



# Socio-economic Characteristics and Constraints Faced by Horticultural Growers of East Sikkim

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## ABSTRACT

Farmers in Sikkim have an aversion to commercial production of horticultural crops as this requires high initial investment. Low educational level coupled with improper technical training/extension services leading to low adoption of new technologies has been a problem area. Farmer's perception in case of seasonal training revealed that about 39.3 percent farmers preferred 2-3 days training followed by 5-7 days training (22%), one day training (18%), less than 7 days training (12.7%) and no training (8%). Regarding demonstrations, 65.3 per cent of the respondents preferred off campus while 4.7 per cent preferred on campus demonstrations. The study revealed twenty six major constraints and difficulty in using bio control agents, non-availability of bio pesticides and bio-fertilizers were most predominant among all for horticulture growers of East Sikkim.

**Key Word:** Constraints, Enterprise, Extension, Socio-economic, Technology.

## INTRODUCTION

Agriculture will play a dominant role in the growth of Indian economy in the foreseeable future. The share of horticulture in agriculture which was 3.9 per cent during Ninth Plan increased to 4.6 per cent during the current Twelfth Plan. Interestingly, this share was 11.6 per cent during the Eleventh Plan. The area under horticulture crops was 23.69 million hectares during 2012-13 (Anonymous, 2014a). The total horticultural production and food grain production in India during 2012-13 was 268.85 MT and 257.13 MT. During 2013-14, the production and productivity under vegetables, fruits and flowers are 162897 MT, 17.3 MT/ha followed by 88977MT, 12.3MT/ha and 1754MT and 543MT/ha (Anonymous, 2014b).

Sikkim, the 22nd State of Indian Union is based upon an agrarian economy. More than 64 per cent of the population depends on agriculture for their livelihood. Agricultural land in Sikkim is estimated to be around 1, 09,000 ha, i.e. 15.36 percent of the total geographical area. Sikkim has a net cultivable area of about 79,000 ha (11.13 %); with irrigated area of 15 per cent of the total operational holdings of 110000 ha (Mohanty *et al*, 2013). Overwhelming

contribution of horticulture sector to the state's GDP needs priority attention for higher levels of rural prosperity. Farmers in Sikkim have an aversion to commercial cultivation of horticultural crops as this requires high initial investment. Poor quality of seeds and other planting material available affect the yield of crops and thereby also in attaining the returns to the farmers. With low educational level of the farmers coupled with improper technical training/extension services available to them, adoption of new technologies has always been a problem. These result in non-uniform quality of commercial horticultural crops produced in Sikkim. Presently, agriculture in Sikkim needs focus on eco-friendly farming including bio-pesticides, farmers' practices to promote sustainable agriculture with the objectives to make organic farming profitable, sustainable and environmentally acceptable.

The present study was carried out with the objective to study the socio-economic characteristics of the respondents in the context of scientific vegetable cultivation, identification of appropriate, sustainable best organic practices and identify the constraints faced by the horticultural growers.

## MATERIALS AND METHODS

The present study was conducted in Gangtok, Ranka and Pakyong blocks of East Sikkim during 2015. A sample of 150 respondents was selected from the identified 15 villages (five villages from each block) following the purposive and random sampling procedure. Data collection was done with the help of well constructed and pre-tested interview schedule and analysis was done with suitable statistical techniques. The percentage, cumulative frequency, mean score and preference ranking were preferred for analyzing the data. In order to understand farmers' knowledge and practices related to sustainable horticulture, face-to-face in-depth interviews were conducted with cross-section of farmers under horticultural crops.

The constraints were classified with the help of a 5 points continuum scale as Strongly Agreed Farmers (5), Agreed Farmers (4), Neutral Farmers (3), Disagreed Farmers (2) and Strongly Disagreed Farmers (1) and accordingly each respondent was given score as per their preference to various constraints and mean weighted score was worked out for each statement under above mentioned five categories.

## RESULTS AND DISCUSSION

### Age, education, marital status and land holding

The study revealed that the highest proportion (46.7%) of the respondents was in young age group (21-40 yr) as compared to 30 per cent in the less than 20 yr and only 23.3 percent in old age category (Table 1). It also showed that most of the respondents were male (63.3%), unmarried (17.3%) and married (82.7%). The data (Table 1) indicated that 11.3 per cent respondents were illiterate, 48.7 per cent had primary education, 14.7 per cent secondary education, 18.7 per cent higher education and 6.6 per cent were graduates and above. Sharma (2016) reported that adoption of various practices was found to be higher for high and secondary education level than primary, middle and college level dairy farmers.

Ninty per cent of respondents were residing as nuclear family and the rest 10 per cent were in joint family. In case of land holding status, it was found that the values for marginal, small, medium and large farmers were 20, 50, 24.7 and 5.3 per cent, respectively, along with moderate (55.3%) followed by high (28%) and low (16.7%) extension contacts of the respondents.

### Farmer's perception on sustainable organic practices

According to the farmers' perception on sustainable organic practices and marketing strategies, the knowledge on market for selling organic produce ranked first with mean score of 3.02 and knowledge on different bio control agents ranked second with mean score of 2.86 (Table 2). The reason behind the perception was the adoption of organic farming to promote Sikkim as an organic state. Hence, it is very important to create or develop markets for organic food produce along with the evolvement of related strategies and to control diseases and insect pests by biological means. The results also depicted that knowledge on use of organic manures and pesticides, perception on profitability of organic farming, perception on environmental degradation were ranked as third, fourth and fifth with mean score of 2.67, 2.63 and 2.01, respectively.

### Constraints faced by the horticultural farmers

The data (Table 3) revealed that 26 different types of constraints faced by the horticultural growers of East Sikkim for successful adoption of organic farming which resulted non-profitable enterprise. The relevant constraints included; difficulty in using bio control agents, non-availability of bio pesticides and non-availability of bio-fertilizers which ranked as first, second and third important constraint respectively. Inadequate training in plant protection measures for dissemination of modern agricultural technologies was considered as the fourth important constraint. Susceptibility of existing varieties to pests and diseases was encountered one of the major constraints for successful cultivation

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of high value horticultural crops in the region (fifth rank).

Other important constraints of the farmers for successful horticultural crops production were lack of adequate technical guidance from extension workers, difficulty in using botanical pesticides, lack of knowledge and skill about the use of pesticides, limited contact between farmers and extension workers, low price for horticultural products, higher cost of bio-inputs (bio-fertilizers, bio-pesticides and bio-fungicides) Inadequate credit facilities, knowledge on name of specific bio-pesticide, non-availability of resistant varieties, lack of diagnostic skill in identifying the major pests, higher labour wages, lack of clarity of information, exploitation by middlemen, knowledge on mode and method of application, knowledge on ITKs, cost for crop insurance, lack of adequate information, seasonal fluctuations in market, lack of knowledge about the beneficial insects, knowledge on prevailing pest, knowledge on disease and non-availability of bio control agents.

Rolle (2006) indicated fresh produce losses ranged between 10 to 40 per cent globally, with losses in India at the high end. Chikkasubbanna (2006) has reviewed some of the issues and priorities for improving the post harvest sector for vegetable handling. Pant and Singh (2014) stated that farmers need updated information on the source, quality and cost of agricultural inputs. They required information which is strategically relevant that can ultimately enhance their quality of livelihood with the winds of global liberalization and global marketing.

### CONCLUSION

The higher education helps farmers to respond to challenges, innovation and organic technology. The farmer's perception on sustainable organic practices and marketing strategies, the knowledge regarding market for selling organic produce and of different bio control agents were the major aspects. It was found that major constraints like difficulty in using bio control agents, non-availability of bio

pesticides and bio-fertilizers which ranked as first, second and third important constraint, respectively were leading factors for non sustainable agriculture development. To strengthen the rural farming community, agricultural extension must play an important role by providing them the best extension services as well as connecting the farming community with market directly. Extension approach needs to be restructured to make technology dissemination responsive as per the needs of farmers.

**Table 1. Distribution of respondents by their personal characteristics. (N=150)**

Parameter	Frequency (Percentage)
Age group (Yr)	
<20	45(30.0)
21-40	70(46.7)
41-60	35(23.3)
Sex	
Male	95(63.3)
Female	55(36.7)
Marital Status	
Single	26(17.3)
Married	124(82.7)
Education level	
Illiterate	17(11.3)
Primary education	73(48.7)
Secondary education	22(14.7)
Higher secondary	28(18.7)
Graduate and above	10(6.6)
Family size	
Nuclear	135(90.0)
Joint	15(10.0)
Land holdings	
Marginal (<1 ha)	30(20.0)
Small (1-2 ha)	75(50.0)
Medium (2-5 ha)	37(24.7)
Large (>5 ha)	8(5.3)
Extension contact	
Low	25(16.7)
Moderate	83(55.3)
High	42(28.0)

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**Table 2. Perception on sustainable organic practices and marketing strategies.****(N=150)**

Sr. No	Statements	SDA	DA	UD	A	SA	Mean Score	Rank
1	Knowledge on market for selling organic produce	25	49	-	56	20	3.02	I
2	Knowledge on different bio control agent	22	35	21	44	28	2.86	II
3	Knowledge on use of organic manures and pesticides	12	46	6	53	33	2.67	III
4	Perception on profitability of organic farming	18	24	19	63	26	2.63	IV
5	Perception on environmental degradation	-	22	12	62	54	2.01	V

**Table 3. Constraints faced by the farmers for adoption of organic practices of horticultural crops. (N=150)**

Sr. No	Constraints	SDF	DF	NF	AF	SAF	MS	Rank
1	Difficulty in using bio control agents	45(30)	27(18)	-	78(52)	-	3.26	I
2	Non-availability of bio pesticides	24(16)	60(40)	15(10)	20(13.3)	31(20.7)	3.17	II
3	Non-availability of organic manures	31(20)	25(15.3)	13(8.7)	44(29.3)	39(26)	3.15	III
4	Inadequate training	32(21.3)	44(29.3)	16(10.7)	22(14.7)	36(24)	3.09	IV
5	Susceptibility of varieties to pests and diseases	53(35)	20(13.3)	-	37(24.7)	40(26.7)	3.06	V
6	Lack of adequate technical guidance	28(18.7)	34(22.7)	9(6)	52(34.6)	27(18)	2.89	VI
7	Difficulty in using botanical pesticides	31(20)	26(17.3)	29(19.3)	25(16.7)	39(26)	2.86	VII
8	Lack of skill about the use of pesticides	-	50(33.3)	25(16.7)	75(50)	-	2.83	VIII
9	Limited contact with extension workers	22(14.6)	39(26)	12(8)	43(28.7)	34(22.7)	2.81	IX
10	Low price for horticultural products	27(18)	32(21.3)	12(8)	33(22)	46(30.7)	2.74	X
11	Higher cost of bio-inputs	-	45(30)	28(18.7)	65(43.3)	12(8)	2.70	XI
12	Inadequate credit facilities	12(8)	25(15.3)	40(26.7)	55(36.7)	20(13.3)	2.68	XII
13	Knowledge on name of specific bio-pesticide	20(13)	34(22.7)	8(5.3)	54(36)	34(22.7)	2.68	XII
14	Non-availability of resistant varieties	30(20)	22(14.7)	13(8.7)	32(21.3)	53(35.3)	2.62	XIII

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15	Lack of diagnostic skill in identifying the major pests	29(19)	15(10)	19(12.7)	42(28)	45(30)	2.60	XIV
16	Higher labour wages	22(14)	29(19.3)	6(4)	51(34)	42(28)	2.58	XV
17	Lack of clarity of information	20(13)	26(17.3)	22(14.7)	36(24)	46(30.7)	2.58	XV
18	Exploitation by middlemen	12(8)	39(26)	-	69(46)	30(20)	2.56	XVI
19	Knowledge on ITKs	19(12)	23(15.3)	11(7.3)	54(36)	43(28.7)	2.47	XVII
20	Cost for crop insurance	18(12)	24(16)	13(8.7)	49(32.7)	46(30.6)	2.46	XVIII
21	Lack of adequate information	10(6.7)	28(18.7)	18(12)	55(36.6)	39(26)	2.43	XIX
22	Seasonal fluctuations in market	19(12)	22(14.6)	8(5.3)	55(36.7)	46(30.7)	2.42	XX
23	Knowledge about the beneficial insects	16(10)	27(18)	11(7.3)	34(22.7)	62(41.3)	2.34	XXI
24	Knowledge on prevailing pest	14(9.3)	9(6)	25(16.7)	62(41.3)	40(26.7)	2.30	XXII
25	Knowledge on disease	-	15(10)	-	89(59.3)	46(30.7)	1.89	XXIII
26	Non-availability of bio control agents	-	-	14(9.3)	61(40.7)	75(50)	1.59	XXIV

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