Production and marketing constraints analysis of kinnow growers in Himachal Pradesh

■ **Sanjeev Kumar and Raj Rani Sharma**

SUMMARY : The present study was conducted in Kangra district of Himachal Pradesh during 2017-18. A multistage sampling technique was adopted to select the ultimate sample of size 100 kinnow growers in total. The results of the study revealed that overall major production problems faced by the farmers in the study area were high cost of plant protection chemicals followed by the problem of stray animals, limited availability of FYM, shortage of skilled labour, higher wage rate and non- availability of labour at peak operation time as reported by 48.00, 46.00, 44.00, 38.00, 36.00 and 33.00 per cent respondents in the study area, respectively. In case of marketing problems, major problem were low prices for the produce, deduction of more charges by various marketing agencies, high transportation charges and higher wage rates as reported by 72.00, 53.00, 49.00 and 49.00 per cent of respondents, respectively. The results also revealed that shortage of skilled labour, higher wage rates and problem of stray animals were found to be statistically significant production problems while in case of marketing related problems, higher wage rate, non-availability of labour at peak operation time, higher prices of packing material and high transportation charges were found to be statistically significant problems. It was found that the availability of inputs on time and proper marketing strategy for marketing of produce could increase the production and income from the produce in the study area.

How to cite this article : Kumar, Sanjeev and Sharma, Raj Rani (2019). Production and marketing constraints analysis of kinnow growers in Himachal Pradesh. *Agric. Update*, **14**(1): 52-57; **DOI : 10.15740/HAS/AU/14.1/52-57.** Copyright@ 2019: Hind Agri-Horticultural Society.

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BACKGROUND AND OBJECTIVES

Under the changing agriculture scenario, it has been realized that the horticultural sector plays a vital role in providing the livelihood security to the farmers globally. It is perhaps the fastest growing sector within agriculture contributing about 30 per cent in agriculture (Anonymous, 2017). India, with its wide variability of climate and soil, is highly favourable for growing a large number of horticultural crops. The country has witnessed sharper increase in acreage in horticulture crops compared to food grains over the last few years. Over the last decade, the area under horticulture grew by about 3 per cent per annum and annual production increased by 5.4 per cent. During 2016-17, the production of horticultural crops was about 295.2 million tonnes from an area of about 24.9 million hectares (Anonymous, 2017). Fruits and vegetables account for nearly 90

per cent of the total horticultural production in the country. India is the world's second largest producer of fruits with its projected value touching 98 million tonnes by the year 2020-2021 (Bhat *et al.*, 2011).

Among different fruit crops, citrus is the third largest fruit industry in India after mango and banana in terms of area under cultivation. It is widely distributed throughout the tropical and subtropical regions of the world and believed to be originated in Southeast Asia, particularly, in the regions extending from North-east India eastward through the Malay archipelago, North into China and Japan and South to Australia (Bhandare *et al.,* 2014 and Moore, 2001). The demand for citrus fruits is very high because of its nutritive value. It is very rich in vitamins "C" (ascorbic acid), fruit sugar and in addition of this it also contains vitamins A and B. It provides vitamin P, which keeps the small blood vessels in healthy condition in our body. India alone has contributed 24 per cent of the total world production of citrus fruits in the world (Anonymous, 2016). Among citrus crops, mandarin orange (Kinnow mandarin, Nagpur, Khasi, Darjling) covers largest area followed by sweet orange (Musambi, Pineapple, Blood Red and Jaffa) and Acid lime. Among these, Kinnow mandarin, originated as a hybrid of king and willow leaf mandarins (*Citrus nobilis× C. deliciosa*) at Riverside, California (Sharma *et al.,* 2007), bears highest place in production, productivity, juice content and fruit quality.

Himachal Pradesh, the north-western and Himalayan state of the country has been endowed with a wide range of agro-climatic conditions due to which a large number of horticulture commodities like fruit crops, vegetables, flowers, mushroom, medicinal and aromatic plants etc. are successfully grown here. The area under fruits in the state, which was 792 hectares in 1950-51 with total production of 1,200 tonnes, has increased to 2, 29,202 hectares during 2016-17. The total fruit production in 2016-17 was 6.12 lakh tonnes, while during 2017-18 have been reported as 5.00 lakh tonnes (Anonymous, 2018). In the sub-tropical region of the state, cultivation of citrus is an important horticulture activity. The production of citrus fruits in the state has reached upto 28051 metric tonnes in 2016-17 (Anonymous, 2018). Among citrus fruits, kinnow mandarin has shown tremendous potential in the foothills of the state. It plays an important role in the socio-economic transformation of rural masses in the low-hill zone of the state. In Himachal Pradesh, kinnow/orange fruit occupies an area

of 8765 hectares with annual production of 14687 metric tonnes (Anonymous, 2018). Kinnow fruits have lot of market potential, which can help in increasing the farm income. It thus, becomes pertinent to study that weather the kinnow growers are growing the crop efficiently or they are facing any type of problems in production and marketing of kinnow. At present no sufficient research is available in respect of the problems faced by the kinnow growers in the state. Moreover, if the constraints in the production and marketing of kinnow in the study area are identified and feasible suggestions are made to overcome these constraints, then the production of kinnow can be increased further in the state. Therefore, the present study was undertaken with an objective to study the production and marketing constraints of kinnow growers in the study area.

RESOURCES AND METHODS

The present study has been conducted during 2017-18 in Kangra district of Himachal Pradesh purposively as this area represents the main kinnow growing belt of the state and contributes significantly to area and production of kinnow in the state. A multistage sampling technique was adopted to select the ultimate sample of the respondents. At the first stage of sampling, out of total 15 blocks falling in the Kangra district, two blocks namely Indora and Nurpur were selected purposively as these are major kinnow growing blocks of the Kangra district. At the second stage of sampling, ten villages from each block were selected randomly. At the third stage, list of farmers growing kinnow was prepared and a sample of five kinnow growers from each selected village was selected randomly to constitute a sample size of 100 farmers in total. For the analysis of data, the selected farmers were further categorized into three categories according to the number of plants, *viz.,* small (<300 plants) medium (300-700 plants) and large (>700 plants) through cumulative cube root frequency method. Thus, the total sample of 100 farmers consisted of 46 small farmers, 39 medium farmers and 15 large farmers. Thereafter, the selected sample farms were contacted through survey method and data were recorded on well-designed pre-tested schedule for analyzing the constraints faced by them at various levels. The multiple responses of producers reporting various problems were taken into consideration for analysis. Further Chi-square test was used to test whether there is any significant difference

Agric. Update, **14**(1) Feb., 2019 : 52-57
Hind Agricultural Research and Training Institute

53

among small, medium and large farms for the problems faced by them. The details of Chi-square test (χ^2) is given as under:

$$\sum_{i=1}^{3} \frac{(O_i - E_i)^2}{E_i} \sim \chi^2 (L-1)(K-1) d.f.$$

where,
O = Observed values
E = Expected values
K = Number of problems
L = Number of farm size groups.

OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads:

Distribution of sample households according to type of family:

The distribution of kinnow growers according to the type of family has been given in Table 1 which has shown that percentage of joint families in the study area was 45.65, 51.28 and 40.00 per cent for small, medium and large categories of farmers, respectively. The maximum percentage of joint families was found on the medium farm category while minimum percentage was found on the large farm category. The analysis has revealed that maximum percentage of the nuclear families was found on the large farm category (60.00%) and minimum percentage was found in medium category (48.72%). Overall situation shows that the 47.00 per cent families

were found to be joint and 53.00 per cent as nuclear families.

Occupational distribution of sampled households:

Occupational distribution of the farmers has been considered very important in determining the economic status of the family. The occupation structure presented in Table 2 revealed that agriculture was main occupation in the study area as 69.00 per cent of selected households practice farming while remaining 31.00 per cent had service and business as their main occupation. Out of total farmers having subsidiary occupation, 17.00 per cent had service as main occupation and 14.00 per cent had business as main occupation. Similar trend in occupational distribution was observed in case of small and medium farm categories. In case of large farms, business was preferred more than services.

Source of irrigation of sampled households:

The results in the Table 3 showed the irrigated area and source of irrigation of sample households in the study area. The results revealed that out of total cultivated area (6.99 ha), 92.70 per cent of the area was found to be irrigated. Maximum percentage of irrigated area was found on large farm category (95.51%) followed by medium (90.64%) and small farm (82.54%). The table also revealed that out of total sample farmers, 10.00 per cent were found to be using *Kuhl* as source of irrigation and 13.00, 31.00, 16.00, 23.00 and 7.00 per cent of farmers were found to be using *Nallah*, tank, bore-well, tube-well and drip irrigation system, respectively.

Table 1: Distribution of sample households according to type of family (Farm category wise)

Family type	Small	Medium	Large	Overall
Numbers of joint families	21 (45.65)	20 (51.28)	6 (40.00)	47 (47.00)
Numbers of nuclear families	25 (54.35)	19 (48.72)	9 (60.00)	53 (53.00)
Total	46 (100.00)	39 (100.00)	15 (100.00)	100 (100.00)

Figures in parenthesis are percentages to total

Table 2 : Distribution of sampled households according to their main and subsidiary occupation (Farm category wise)

Farm size	Total farmers	No. of farmers with main occupation as agriculture	No. of farmers with other subsidiary occupation	Service	Business
Small	46 (100.00)	29 (63.04)	17 (36.96)	10 (21.74)	7 (15.22)
Medium	39 (100.00)	30 (76.92)	9 (23.08)	5 (12.82)	4 (10.26)
Large	15 (100.00)	10 (66.67)	5 (33.33)	2 (13.33)	3 (20.00)
Overall	100 (100.00)	69 (69.00)	31 (31.00)	17 (17.00)	14 (14.00)

Figures in parenthesis are percentages to total

Production related problems faced by the kinnow growers in the study area:

The results in the Table 4 showed the per cent response of production problems faced by kinnow growers in the study area. The results revealed that at overall level, main labour problems faced by kinnow growers were shortage of skilled labour (38.00%), higher wage rate (36.00%) and non- availability of labour at

Table 3: Irrigated area and source of irrigation (Farm category wise)

Farm categories	Total cultivate area (ha)	Irrigated area (ha)	Source of irrigation (No.)						
			Kuhl	Nallah	Tank	Bore-well	Tube-well	Drip system	Overall
Small	0.63	0.52 (82.54)	9	7	17	3	10	0	46
Medium	2.35	2.13 (90.64)	1	6	12	6	9	5	39
Large	4.01	3.83 (95.51)	0	0	2	7	4	2	15
Total	6.99	6.48 (92.70)	10 (10.00)	13 (13.00)	31 (31.00)	16 (16.00)	23 (23.00)	7 (7.00)	100 (100.00)

Figures in parenthesis are percentages to overall total

Table 4: Production related problems faced by the kinnow growers in the study area (Multiple response %)

Sr. No.	Particulars	Small	Medium	Large	Overall
	Labour problems				
1.	Shortage of skilled labour	34.78	35.90	53.33	38.00
2.	Higher wage rate	26.09	43.59	46.00	36.00
3.	Non- availability of labour at peak operation time	30.43	33.33	40.00	33.00
	Chemical fertilizers/ plant protection chemicals				
1.	High cost of plant protection chemicals	54.34	43.58	40.00	48.00
2.	Fertilizers not available in time	13.04	15.38	6.67	13.00
	Other problems				
1.	Shortage of desired plant material	17.39	17.95	13.33	17.00
2.	Limited availability of FYM	50.00	35.89	46.66	44.00
3.	Problem of stray animals	56.52	43.59	20.00	46.00

Table 5: Marketing related problems faced by the farmers in marketing of kinnow (Multiple response %)

Sr. No.	Particulars	Small	Medium	Large	Overall
	Labour problems				
1.	Shortage of skilled labour	39.13	35.9	33.33	37.00
2.	Higher wage rate	36.95	66.66	40.00	49.00
3.	Non- availability of labour at peak operation time	21.74	38.46	26.67	29.00
	Packing material				
1.	Shortage of packing material	17.39	20.51	13.33	18.00
2.	Higher prices	41.30	30.77	20.00	34.00
	Transportation				
1.	Villages not linked with roads	21.74	20.51	20.00	21.00
2.	High transportation charges	52.17	53.85	26.67	49.00
	Market intelligence				
1.	Late information	13.04	15.38	13.33	14.00
2.	Inadequate information	28.26	25.64	26.67	27.00
	Malpractices				
1.	Deduct more charges	56.52	53.85	40.00	53.00
2.	Prices are not paid in time	34.78	38.46	33.33	36.00
3.	Low prices	71.74	76.92	60.00	72.00

peak operation time (33.00%). In case of fertilizers and plant protection chemicals, main problems were of high cost of plant protection chemicals (48.0 %) and non-availability of fertilizers in time (13.00%). Other production problems included the problem of stray animals (46.00%), limited availability of FYM (44.00%) and shortage of desired plant material (17.00%). Among different categories of farms, high cost of plant protection chemicals on small farms, higher wage rate on medium farms and limited availability of FYM on large farms were more prominent problems with per cent response

of 54.34, 43.59 and 46.66 per cent, respectively.

Marketing related problems faced by the growers in marketing of kinnow:

The various problems related to marketing of kinnow are presented in Table 5. The results revealed that even though the cultivation of kinnow is a profitable venture in study area but still, there are some lacunas in the marketing of kinnow. Overall, the major problems of kinnow marketing were low prices for the produce, deduction of more charges by various marketing

Table 6: Test of significance of problems faced by kinnow growers in the study area		
Sr. No.	Particulars	Chi-square
	No. of farmers	100
	Production related problems	
	Labour problems	
1.	Shortage of skilled labour	5.23**
2.	Higher wage rate	6.12**
3.	Non- availability of labour at peak operation time	1.39
	Chemical fertilizers/ Plant protection chemicals	
1.	High cost of plant protection chemicals	2.42
2.	Fertilizers not available in time	3.47
	Other problems	
1.	Non-availability of healthy plant material	0.78
2.	Limited availability of FYM	2.46
3.	Problem of stray animals	17.12**
	Marketing related problems	
	Labour problems	
1.	Shortage of skilled labour	0.47
2.	Higher wage rate	11.16**
3.	Non- availability of labour at peak operation time	5.10**
	Packing material	
1.	Shortage of packing material	1.52
2.	Higher prices	7.39**
	Transportation	
1.	Villages not linked with roads	0.08
2.	High transportation charges	10.49**
	Market intelligence	
1.	Late information	0.23
2.	Inadequate information	0.13
	Malpractices	
1.	Deduct more charges	3.14
2.	Prices are not paid in time	0.39
3.	Low prices	2.16

** indicate significane of value at P=0.05

agencies, high transportation charges and higher wage rates as reported by 72.00, 53.00, 49.00 and 49.00 per cent of respondents, respectively. Other main problems at overall level were shortage of skilled labour (37.00%), non-payment of prices on time (36.00%), higher prices of packing material (34.00%), non-availability of labpur at peak time (29.00%), inadequate market intelligence (27.00%), villages not linked with roads (21.00%), shortage of packing material (18.00%) and late information about market prices (14.00%). The results revealed that among all farm categories, prominent problem was low price for the produce as reported by 71.74, 76.92 and 60.00 per cent of kinnow growers in small, medium and large category, respectively.

Test of significance of problems faced by kinnow growers in the study area:

The major problems in the production and marketing of kinnow were tested by chi-square test presented in Table 6. The results revealed that in case of production related problems, shortage of skilled labour, higher wage rates and problem of stray animals were found to be statistically significant at 5 per cent level of significance. In case of marketing related problems, higher wage rate, non-availability of labour at peak operation time, higher prices of packing material and high transportation charges were found to be statistically significant indicating that response of the farmers related to these problem differ significantly among different categories of farms.

Conclusion and policy implication:

From the present study, it was concluded that major production problems faced by kinnow growers were high cost of plant protection chemicals, problem of stray animals, limited availability of FYM, shortage of skilled labour, higher wage rate and non- availability of labour at peak operation time. Major marketing related problems were low prices for the produce, deduction of more charges by various marketing agencies, high transportation charges and higher wage rates. Other main problems prevailing in production and marketing of the produce in the study area were shortage of desired plant material,

shortage of packing material and non-availability of fertilizers in time. To overcome these constraints in the study area, the government should provide regular and timely supply of inputs and information on market potential, price and market intelligence is required to be collected through market survey so that proper marketing strategy could be formulated.

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REFERENCES

Anonymous (2017). *Horticulture statistics at a glance 2017.* Ministry of Agriculture and Farmers Welfare, Department of Agriculture, Co-operation and Farmers Welfare, Horticulture Statistics Division, Government of India, New Delhi, India.

Anonymous (2018). *Economic survey of Himachal Pradesh 2017-18.* Department of Economics and Statistics, Government of Himachal Pradesh, Shimla (H.P.) India.

Anonymous (2018). *State Department of Horticulture.* Government of Himachal Pradesh (H.P.) India.

Bhandare, C.L., Kamble, V.B. and Sidam, V.N. (2014). Constraints faced by sweet orange growers while adopting recommended package of practices. *Agric.Update,* **9** (3) : 403-406.

Bhat, A., Kachroo, J. and Kachroo, D. (2011). Economic appraisal of kinnow production and its marketing under North-Western Himalayan region of Jammu. *Agric. Econ. Res. Rev.*, **24** : 283-290.

Moore, G.A. (2001). Oranges and lemons: clues to the taxonomy of citrus from molecular markers. *Trends Genet.,* **17** : 536-540.

Sharma, S., Singh, B., Rani, G, Zaidi, A.A., Hallan, V., Nagpal, A. and Virk, G.S. (2007). Production of Indian citrus ring spot virus free plants of kinnow employing chemotherapy coupled with shoot tip grafting. *J. Central European Agric.,* **8**: 1-8.

WEBLIOGRAPHY

Anonymous (2016). *Food and agriculture organization of the United Nations*. FAOSTAT database. Website: *http://www.fao.org.*

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