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Technological gap in production and marketing of carnation in Himachal Pradesh

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Abstract

Present study was conducted in the ten carnation growing districts (except Kinnaur and Lahaul & Spiti) of Himachal Pradesh with the objective to find the technological gaps in the production and marketing practices of carnation. The study was conducted using quasi-experimental design. The sample selection was done by proportional allocation method and it makes the sample size of 123 respondents. Regarding profile of the respondents it was observed that majority of the respondents (60.48%) were having middle age group and educated up to high school (40.32%). Majority of the respondents (33.87%) have an experience of 5-10 years in carnation cultivation and 35.48 per cent having an annual income of 50,000-1,00,000. The overall technology gap of the carnation growers was found low (18.92%). Maximum mean technology gap (30.62%) was recorded in the adoption of plant protection measures followed by the practices regarding harvesting and post harvesting handling of carnation (27.46%). Talking about individual practices, maximum technology gap was found in the use of recommended methods and doses for pulsing and holding of carnation flowers.

Keywords: Carnation, production, marketing, technological gaps

Introduction

Carnation (*Dianthus caryophyllus* L.) is an important cut flower crop, ranked second in world market only after roses. Carnation flowers are not just grown for their magnificent cut flowers but also as a beautiful bedding plant, in pots, edges, rock gardens etc and raw material is used in perfumery, cosmetic and pharmaceutical industries. The plant requires mild summers and cooler regions for its better growth and has been extensively grown in different regions of the world and India. Himachal Pradesh has variable climatic conditions and provides congenial environment for the commercial cultivation of carnation. Numerous researches have described the presence of technology gap among tribal farmers (Trivedi, 1994) [5]. Technological gap in gladiolus flower production was worked out by Roy *et al*, 2007 [3]. In spite of the wide spread network of the extension workers at different levels throughout the state, whose job is to make farmers aware of the new technology and helps them in its adoption, the gap between the recommended and adopted practices still exists (Bain *et al*, 2017). The advancement of scientific techniques in flower cultivation has given an impetus to the growth of flower industry. Commercial cultivation of flowers requires thorough knowledge of recommended scientific practices among growers. Therefore, a study was conducted to find out the gap between the recommended and adopted practices.

Method and Material

The present study investigation was conducted in ten carnation growing districts (except Kinnaur and Lahaul & Spiti) of Himachal Pradesh, for the year 2018-19. A list of carnation growing farmers was procured from the State Horticulture Dept and from that farmers from the ten districts were randomly selected by using the proportional allocation technique and a sample of 123 respondents was prepared. The selected farmers were further classified in to seven groups according to their area under carnation cultivation *viz.* Group I (<500), Group II (>500-1000 m²) in Group III (>1000 to 1500 m²), Group IV (>1500-2000 m²), Group V (>2000 to 2500 m²), Group VI (>2000 to 2500 m²) and Group VII (>2500 m²). A semi- structured questionnaire was constructed for collecting the primary data from the respondents. For data collection, respondents were interviewed either by conducting personal visits or through telephones. Technology gap for the production and marketing of carnation was worked out by measuring technological gap index previously used by Biradar, (2012) [2] and Shinde (2017) [4]. The formula used for measuring technology gap is as under

$$\text{Technology gap index} = \frac{R-A}{R} \times 100$$

Where

R = score of recommended practices

A = score of adopted practices

Results and Discussions**Socio-economic profile of carnation growers**

Data presented in Table 1 reveals that majority (60.48%) of the carnation growers belong to the middle age group with an

education of high school level (40.32%). Most of the respondents (33.87%) have a farming experience of 5-10 years. Further, regarding annual income of the respondents, majority of them (35.48%) have an annual income of Rs 50,000-1,00,000 and most of the respondents (37.90%) have 30-50% share of their income from carnation cultivation. Majority of the respondents (32.26%) invest their own money in flower production.

Table 1: Socio-economic profile of the carnation growing farmers

Profile characters	Category	Group I	Group II	Group III	Group IV	Group V	Group VI	Group VII	Frequency	Percentage
Age	20-30 (Young)	0	7	2	1	3	0	0	13	10.49
	30-50 (Middle age)	11	27	6	11	5	15	0	75	60.48
	≥ 50 (Old age)	4	18	6	3	1	3	1	36	29.03
Education	Illiterate	0	3	1	1	0	1	0	6	4.84
	Primary- High School	9	22	4	5	4	6	0	50	40.32
	Secondary	3	15	3	5	4	7	0	37	29.84
	Graduate & above	3	12	6	4	1	4	1	31	25
Farming Experience	≤ 3 years	1	10	0	2	3	3	0	19	15.32
	3-5 years	7	14	2	4	0	5	0	32	25.81
	5-10 years	5	12	9	6	4	6	0	42	33.87
	≥10 years	2	16	3	3	2	4	1	31	25
Annual income	≤ 25,000	2	7	0	2	3	3	0	17	13.70
	25,000-50,000	8	23	2	4	0	5	0	42	33.88
	50,000-1,00,000	5	14	9	6	4	6	0	44	35.48
	≥1,00,000	0	8	3	3	2	4	1	21	16.94
Share of carnation cultivation in income	<10%	5	11	0	0	2	4	0	22	17.75
	10-30%	7	19	5	3	4	3	1	42	33.87
	30-50%	3	17	7	9	3	8	0	47	37.90
	>50%	0	5	2	3	0	3	0	13	10.48
Major source of financing	Own	7	16	5	2	3	7	0	40	32.26
	Bank	4	15	4	5	5	6	0	39	31.45
	Co-operative societies	4	20	4	5	0	5	0	38	30.65
	Others	0	1	1	3	1	0	1	7	5.64
	Total	15	52	14	15	9	18	1	124	

Table 2 illustrates the data regarding technology gap index observed in carnation growing respondents. Data revealed that technology gap was found to be maximum (30.62%) for the use of plant protection practices followed by harvesting and post harvesting practices (27.46%) and use of manures and fertilizers.

Perusal of data revealed that maximum technology gap (41.19%) was observed in the use of recommended methods and doses of pulsing and holding treatments followed by the

use of recommended uses of FYM and chemical fertilizers (34.69%), recommended chemicals, its time of application and recommended doses of disease control measures. The respondents selected for the study were using the recommended propagating material for raising carnations and were harvesting the flowers on recommended stage and on recommended time and therefore the technology gap recorded for these practices was zero. A very low level of technology gap was recorded for the land preparation practices.

Table 2: Technology gap index of recommended cultivation practices of Carnation

S. No	Particulars	Group I	Group II	Group III	Group IV	Group V	Group VI	Overall score	Gap index
A	Gap in land preparation practices								
1	Ploughing	43	146	40	39	26	52	346	6.23
2	Harrowing	45	131	37	40	22	51	326	11.65
3	Bed preparation	39	128	33	42	24	47	313	15.17
	Mean technology gap								11.19
B	Gap in planting material and planting practices								
1	Propagating material used	45	156	42	45	27	54	369	0.00
2	Recommended varieties	37	121	35	39	25	44	301	18.42
3	Time of planting	41	129	36	42	24	47	319	13.55
4	Planting distance	40	139	38	41	22	49	329	10.84
	Mean technology gap								10.70
C	Gap in application of Manure and Fertilizers								
1	Recommended dose of FYM	29	97	28	30	16	41	241	34.69
2	Recommended dose of fertilizers	29	97	28	30	16	41	241	34.69
3	Method of application	42	132	38	40	25	48	325	11.92
4	Time of application	40	127	31	34	24	47	303	17.88
	Mean technology gap								24.80
D	Gap in intercultural practices								
1	Weeding	45	156	42	45	27	54	369	0.00

2	Hoeing	45	142	38	37	23	47	332	10.02	
3	Irrigation method and frequency	42	137	40	39	26	51	335	9.21	
4	Pinching	40	135	38	34	24	49	320	13.28	
5	Disbudding	43	143	40	36	27	52	341	7.58	
6	Staking	41	140	36	36	23	47	323	12.46	
Mean technology gap									8.76	
E	Plant protection practices									
1	Recommended control measures	28	101	28	32	17	38	244	33.88	
2	Recommended quantity applied	32	106	26	32	20	35	251	31.98	
3	Method of application	36	115	30	35	23	40	279	24.39	
4	Time of application	31	105	28	29	20	37	250	32.24	
Mean technology gap									30.62	
F	Harvesting and post harvesting practices									
1	Harvesting stage and time	45	156	42	45	27	54	369	0.00	
2	Pulsing and holding treatments	27	90	24	27	16	33	217	41.19	
3	Recommended dose	27	90	24	27	16	33	217	41.19	
Mean technology gap									27.46	
Overall technology gap									18.92%	

Table 3 illustrates the suggestions given by growers to reduce the technology gap. The data reveals that majority of respondents want regular field visits by the specialists from the horticulture Dept or scientists from the SAU's as it got 1st rank, followed by the demand in increased extension activities whether it is technology demonstration or to solve the farmers queries and it is IInd ranked suggestion by the farmers. Most of the farmers want supply of subsidized input from the State or Central Govt. and ranked IIIrd followed by the demand for

developing such technologies which are easily accessible and affordable by the farmers (IVth). Increased number of trainings and field demonstrations of technologies by the State Dept of horticulture and provide market information to farmers ranked fifth and sixth respectively. Whereas, spreading information to farmers using radio and television ranked seventh and providing necessary information to farmers got eighth rank as suggested by the farmers.

Table 3: Suggestions for minimizing the technological gap

S. No.	Suggestions	SA	A	NA	D	SD	Weighted score	Rank	Mean	SD	Skewness
1	Increased extension activities	200	184	36	28	12	460	II	92	91.87	0.59
2	Subsidized inputs	200	176	36	32	12	456	III	91.2	89.24	0.60
3	Provide necessary knowledge to farmers	130	184	45	40	17	416	VIII	83.2	70.81	0.82
4	Technology dissemination through radio or television	165	168	33	36	20	422	VII	84.4	75.20	0.58
5	Technology should be accessible and affordable to farmers	200	176	36	32	12	451	IV	90.2	85.46	0.56
6	Increased technological demonstration conducted on farmers field	225	192	27	24	10	478	I	95.6	103.92	0.65
7	Provide market related knowledge to growers	205	156	24	40	16	441	VI	88.2	86.45	0.74
8	Increased trainings at block level	220	136	39	36	15	446	V	89.2	86.83	1.05

Conclusion

Technological gaps emerged as a major constraint in the growth of any agriculture production system. The gaps are dynamic in their nature and vary from place to place and time to time. Present study gives an idea about the level of technical gaps amongst the carnation growing farmers. Suggestions made by growers are also mentioned in the study. This information can be judiciously accessed by the researcher and timely help will be provided to the farmer.

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