

*Full Length Research Paper*

# **Studies on technology adoption on different extension methods for enhancing fruit production in District Pulwama of Jammu and Kashmir**

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Fruit cultivation plays a major role in the economic scenario of the Jammu and Kashmir. For sustainable fruit production, it is important to understand the technological needs of farmers and to develop such communication methodology that supports the operational aspects of fruit growers. To fill the gap between technology generation and its dissemination with the latest information tools, the present study was conducted in different villages and main campus (Krishi Vigyan Kendra) of District Pulwama of Kashmir valley for five years (2007-2011). Different trainings were conducted and knowledge on various aspects of fruit production was imparted to the farmers/farm women, rural youth and extension personnel of the Department of Horticulture of the District. Practical demonstrations (259) were the most preferred method of communication by the clientele of the Districts in adopting the technical knowledge on various aspects for enhancing fruit production followed by speech/lectures (256). Regarding the participation of the different clientele in various trainings, rural youth showed maximum interest followed by farmers/farm women. However, after providing training impact recorded was up to 95.75% which was earlier only 4.84 whereas, the full adoption of the trainings ranged between 14.29% for marketing of fruits and 78.19% integrated disease and insect-pest management.

**Key words:** Fruit cultivation, technology, marketing of fruits, integrated disease, insect-pest management.

## **INTRODUCTION**

Horticulture constitutes the core of agricultural economy of the Jammu and Kashmir state making significant contribution to agricultural gross domestic product. Fruit cultivation is one of the major sectors that has a vast potential for employment generation and alleviate the poverty in the rural as well as backward areas (Misger et al., 2001). The increased income from horticultural crops, especially fruits has resulted in diversification of cereal land to fruit land in the state. The per unit land profit from fruit crops is more than the cereals (Wani, 2008). As per Department of Horticulture the area and production of the District for the year 2007-08 was 17,664 ha and 108,097

MT while in the present year, that is, 2011-12 this was 22,435 ha and 139,979 MT which recorded an increase of 10.11 and 7.07%, respectively however, the production of fruits (fresh and dry) in the district was far below from the other districts (Anonymous, 2012). The planners in the developing countries realize that development in agriculture/horticulture could be hastened with effective use of mass media for technology transfer (Md Salleh et al., 2010). The task of extension education is accomplished by different extension methods/ media which may come under individual, group and mass contact. The information and communication technology

**Table 1.** Trainings imparted on different aspects fruit production.

I	Layout of orchards
II	Popularization of SKUAST-K released varieties of fruits
III	Rejuvenation of old orchards, raising seedlings and planting material
IV	Training and pruning
V	Integrated nutrient management
VI	Water management
VII	Use of pollinizers and pollinators
VIII	Integrated disease and insect-pest management
IX	Orchard management
X	Harvesting, grading and packaging of fruits
XI	Value addition fruits
XII	Marketing of fruits

Details of the technology imparted that is I to XII is given in the methodology section.

(ICT) methods can play a vital role in facilitating the exposure of farmers to latest available technologies for higher productivity and output levels through efficient decision support system (Sharma et al., 2011). By the last decade various information and communication technologies were used in imparting the trainings to the fruit growers of the district to increase the production and to meet the national demand for the upcoming population. Different trainings consisting of technical aspects of fruit cultivation, including agronomic practices, fertigation, pest and disease management etc., were imparted to the farmers by various means of communication/media (frontline demonstrations, result demonstrations and use of audio visual aids) and to assess which method of communication was more effective in imparting the technology.

## METHODOLOGY

The present study was conducted for five years from 2007 to 2011 and different trainings on various aspects of fruit orcharding practices were imparted to the farmers/farm women (one day training at farmers field), rural youth (three days training at farmers field and on campus, that is, at KVK) and to extension personnel of Department of Horticulture (three to five days training on campus, that is, at KVK). Different thematic areas covered for imparting training on different aspects of fruit production (Table 1).

Data on opinions and behaviour of fruits growers with respect to different methods of Information and Communication Technology viz. lecture/speech, audio-visual, Result Demonstrations and radio and television etc. were collected by means of face to face interviews and on the basis of the implementation of the given trainings at their fields. Apart from these methods of providing information farmers also facilitated themselves with knowledge through newspaper, print media and internet.

## RESULTS AND DISCUSSION

### Methods of information

Based on the sample analysis it was found that earlier

most of farmers access the knowledge through collecting information from fellow progressive farmers, relative input dealers, traders, government agricultural extension agencies and in the recent past through Krishi Vigyan Kendra primarily. The other important sources of information like newspaper, radio, television, internet, helpline telephone number were found to be least preferred sources among the farmers of the District. Sharma et al. (2011) also reported that these sources are least preferred sources of information by the farmers of District Kapurthala (Punjab) for enhancing agriculture production. In the present study, only four types of methodology were used and it was observed that the farmers participated in the demonstration/practical methods followed by speech/lectures. However, farmers were not satisfied with the type of information being transmitted through one way media like television/radio or audio-visuals or print media, but preferred two ways communication like lecture along with demonstration which was found more informative where the sample population could interact with the expert face to face. Such type of dissatisfaction regarding one way media was also reported by Pukhta et al. (2012) while imparting technical knowledge for enhancing the production level in apple crop in the valley.

As per the ICT's and desire of the farmers or participants, maximum trainings were imparted through demonstration (259) in the KVK farm or in the farmers field practically in the last five years closely followed by speech/lecture (256) and audio-visuals (185). Radio/television programmes were least (150) as the way of communication in imparting technical knowhow regarding fruit production (Table 2).

Among the different trainings imparted, maximum numbers of trainings were under the thematic area of training and pruning (88) closely followed by value addition of fruits (85) and integrated disease and insect-pest management (81). Layout of orchards, use of pollinizers and pollinators, water management, rejuvenation

**Table 2.** Trainings imparted through various methods of communication during last five years.

Technology imparted	Speech/ lecture	Audio isual	Result demonstrations	Radio and television	Total trainings
Layout of orchards	24	16	25	11	76
Popularization of SKUAST-K released varieties of fruits	18	12	15	12	57
Rejuvenation of old orchards	18	16	17	14	65
Training and pruning	27	18	29	14	88
Integrated nutrient management	17	16	20	12	65
Water management	16	16	17	17	66
Use of pollinizers and pollinators	15	20	24	12	71
Integrated disease & insect-pest management	24	18	27	12	81
Orchard management	15	15	25	10	65
Harvesting, grading and packaging of fruits	23	12	19	10	64
Value addition fruits	27	16	27	15	85
Marketing of fruits	12	10	14	11	47
<b>Total trainings</b>	<b>256</b>	<b>185</b>	<b>259</b>	<b>150</b>	

Details of the technology imparted that is I to XII is given in the methodology section.

**Table 3.** Total number of clientele participated in various trainings imparted in last five years.

Technology imparted	Farmer/farm women		Rural youth		Extension personnel		Total no. of clientele
	Total no.	Percentage	Total no.	Percentage	Total no.	Percentage	
I	103	31.21	146	44.24	81	24.54	330
II	109	35.97	126	41.58	68	22.44	303
III	100	34.24	118	40.41	74	25.34	292
IV	115	33.24	164	47.40	67	19.36	346
V	111	34.36	147	45.51	65	20.12	323
VI	101	31.46	156	48.60	64	19.94	321
VII	109	33.03	157	47.57	64	19.40	330
VIII	105	31.53	163	48.95	65	19.52	333
IX	110	33.13	152	45.78	70	21.08	332
X	114	32.29	164	46.46	75	21.24	353
XI	120	33.99	157	44.47	76	21.53	353
XII	104	32.10	139	42.90	81	25.00	324

Details of the technology imparted that is I to XII is given in the methodology section.

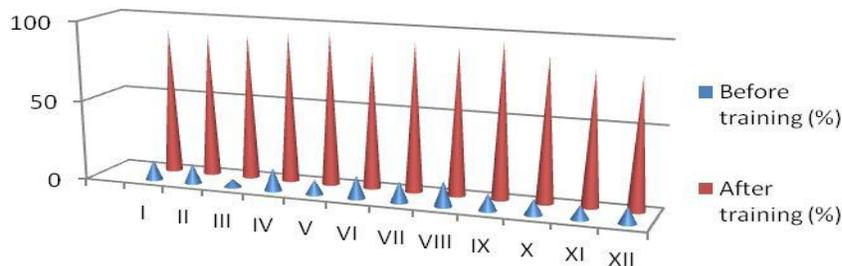
of old orchards, integrated nutrient management and orchard management were other important thematic areas on which 76, 71, 66, 65, 65 and 65 trainings, respectively were imparted. However, least number of trainings were provided on the marketing of fruits (47).

### Participation of clientele

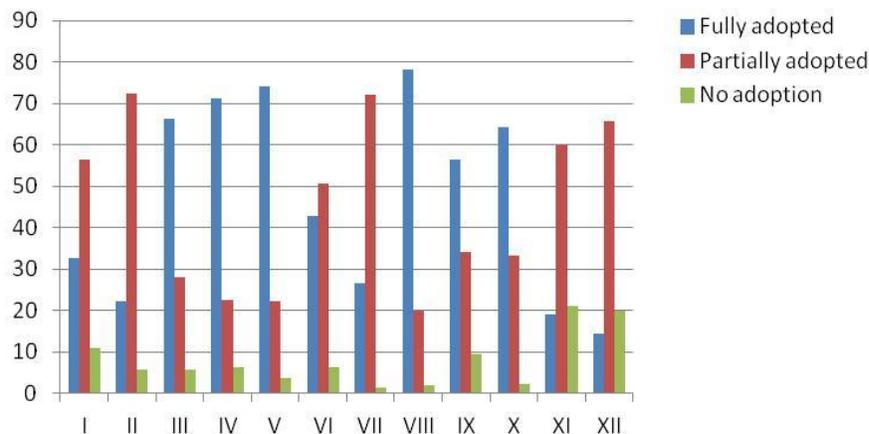
Trainings were imparted to three types of clientele, that is, farmers/farm women, rural youth and extension personals and their participation details are presented in Table 3. Among the different clientele rural youth showed much interest in different trainings which ranged between

40.41 and 48.95% in use of pollinizers and pollinator and integrated disease and insect-pest management, respectively followed by farmer/farm women which ranged between 31.21 and 35.97%. However, extension personnel participated in least trainings which ranges between 19.36 and 25.34% in different trainings.

Maximum (35.97) percentage of the farmers/farm women participated in obtaining knowledge regarding popularization of the new varieties of fruits followed by integrated nutrient management (34.36%) and use of pollinizers and pollinators (34.24%). Least that is, 31.21% of farmers/farm women participated in layout of orchards related trainings. In Integrated disease and insect pest



**Figure 1.** Impact of different trainings on the clientele. Details of the technology imparted that is I to XII is given in the methodology section



**Figure 2.** Adoption of trainings imparted to different clientele in last five years. Details of the technology imparted that is I to XII is given in the methodology section

management training maximum (48.95%) rural youth of the district took part closely followed by training on water management (48.60%), rejuvenation of old orchards (47.57%) and training and pruning (47.40%). Only 40.41% of the rural youth participated in the training on use of pollinizers and pollinators closely followed by popularization of new varieties of fruits (41.58%).

Use of pollinizers and pollinators (25.34%) and marketing of fruits (25.00%) are the major trainings where maximum participation of extension personals was noticed closely followed by layout of orchards (24.54%). However, the trainings on training and pruning (19.36%) were attended by least number of extension personals of the district. Other trainings where least participation of extension personals was noticed where rejuvenation of old orchards (19.40%), integrated disease and insect-pest management (19.52%) and water management (19.94%).

**Impact studies**

A survey was conducted before and after each trainings among the different clientele who participated in the trainings and it was observed from the sample population that survey (done before training) that the participants

were too less aware ranging between 4.84 and 15.68% about the aspects and benefits of these trainings (Figure 1). After providing the trainings to all the clientele under different category it was observed that the awareness regarding the trainings ranged between 80.55 and 95.75%.

With respect to adoption of the imparted knowledge 78.19% of the clientele fully adopted the method or ideas provided to them on integrated disease and insect-pest management closely followed by integrated nutrient management (74.02%) and training and pruning (71.11%). However, only 14.29% of the clientele showed interest in full adoption for marketing of fruits closely to 18.91% clientele interested in value addition of fruits. Less interest in adoption of such technology is due to the reason that these two aspects of horticulture require much expertise and expenditure in the initial years of establishment (Figure 2).

Popularization of new varieties of fruits and use of pollinizers and pollinators were the aspects which were partially adopted by 72.25 and 72.00% of the clientele, respectively, however, 56.33% of the clientele were interested in the Layout of high density orchards.

Maximum (21.08 and 20.00%) of the clientele did not show their interest in adopting the knowledge about value

addition and marketing of fruits, respectively.

### Conclusion

From the present studies, it was observed that among the entire clientele who had participated in the trainings, only rural youth showed interest in all the trainings as these were based on entrepreneurship development, so that youth are able to start their own enterprises for earning their livelihood through various income generating units. It is also concluded that proper use of Information and communication technology can offer solutions in order to improve the fruit production by advanced technology in the district Pulwama as well as in the valley. Use of different methods of communication in local dialect will help in dissemination of knowledge about different technologies which will certainly enhance the decision making capabilities of fruit growers of the district so that it improves life standard of farmers involved in fruit production.

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