

**Assessment of thematic areas for training needs of apple growers
in Shopian of Jammu and Kashmir districts, India.**

ABSTRACT: Nature has endowed the state of Jammu and Kashmir (India) with wide range of agro- climatic conditions which permit the production of varieties of temperate fruits. The district Shopian was purposively selected, because of the potentiality for the development of horticulture, mainly because 90 per cent area of the district was under apple plantation. The major training needs components identified for the study were crop production, plant protection, harvesting and marketing etc. It was observed that integrated disease management receiving highest score in all the three altitudes under study, was the most prioritized thematic area for training need. Soil and water testing received first priority in mid and high altitude areas while it got second level of priority in low altitude. The training need for micro irrigation system in orchard was given lowest priority by the fruit growers in all the three altitudes.

KEYWORDS: Altitude, Apple growers, thematic areas, Shopian, Kashmir.

Introduction:

Agriculture is the back bone of the Indian economy and plays a vital role in the overall development of the nation (Anonymous, 2012). India has achieved self-sufficiency in food grain production and now the major concern is to achieve higher growth rate. The focus has now shifted from agriculture to horticulture sector, which besides imparting nutritional security, offers a great potential for efficient input use, higher returns per unit area, crop diversification, foreign exchange earnings and greater employment generation through post-harvest processing in agro industries. Fruit cultivation in India is one such potential commercial and business sectors for exporting merchandise and shipping from which much of the international revenue is expected (Jadhav and Manjunath, 2011). Millions of farmers rely on land, which is too small and too poor to sustain the living of their families, but still they have to make ends meet on that land. Indian agriculture is facing serious challenges because of its ever-increasing population, limited land and water availability, and degradation of natural resources. It is desirable to increase agricultural productivity in a sustainable manner. The excessive use of agro-chemicals over past decades has deteriorated soil health leading to declines of crop yields and produce quality (Yadav *et al*, 2013).

33 Apple is commercially the most important temperate fruit and occupies the fourth
34 (4th) position in the world in terms of production after banana, orange and grapes. China,
35 USA and Turkey are the top three countries in the world as far as apple production is
36 concerned, followed by Italy, India and Poland (Anonymous, 2016). Indian apple production
37 averaged nearly 1.4 million making it the sixth largest apple producer in the world. Apple alone
38 is the fourth widely produced fruit in the world after Banana, Orange and grapes. India annually
39 exports apple worth of Rs 400 million (Nearly US \$ 10 million) out of which Rs 200 million
40 of apples comes from Jammu and Kashmir North region (Kashmir) and provides job
41 opportunity to 1.2 million people directly, indirectly. Its area is estimated to be the second
42 largest in the world and in Asia it is the second largest producer. Thereby making it the
43 largest contributor to the State GDP (Parrey and Hakim, 2015).

44 Nature has endowed the state of Jammu and Kashmir with a wide range of agro-
45 climatic conditions which permit the production of varieties of temperate fruits. It has varied
46 climatic features, topography and diversity in physiographic features, existence of cold arid,
47 temperate, intermediate and sub-tropical zones within a small geographical area. Though the
48 large diversity in agro climatic conditions of the state is conducive for propagation of
49 diversified farming system, the terrain at the same time is tough and accessibility to a greater
50 part of the region is poor. This causes a lot of hurdles to the inhabitants regarding the
51 knowledge and awareness about the use of inputs, products and other farming practices.

52 There are also certain factors such as alternate bearing, defective pruning and training,
53 use of seedling rootstock of unknown performance, lack of proper nutrient and water
54 management, deficiency of suitable pollinizers/pollinators and ineffective control of pests and
55 diseases which are responsible for low productivity and quality.

56 Since scanty studies have been undertaken so far, related to the assessment of training
57 needs, which have tried to determine the cause for such low productivity and quality of apple
58 in Kashmir. Keeping in view the importance and need of trainings to the farming community
59 in general and apple growers in particular.

60 Training of the farmers is essential to induce motivation, create confidence and
61 inculcate efficiency in an individual (Chawang and Jha, 2010). Training of the farmers is also
62 inevitable for imparting new knowledge and updating the skills of farmers. Training of
63 farmers has assumed further importance and urgency in the context of the high yielding
64 varieties and improved practices in agriculture and allied fields. In order to make any training
65 meaningful and effective, it is imperative on the part of the training organizers to identify the
66 training needs of the farmers based on which suitable training modules can be developed so

67 that the appropriate training is given to the right people, in the right form, at the right time so
68 that higher degree of productivity and profitability can be achieved (Prajapati and Patel,
69 2013). Therefore, training of the farmers is 'an intensive learning activity, assisted by
70 competent trainers to understand and practice the skills required in a deficit situation in the
71 knowledge, skills and attitude level of the practicing farmers as well as the availability of
72 appropriate applicable information, the utilization of which will correct the problems (Okwu
73 and Ejembi 2005).

74 Training is a process of acquisition of new skills, attitude and knowledge in the context of
75 preparing for entry into a vocation or improving ones productivity in an enterprise. Effective
76 training requires a clear picture of how the trainees or farmers will need to use information
77 after training in place of local practices what they have adopted before in their situation.
78 Training of the farmers is carried out so as to be fitted, qualified and proficient. The purpose
79 is to impact knowledge and skills to the farmers so that they can perform some desirable tasks
80 (Halim and Ali, 1988). Training of farmers focused on enterprise skills, such as market
81 analysis, distribution and business management, would support small-scale farmers in
82 identifying the technologies that would benefit them most, and would help them to participate
83 in agricultural innovation (Davis and Rylance, 2005). Training of farmers largely consists of
84 well-organized opportunities for participants to acquire necessary understanding and skill.
85 Farmer training is directed towards improving their job efficiency in farming. The kind of
86 education we call as training is not for knowing more but behaving differently (Lynton and
87 Pareek, 1990).

88 A Training Needs Assessment is a systematic process for determining and addressing
89 "needs" or "gaps" between the current conditions and desired conditions or "wants". The
90 discrepancy between the current condition and wanted condition must be measured to
91 appropriately identify the need. The need can be desired to improve current performance or to
92 correct a deficiency. The purpose of the training needs assessment is to identify performance
93 requirements and the knowledge, skills, and abilities needed by an individual to achieve the
94 requirements. An effective training needs assessment may help direct resources to areas of
95 greatest demand. The assessment should address resources needed to improve productivity
96 and quality.

97 **Research Methodology:**

98 The present study was conducted in the state of Jammu and Kashmir (India)
99 comprising extreme sector of Himalaya's and occupies a central geographical location in the

Asian continent. A multistage sampling procedure was adopted for the selection of districts, tehsils, villages and sample respondents. Kashmir valley consists of 10 districts namely Anantnag, Kulgam, Pulwama, Shopian, Srinagar, Bandipora, Baramulla, Budgam, Ganderbal and Kupwara. Among these, district Shopian was selected purposively. District Shopian was purposively selected because of the potentiality for the development of horticulture, mainly because 90 per cent area of the district was under apple plantation and prevailing agro climatic situations were very good for cultivation of horticultural crops especially fruit crops and apple in particular. The study was conducted in three types of altitudes viz. high altitude, mid altitude and low altitude in the form of strata which were purposively selected. Each strata consisted of three villages which were randomly selected. A list of apple growers from each village was prepared in consultation with village sarpanches/revenue authorities. The prepared list was stratified properly, taking care that it includes small, marginal and large farmers. Accordingly a sample size of twenty farmers from each village was selected randomly, thus making a sample size of sixty respondents from each strata based on the total number of respondents engaged in apple cultivation. A sample size of 180 respondents from all the three strata's was included in the study. Data collection from randomly selected respondents was made by using pre-tested 'structured schedule' through personal interview method. For this purpose, an interview schedule was constructed for data collection from respondents in the light of the objective of the study. The selected respondents were personally interviewed at their place of residence/ field and their responses were recorded in the schedule. In the present study, training needs of apple growers was taken as dependent variable and other such as age, education, family education, experience, innovative proneness, media exposure etc. as independent variables and analysis of data was done between dependent and independent variables. Utmost care was taken to make the respondents to understand about the objective of the study and clarified their doubts in the interview schedule. For the present study, a list of 30 major components/ thematic areas was prepared. In this regard, the farmers were requested to give a tick (") in one of the three response categories (viz. Very Important, Important and Not Important) provided against the identified specific items under each major component based on their perceived needs for providing training to them for further improvement in their farming system and livelihood. The major training needs components identified for the study were crop production, plant protection, Harvesting and marketing etc. The farmer's responses were collected in a 3 – point continuum scale viz. Very Important (VI), Important (I) and Not Important (NI) by assigning scores 3, 2 and 1 respectively.

Option (Response category)	Score
Very Important (VI)	3
Important (I)	2
Not Important (NI)	1

134

135 The results were calculated as weighted score for each of the thematic t area identified for the
136 training

$$W.S = \frac{No\ of\ V.I \times 3 + No\ of\ I \times 2 + No\ of\ N.I \times 1}{Total\ No.\ V.I + I + N.I}$$

137

Where:

138

W.S= weighted score

139

V.I= Very Important

140

I= Important

141

N.I= Not Important

(Sajeev, *et al.* 2012a)

142 Result and discussion:

143 Table – 1: Thematic areas for training needs of apple growers in low altitude areas:

S.No.	Thematic areas	V. I Training needs	I Training needs	N.I Training needs	W.S	Rank
1.	Integrated Disease Management.	46	8	6	2.66	I
2.	Soil and water testing.	44	9	7	2.61	II
3.	Training and pruning.	42	13	5	2.61	II
4.	Integrated Pest Management.	42	9	9	2.55	III
5.	Improvement in production and quality.	41	11	8	2.55	III
6.	Pollination.	38	17	5	2.55	III
7.	Marketing.	40	13	07	2.55	III
8.	Pre harvest fruit drop.	37	19	04	2.55	III
9.	Management of Inorganic fertilizers.	39	14	07	2.53	IV
10.	Integrated nutrient Management.	37	18	05	2.53	IV
11.	Nursery raising	38	16	06	2.53	IV
12.	Rejuvenation of unproductive orchards.	37	15	8	2.48	V
13.	Management of young plants/orchards.	36	17	07	2.48	V
14.	Proper grading and packaging technique.	35	19	06	2.48	V
15.	Plant propagation techniques.	37	11	12	2.40	VI
16.	Management of Physiological Disorders.	36	13	11	2.40	VI

17.	Harvesting.	29	21	10	2.31	VII
18.	Not to use chemicals for colouring of apple crop.	31	15	15	2.31	VII
19.	Bio-control of pests and diseases.	32	15	13	2.31	VII
20.	Soil and Water conservation.	31	17	12	2.31	VII
21.	Thinning of flowers.	26	21	13	2.21	VIII
22.	Micro nutrient deficiency in crops.	25	23	12	2.21	VIII
23.	Using hand gloves and masks while spraying.	21	31	8	2.21	VIII
24.	Preparation of orchard layout.	21	27	12	2.15	IX
25.	Selection of site for orchard.	24	21	15	2.15	IX
26.	Nursery Management.	21	26	13	2.13	X
27.	Planting of apple saplings.	18	32	10	2.13	X
28.	Proper cleaning of spraying machinery after each spray.	17	22	21	1.93	XI
29.	Disposal of pesticide and insecticide containers properly.	13	30	17	1.93	XI
30.	Micro Irrigation system of orchards.	8	29	23	1.75	XII

144 V.I=Very Important, I=Important, N.T=Not Important, W.S=Weighted Score.

145 **Thematic areas for training needs of apple growers in low altitude areas:**

146 The data presented in table 1 reveals the thematic areas for training needs of apple
147 growers. Among the thematic areas it is evident from the data that in low altitude integrated
148 disease management got rank I on the basis of weighted score (2.66), followed by soil and
149 water testing, and training and pruning each of them got rank II and weighted score of 2.61,
150 integrated pest management, improvement in production and quality, pollination, marketing
151 and pre harvest fruit drop each got rank III and weighted score of 2.55 each, the thematic
152 areas such as management of inorganic fertilizers, integrated nutrient management and
153 nursery raising got rank IV and weighted score 2.53 each, rejuvenation of unproductive
154 orchards, management of young plants/orchards, proper grading and packaging technique
155 each of them got rank V and weighted score 2.48, plant propagation techniques and
156 management of physiological disorders got rank VI and weighted score 2.40, harvesting, not
157 to use chemicals for colouring of apple crop, bio-control of pests and diseases, soil and water
158 conservation each of them got rank VII and weighted score 2.31, in the same manner thinning
159 of flowers, micro nutrient deficiency in crops, using hand gloves and masks while spraying
160 all of them got rank VIII and weighted score of 2.21, preparation of orchard layout, selection
161 of site for orchard each got rank IX and weighted score 2.15, nursery management, planting
162 of apple saplings got rank X and weighted score 2.13, proper cleaning of spraying machinery
163 after each spray, disposal of pesticide and insecticide containers got rank XI and weighted

164 score 1.93 and among the thematic areas in lower altitude micro irrigation system of orchards
 165 got the lowest weighted score of 1.75, hence lowest rank of XII. It is revealed from the data
 166 that most of the farmers need immediate training in Integrated Disease Management, Soil and
 167 water testing, training and pruning etc. which are the main components where farmers face
 168 difficulty.

169 **Table – 2: Thematic areas for training needs of apple growers in mid altitude areas:**

S.No.	Thematic areas	V. I Train ing needs	I Training needs	N.I Training needs	W.S	Rank
1.	Soil and water testing.	41	15	4	2.61	I
2.	Integrated Disease Management.	40	17	4	2.61	I
3.	Training and pruning.	43	11	6	2.61	I
4.	Integrated Pest Management.	42	12	6	2.61	I
5.	Improvement in production and quality.	41	12	7	2.56	II
6.	Pre harvest fruit drop.	40	14	6	2.56	II
7.	Marketing.	39	14	7	2.53	III
8.	Proper grading and packaging technique.	42	8	10	2.53	III
9.	Pollination.	43	6	11	2.53	III
10.	Management of Inorganic fertilizers.	37	17	6	2.51	IV
11.	Rejuvenation of unproductive orchards.	36	19	05	2.51	IV
12.	Integrated nutrient Management.	33	21	06	2.45	V
13.	Bio-control of pests and diseases.	35	17	8	2.45	V
14.	Harvesting.	34	19	7	2.45	V
15.	Plant propagation techniques.	37	13	10	2.45	V
16.	Management of young plants/orchards.	38	11	11	2.45	V
17.	Thinning of flowers.	32	23	5	2.45	V
18.	Micro nutrient deficiency in crops.	37	13	10	2.45	V
19.	Management of Physiological Disorders.	31	16	13	2.30	VI
20.	Selection of site for orchard.	26	26	8	2.30	VI
21.	Not to use chemicals for colouring of apple crop.	32	14	14	2.30	VI
22.	Preparation of orchard layout.	27	24	9	2.30	VI
23.	Nursery raising.	33	12	15	2.30	VI
24.	Nursery Management.	22	25	13	2.15	VII
25.	Soil and Water conservation.	21	27	12	2.15	VII
26.	Planting of apple saplings.	23	23	14	2.15	VII
27.	Proper cleaning of spraying machinery after each spray.	19	31	10	2.15	VII

28.	Using hand gloves and masks while spraying.	17	22	21	1.93	VIII
29.	Micro Irrigation system of orchards.	16	24	20	1.93	VIII
30.	Disposal of pesticide and insecticide containers properly.	14	28	18	1.93	VIII

170 V.I=Very Important, I=Important, N.T=Not Important, W.S=Weighted Score.

171 **Thematic areas for training needs of apple growers in mid altitude areas:**

172 The data presented in table2 reveals that in middle altitude soil and water testing,
173 integrated disease management, training and pruning, integrated pest management each of
174 them got rank I on the basis of weighted score (2.61), followed by improvement in
175 production and quality, pre harvest fruit drop, each got rank II and weighted score of 2.56,
176 marketing, proper grading and packaging techniques and pollination, each of them got rank
177 III and weighted score 2.53, followed by management of inorganic fertilizers, and
178 rejuvenation of unproductive orchards each of them got rank IV and weighted score of 2.51,
179 the thematic areas such as integrated nutrient management, bio-control of pests and diseases,
180 harvesting, plant propagation techniques, management of young plants/orchards, thinning of
181 flowers, micro nutrient deficiency in crops got rank V and weighted score 2.45 each,
182 management of physiological disorders, selection of site for orchard, not to use chemicals for
183 colouring of apple crop, preparation of orchard layout and nursery raising each of them got
184 rank VI and weighted score 2.30, nursery management, soil and water conservation, planting
185 of apple saplings, proper cleaning of spraying machinery each of them got rank VII and
186 weighted score 2.15, using hand gloves and masks while spraying, micro irrigation system of
187 orchards, disposal of pesticide and insecticide containers each of them got lowest rank VIII
188 and weighted score 1.93.

189 **Table – 3: Thematic areas for training needs of apple growers in high altitude areas:**

S.No.	Thematic areas	V.I Training needs	I Training needs	N.I Training needs	W.S	Rank
1.	Soil and water testing.	43	16	1	2.70	I
2.	Marketing.	44	14	2	2.70	I
3.	Integrated Disease Management.	46	10	4	2.70	I
4.	Integrated Pest Management.	47	8	5	2.70	I
5.	Training and pruning.	46	7	7	2.65	II
6.	Improvement in production and quality.	43	13	4	2.65	II
7.	Proper grading and packaging technique.	41	15	4	2.61	III
8.	Management of Inorganic	43	11	6	2.61	III

	fertilizers.					
9.	Pollination.	44	09	7	2.61	III
10.	Pre harvest fruit drop.	41	15	4	2.61	III
11.	Rejuvenation of unproductive orchards.	42	13	5	2.61	III
12.	Plant propagation techniques.	41	11	8	2.55	IV
13.	Integrated nutrient Management	40	13	7	2.55	IV
14.	Bio-control of pests and diseases.	37	19	4	2.55	IV
15.	Management of Physiological Disorders.	34	21	5	2.51	V
16.	Thinning of flowers.	33	25	2	2.51	V
17.	Management of young plants/orchards.	37	17	6	2.51	V
18.	Micro nutrient deficiency in crops.	31	19	10	2.35	VI
19.	Harvesting.	35	11	14	2.35	VI
20.	Soil and Water conservation.	26	25	9	2.28	VII
21.	Using hand gloves and masks while spraying.	25	27	8	2.28	VII
22.	Nursery Management.	27	21	12	2.25	VIII
23.	Nursery raising.	24	27	09	2.25	VIII
24.	Not to use chemicals for colouring of apple crop.	28	19	13	2.25	VIII
25.	Preparation of orchard layout.	22	31	7	2.25	VIII
26.	Planting of apple saplings.	25	21	14	2.18	IX
27.	Selection of site for orchard.	22	27	11	2.18	IX
28.	Proper cleaning of spraying machinery after each spray.	19	33	8	2.18	IX
29.	Disposal of pesticide and insecticide containers properly.	21	19	20	2.01	X
30.	Micro Irrigation system of orchards.	19	23	18	2.01	X

190 V.I=Very Important, I=Important, N.T=Not Important, W.S=Weighted Score.

191 **Thematic areas for training needs of apple growers in high altitude areas:**

192 The data presented in table 3 reveals that in high altitude soil and water testing,
193 marketing, integrated disease management, integrated pest management each of them got
194 rank I on the basis of weighted score (2.70), followed by training and pruning, improvement
195 in production and quality both of them got weighted score of 2.65 and hence rank II, proper
196 grading and packaging techniques, management of inorganic fertilizers and pollination, pre
197 harvest fruit drop and rejuvenation of unproductive orchards each of them got rank III and
198 weighted score 2.61, plant propagation techniques integrated nutrient management, bio-
199 control of pests and diseases each of them got rank IV and weighted score of 2.55, the
200 thematic areas such, management of physiological disorders, thinning of flowers,

201 management of young plants/orchards each of them got rank V and weighted score 2.51, ,
 202 micro nutrient deficiency in crops and harvesting both of them got rank VI and weighted
 203 score of 2.35, soil and water conservation, and using hand gloves and masks while spraying
 204 both of them got rank VII and weighted score 2.28, nursery management, nursery raising,
 205 not to use chemicals for colouring of apple crop, preparation of orchard layout all of them got
 206 rank VIII and weighted score 2.25, planting of apple saplings, selection of site for orchard,
 207 proper cleaning of spraying machinery each of them got rank IX and weighted score 2.18,
 208 disposal of pesticide and insecticide containers, micro irrigation system of orchards, each of
 209 them got lowest rank X and weighted score 2.01.

210 **Table – 4: Rank wise comparison of Training needs of farmers for the selected**
 211 **altitude:**

S.No.	Thematic Areas	Altitude		
		Low	Mid	High
1.	Integrated Disease Management.	I	I	I
2.	Soil and water testing.	II	I	I
3.	Training and pruning.	II	I	II
4.	Integrated Pest Management.	III	I	I
5.	Improvement in production and quality.	III	II	II
6.	Pre harvest fruit drop.	III	II	III
7.	Marketing.	III	III	I
8.	Pollination.	III	III	III
9.	Management of Inorganic fertilizers.	IV	IV	III
10.	Proper grading and packaging techniques.	V	III	III
11.	Rejuvenation of unproductive orchards.	V	IV	III
12.	Integrated nutrient Management.	IV	V	IV
13.	Bio-control of pests and diseases.	VII	V	IV
14.	Harvesting.	VII	V	VI
15.	Plant propagation techniques.	VI	V	IV
16.	Management of young plants/orchards.	V	V	V
17.	Thinning.	VIII	V	V
18.	Micro nutrient deficiency in crops.	VIII	V	VI
19.	Management of Physiological Disorders.	VI	VI	V
20.	Selection of site for orchard.	IX	VI	IX
21.	Not to use chemicals for colouring of apple crop.	VII	VI	VIII
22.	Preparation of orchard layout.	IX	VI	VIII
23.	Nursery raising.	IV	VI	VIII
24.	Nursery Management.	X	VII	VIII
25.	Soil and Water conservation.	VII	VII	VII
26.	Planting of apple saplings.	X	VII	IX
27.	Proper cleaning of spraying machinery after each spray.	XI	VII	IX
28.	Using hand gloves and masks while spraying.	VIII	VIII	VII
29.	Micro Irrigation system of orchards.	XII	VIII	X
30.	Disposal of pesticide and insecticide containers properly.	XI	VIII	X

212 V.I=Very Important, I=Important, N.T=Not Important, W.S=Weighted Score.

213 **Rank wise comparison of training needs of farmers for the selected altitude:**

214 The data presented in table 4 reveals that in all the three altitudes integrated disease
215 management got rank I, so it indicates that farmers need training on priority basis in disease
216 management, while as in lower altitude training and pruning, soil and water testing both of
217 them got rank II while as soil and water testing got rank I in mid and high altitude, and
218 training and pruning got rank I in mid and rank II in high altitude. In case of lower altitude
219 integrated pest management got rank III, while it got rank I in mid and high altitude,
220 Improvement in production and quality were ranked III in low altitude and II in mid and high
221 altitude, pre harvest fruit drop got rank III in low and high altitude and II in mid altitude,
222 while as marketing got rank III in low and mid altitude and I in high altitude. In all the three
223 altitudes pollination got rank III, while as management of inorganic fertilizers got rank IV in
224 low and mid altitude and rank III in high altitude areas. Proper grading and packaging
225 technique got rank V in lower altitude, while it got rank III in mid and high altitude.
226 Integrates nutrient management got rank IV in low and high altitudes, while it got rank V in
227 mid altitude areas. Plant propagation techniques got rank V in mid altitude and rank VI in
228 low altitude areas and rank IV in high altitude areas. Bio control of pests and diseases got
229 rank IV in high altitudes, rank V in mid attitude, and rank VII in lower altitude. In the same
230 way micro irrigation system of orchards got lowest rank in all the three altitude areas. The
231 highest rank of the components indicate that farmers need immediate training in that
232 particular component and lack of knowledge and training could be the reason of low
233 production and productivity of the apple produce, whereas low rank of the component
234 indicates less training needs.

235 It was seen that majority of the farmers needed training in soil testing, expert
236 guidance, layout planning and pollination in planning skills, pest and disease management,
237 nutritional management and physiological disorder management in management skills and in
238 proper weighing of chemicals for spray, handling of spray equipment's, grading and
239 packaging in practical skills on priority basis. Moreover apple growers had delineated
240 different thematic areas wherever they need trainings, these include integrated disease
241 management which got maximum weighted score as per the response of the apple growers in
242 all the three altitudes, followed by soil and water testing, training and pruning, integrated pest
243 management etc. These findings were in line with the findings of Sajeevet *al.* 2012b.

244 **Conclusion:**

More emphasis should be given on practical training instead of lectures and apple growers should be encouraged to learning by doing. In order to achieve stability in apple production, the resources should be fully exploited by encouraging farmers by providing them with the necessary support services, with necessary arrangement of credit and subsidies as and when required. Individual member of the family should not be the target for imparting the training rather, more number of family members should be the target group. The need based cost effective training programmes and strategies need to be tailored in an effective manner so that human resource be put to effective use for achieving sustainable production of apple. It is to be recommended that both extensive and intensive hand on-training programmes should be emphasized for farmers and rural youth through proper assessment of their training needs in the state. Further much emphasis should be paid on Integrated Disease Management, Soil and water testing, Training and pruning, Integrated Pest Management, Improvement in production and quality, Pre harvest fruit drop while planning and designing training programmes for farmers. The concerned stakeholders should pay relatively higher emphasis and care on those specific most important needs, as identified by this study through concerted efforts while formulating different training strategies and programmes for the farmers in hills and plain areas of Kashmir valley and other similar agro-climatic and farming systems of the country. However certain constraints such as time limitation, limited resources, easy accessibility of the research area etc. cannot be eliminated in the study.

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296