | **Moji Kamboj** |
| Admission No. | : | 2009A28M |
| Major Advisor | : | **Dr. S.K. Mehta**<br>Associate Professor,<br>Department of Extension Education |
| Title of degree | : | Master of Science in Extension Education |
| Year of award of degree | : | 2011 |
| Degree awarding University | : | CCSHAU, Hisar |
| Major subject | : | Extension Education |
| Number of pages in thesis | : | 58+v+XII |
| Number of words in abstract | : | 375 Approx. |

***Key words:*** Communication Gap, Communication Behaviour and Constraints

The present study was conducted in Sirsa and Hisar districts of Haryana state with 80 farmers as a sample for the study. The major thirst of the study was upon the communication gap and communication behaviour of the farmers in relation to getting information for scientific cultivation of kinnow crop. The findings revealed that majority of the farmers were from middle aged group and from the dominant caste, having high socio economic status and more than ten acres of land, educated up to high school, having farming as their main occupation and they mainly came from joint family setup. The DHO and its officials were the most preferred with a maximum credibility and trustworthiness. The university scientists topped the list of information sources from the point of view of level of satisfaction derived by the kinnow growers.

The farmers were having a large communication gap of 46.75 with the university scientists and a narrow communication gap of 17.75 and 18.50 with the input dealers and DHO/HDOs, respectively. However, the largest communication gap of 76.67 was found in case of radio. The higher caste and the well educated farmers considered university scientists a more reliable source and therefore seized to opt for input dealers. The major constraints in using radio and television were that most of the programmes broadcasted from the radio and television did not relate to their farming system. The important constraints faced by the kinnow growers in utilizing DHO/HDO were regarding their availability and poor knowledge of horticulture. The farmers faced difficulty to visit the university and search the scientist and they said that few scientists have got expertise on kinnow crop.

Non-availability of quality inputs, high cost of insecticides/pesticides and fungicides, inadequate weed control in kinnow production, low production due to unfavorable weather condition, absence of agro-processing units, lack of knowledge of current advances on kinnow production, lack of guidance for controlling insect pests/diseases were considered the most serious constraints by the kinnow growers. All these constraints can be minimized by providing trainings to the farmers and by distributing literature regarding technical know-how to the farmers as it requires specialized skills in certain operations. The facility of modern communication technology can also play an important role in mitigating these constraints.

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