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Economic appraisal of kinnow production and its marketing in lower hills of Himachal Pradesh

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ABSTRACT

A study was conducted in Kangra district of Himachal Pradesh during the year 2013-14 to appraise the socio-economic status of kinnow orchardists and marketing system in the selected area. The samples comprised of 160 kinnow growers selected from Nurpur and Indora blocks of Kangra district using multistage sampling technique. The required information was collected through personal interview method using well-designed and pre-tested schedules. The average size of kinnow crop holdings of small, medium and large orchardists in Nurpur block was worked out to be 1.46, 2.83 and 4.12 respectively whereas in Indora block it was 1.79, 2.79 and 3.95 hectares respectively. The net farm income was found to be the highest in the category of large farms (87.09%) and the lowest in small ones. This indicated that farmers with larger holdings were more inclined towards horticultural crops particularly kinnow. The results revealed that the kinnow production makes significant contribution towards the upliftment of the socio-economic status of the kinnow orchardists in the study area. Out of the three marketing channels, channel III was found to be most efficient with a marketing efficiency of 2.18 followed by channel II with a marketing efficiency of 1.56 while channel I was found to be the least efficient with a marketing efficiency of 0.76.

Keywords: Kinnow; economic analysis; marketing channel

INTRODUCTION

Under the changing agricultural scenario horticultural sector plays a vital role in providing a secure livelihood to the farmers. Horticulture sector is very important as it generates sufficient employment and also increases the income of the farming families. The economy of perennial horticultural crops is different from that of field crops mainly because of the long gestation period in case of the former. Fruit growers have to plan for a longer period keeping in view their land, labour and capital resources. Though the initial cost of establishing an orchard is fairly high the cost of maintenance during the fruiting period is almost the same as that for field crops.

Kinnow is a hybrid of king and willow leaf mandarins at Riverside, California (Sharma et al 2007). Kinnow fruits are medium, oblate, with flattened base, deep orange yellow in colour and very juicy (Gangwar et al 2005) and have lot of market potential which can help in increasing the farm income. Therefore there is a need to boost its production as well as expand its area which is possible only when a detailed cost and marketing analysis is carried out systematically. The present study was undertaken in Kangra district of Himachal Pradesh with the objectives of studying the socio-economic status of kinnow orchardists and the kinnow marketing system in the study area.

METHODOLOGY

The multistage random sampling was adopted for the selection of ultimate sampling units. The entire sampling plan consisted of four stages. In the first stage two blocks namely Nurpur and Indora from Kangra district were selected purposely as these are major kinnow growing blocks. In the second stage a list of kinnow producing Panchayats falling in the selected blocks was prepared from the records of the office of block development officer and at least 30 per cent random sample of these Panchayats was chosen. In the third stage a list of villages falling in the selected Panchayats was made and these kinnow producing villages were divided into two groups viz villages having more than 30 per cent and villages having less than 30 per cent of the area under kinnow cultivation.

Thereafter a random sample of 30 per cent of the villages from each group of villages was drawn. The kinnow growers were selected randomly from each village so as to constitute a sample size of 160 growers. The required information was collected through personal interview method using well designed and pre-tested schedules. The growers were divided into three groups namely small (<350 plants), medium (350-700 plants) and large (>700 plants).

The data were collected based on various aspects of demographic structures, land, livestock, land utilization pattern, production of agricultural and horticultural crops on the farm, prevailing price of inputs and outputs, off-farm income, net returns as well as marketing of kinnow during the year 2013-2014.

Marketing analysis: The primary data were collected from the selected farmers, village level agents, wholesalers, retailers and various other agencies and people involved in the marketing with the help of a pre-structured schedule by personal interview method.

Marketing cost:

$$T_c = C_p + M_{c_i}$$

where

Tc: Total cost of kinnow fruit marketing

Table1. Sample size, area under fruit plantation and area under kinnow plantation in different categories of orchards (area in ha)

Particular	Nurpur block			Indora block		
	Small (<350)	Medium (350-700)	Large (>700)	Small (<350)	Medium (350-700)	Large (>700)
# sample orchardists	34	29	17	15	46	19
Average area under fruit crops	3.01	3.56	4.56	5.95	3.35	4.88
Average area under kinnow plantation of fruit crops	1.46	2.83	4.12	1.79	2.79	3.95

Cp : Cost incurred by producer

M_{c_i}: Marketing cost increased by i^{th} middleman

Marketing margins: Following marketing margins were worked out in the study:

$$A_{m_i} = P_{m_i} - (P_p + M_{c_i})$$

where

A_{m_i}= The absolute margin of the ^{i}th middleman

P_{m_i}= The selling price of the ^{i}th middleman

P_p= Producer's price for his kinnow produce

M_{c_i}= Marketing cost of the ^{i}th middleman

Price spread

Price spread= Consumer price – Producer price

Marketing efficiency: Marketing efficiency was calculated using the formula given by Acharya and Agarwal (1998). It can be given as-

$$ME = \frac{FP}{MC + MM}$$

where

ME= Marketing efficiency

FP= Net price received by the producer-seller

MC= Total marketing cost

MM= Net marketing margin

Producer's share

$$P_s = \frac{Pp}{Pc} \times 100$$

where

Ps= Producer's share in consumer's rupee

Pp= Producer's price for his produce

Pc= Price paid by consumer

RESULTS and DISCUSSION

The data obtained on different socio-economic variables, area and production of kinnow crop for the study area have been analyzed and presented in Tables 2 to 7.

Type and size of family: The type and size of the family, work force and literacy among the kinnow growers are the essential components influencing the kinnow crop

management which happens to be family labour-based occupation at the village level. These factors ascertain the socio-economic prosperity of the family in particular and the area in general. It plays a critical role in the farm business activities. The family size has been divided in three categories viz i) 1-3 family members ii) 4-6 members and iii) more than 5 members per family. Among the sampled farm families there were about 72 per cent nuclear families in medium size and rest were joint families in Nurpur block whereas in Indora block 73.33 per cent small orchardists were reported to have nuclear families. On medium and large farms the number of nuclear type of family system was found to be on lower side.

Education: The education is an important ingredient for the development of any society. For scientific management of orchards the education level becomes more significant as this determines the adoption of innovative techniques. For this reason the educational status of sampled orchardists was analysed. It can be seen from the table that only 7.95 per cent orchardists were illiterate in Nurpur block followed by the medium and small orchardists and in Indora block there were 5 per cent illiterate orchardists in small group followed by medium and large groups. Majority of the respondents were graduates in Nurpur while their proportion was relatively lower in Indora.

Land utilization pattern of sampled orchardists: Land utilization pattern in different sizes of orchards in the study area is presented in Table 4. Average size of kinnow crop holdings of small, medium and large orchardists in Nurpur block was worked out to be 1.46, 2.83 and 4.12 respectively whereas in Indora block it was 1.79, 2.79 and 3.95 hectares respectively. This indicates that farmers with larger holdings were more inclined towards horticultural crops particularly kinnow. Percentage area under irrigation ranged between 29.45 to 49 per cent in Kangra district.

Cropping pattern in any region depends mainly on soil, altitude, micro-climate, availability of resources and management factors. A close scrutiny of the cropping pattern depicts the status of agriculture in the area. A look at the proportional share of a particular crop on the farm suggests the importance that the farmer attaches to a particular crop. Cropping pattern of sampled farms was examined and results are presented in Table 5. It is evident from the table that gross cropping area was highest of largest orchardists followed by the small and medium group orchardists. Wheat was the important crop in the Rabi season and paddy was found to be most important Kharif crop in this region.

Pattern of investment: In the present study the term capital investment includes value of land and non-residential buildings ie the portion of house mainly used for agricultural purposes like animal sheds,

Table 2. Distribution of selected orchardist according to size of family

Category	Nurpur					Indora				
	Sample size	Total family members	Size of family			Sample size	Total family members	Size of family		
			1-3	4-6	7 and above			1-3	4-6	7 and above
Small	34	170	6 (17.65)	21 (61.76)	7 (20.59)	15	60	6 (40)	9 (60)	- -
Medium	29	128	9 (31.03)	19 (65.52)	1 (3.45)	46	241	1 (2.17)	37 (80.43)	8 (17.39)
Large	17	88	3 (17.65)	10 (58.82)	4 (23.53)	19	95	2 (10.53)	15 (78.95)	2 (10.53)

Table 3. Education level of orchardists (%)

Education level	Nurpur			Indora		
	Small	Medium	Large	Small	Medium	Large
Illiterates	4.12	4.69	7.95	5.00	3.73	3.16
Under-matric	11.18	12.5	18.18	1.67	10.37	13.68
Matric	14.12	17.97	19.32	35.00	24.48	12.63
Plus two	24.12	27.34	22.73	43.33	32.37	17.89
Graduate	32.94	31.25	21.59	13.33	18.67	28.42
Post-graduate	13.53	6.25	10.23	1.67	10.37	24.21
Total over which percentage calculated (#)	170	128	88	60	421	95

Table 4. Land utilization pattern of selected orchardists (ha/farm)

Particulars	Nurpur			Indora		
	Small	Medium	Large	Small	Medium	Large
Orchard area	3.01	3.56	4.56	5.95	3.35	4.88
Area under field crop	5.61	3.97	5.00	4.56	3.76	6.23
Average Area under kinnow	1.46	2.83	4.12	1.79	2.79	3.95
plantation of fruits crop	(48.38)	(79.48)	(77.52)	(52.49)	(83.14)	(81.04)
Others (grasslands etc)	0.17	0.03	0.11	0.02	0.08	0.12
Average total area	8.79	7.56	9.67	10.53	7.19	11.53
Percentage area under irrigation	43.34	48.23	49.00	29.45	40.00	31.23

stores etc and livestock and farm implements.

Gross farm income: Gross farm income here means the income from field and fruit crops only during the study year. The percentage contribution of income from fruit crops towards the gross farm income on larger farms was in general more than the medium and smaller one in the study area as shown in table. This may be attributed to the higher number of bearing plants of larger orchards. Hoverever in Indora this contribution was higher on small farms.

Farm efficiency measures: Farm efficiency measures on different sizes of

farms in the lower hills of Himachal Pradesh are presented in Table 7. The net farm income on large farms was more than the small and medium farms in the study area in Kangra district.

This difference in the farm income among three categories of the farms may be attributed to the different levels of adoption of scientific techniques of farm production. The net farm income was found to be highest in large category of farms and the lowest on small ones. The larger farms were found to contribute maximum (87.09%) forwards the net farm income followed by the medium and small orchardists.

Marketing system of kinnow

In this section an attempt was made to present the marketing costs, margins and price spread in marketing of kinnow in Kangra district. The efficiency of marketing system for an agricultural produce in general is assessed by size of share which a farmer gets in the price paid by the consumer for a unit of the commodity. It is also important to have an efficient marketing system so that the producers get appropriate returns for their produce and consumers get them at reasonable prices (Gunwant et al 2013). The difference between price paid by the ultimate consumer and price received by the farmer/producer for an equivalent quantity of produce exists due to the costs of various marketing functions performed in the process of movement of the produce and also due to the margins of various agencies associated in the process of movement of the commodity. Therefore marketing costs, margins and prices spread in marketing of kinnow through different channels have been presented based on the data collected from farmers and market functionaries. The section has been divided into three sub-sections viz marketing channels, type of marketing costs and channel wise marketing margins, price spread and market efficiency.

Type of marketing costs: The costs of performing various functions in marketing of kinnow are as under:

Transportation charges: The cost of transportation on the movement of the produce between two places is one of the important marketing costs. The farmer seller on the basis of weight and distance pays transportation cost from farm to Mandi (market). Further transportation costs of the commodities from the Mandi are borne by the respective buyer.

Loading and unloading charges: It is the payment made to the labourers for rendering services of loading and unloading of the produce from transportation mode. The producer does loading of produce at his farm but unloading is done by Palledars (porters) in the Mandi. The charges for unloading were born by producer-farmer in the Mandi. Palledars perform further loading and unloading activities in the Mandi

Table 5. Cropping pattern and intensity of cropping (ha/farm)

Particulars	Nurpur			Indora		
	Small	Medium	Large	Small	Medium	Large
Wheat	0.73 (13.02)	1.50 (37.79)	1.91 (38.20)	1.37 (30.04)	1.10 (29.14)	1.23 (23.36)
Maize	0.78 (13.90)	0.59 (14.86)	0.78 (15.60)	1.27 (27.84)	0.45 (11.95)	0.66 (12.40)
Paddy	1.04 (18.54)	0.24 (6.04)	1.32 (26.47)	0.77 (16.85)	0.67 (17.90)	1.26 (23.90)
Barley	0.50 (8.91)	0.45 (11.33)	0.06 (1.18)	0.10 (2.20)	0.41 (10.97)	0.53 (9.96)
Mustard	0.27 (4.81)	0.24 (6.04)	0.43 (8.53)	0.28 (6.23)	0.26 (6.93)	0.26 (4.98)
Vegetables	1.01 (1.80)	0.76 (1.91)	0.35 (7.06)	0.67 (14.65)	0.75 (19.92)	1.29 (24.90)
Other	0.28 (4.99)	0.19 (0.47)	0.15 (2.94)	0.10 (2.19)	0.12 (3.18)	1.00 (0.05)
Area under field crops	5.61	3.97	5.00	4.56	3.76	6.23
Area under fruits crops	3.01	3.56	4.56	5.95	3.35	4.88
Gross cropped area	8.34	7.53	9.56	10.51	7.11	11.11

Figures in parentheses show percentage to total

Table 6. Income pattern of sampled orchardists (%)

Particulars	Nurpur			Indora		
	Small	Medium	Large	Small	Medium	Large
Fruit crops	78.82	83.44	96.53	96.15	91.91	93.11
Field Crop	21.18	16.56	3.47	3.85	8.09	6.89
Gross farm income over which percentage has been calculated (Rs/farm/year)	1257485.54	1267750.90	1635290.90	1211287.50	1350370.40	1966523.40

Table 7. Farm efficiency measures

Particulars	Nurpur			Indora		
	Small	Medium	Large	Small	Medium	Large
Gross farm income (Rs)	1257485.54	1267750.90	1635290.90	1211287.50	1350370.40	1966523.40
Farm expenditure (Rs)	1089766	1062474	1337776	989766	1078190.3	1664238.3
Per cent contribution of kinnow to total farm income	39.74	50.99	87.09	68.36	77.48	76.33
Net farm income (Rs)	167719.6	205277	297514.92	221521.5	272180.12	302285.08

and charges are borne by the concerned buyer.

Weighing charges: This charge is borne by the buyer. Weighing charges vary with type of container ie baskets, gunny bags, crates etc.

Mandi fee: The Mandi for rendering various services in the market area collects the charges. The Mandi fee in case of kinnow was Rs 0.50 per/kg.

Commission: It is the charge paid to commission agent for the service rendered by him in the disposal of the produce. The prevailing rate of commission prescribed by the market committee was Rs 1.60 per kg which was charged from the buyer.

Basket and crate charges: Farmers used to bring kinnow for sale in the Mandi in crates of about 25-30 kg capacity.

Grading, sorting, filling and packing charges: Baskets and crates were used to carry the produce from farm to the Mandi and Mandi to the retailers' shops. Grading, sorting, filling and packing were done by the labour present in the Mandi at a rate of Rs 10 per crate.

Quantity loss: In kinnow marketing loss in quantity is common due to packing, spoilage in the process of movement (transportation) and fluctuation of temperature, rough handling and delay in sale of the produce etc.

Marketing channels: A marketing channel is a route through which produce moves from the producer farmer to the ultimate consumer. The length of the channel varies from commodity to commodity depending upon the quantity to be moved, the kind of consumer demand and degree of regional specialization in production. In the study area

Table 8. Marketing cost, marketing margin, price spread and marketing efficiency under different channels

Particulars	Channel- 1	Channel- 2	Channel- 3
Gross price received by farmer (Rs/kg)	15.00	20.00	22.00
Cost incurred by farmers (Rs/kg)	2.00	3.50	3.80
Producers net price (Rs/kg)	13.00	16.50	18.20
Marketing cost incurred by farmers (Rs/kg)	0.80	0.80	1.00
Consumers price (Rs/kg)	30.00	25.00	23.50
Price Spread in different format (Rs/kg)	17.00	8.50	5.30
Total gross marketing margin (Rs/kg)	19.00	12.80	10.10
Marketing margin as % of consumer's price	1.52	1.95	2.33
Producer's share in consumer's rupee	43.33	66.00	77.45
marketing efficiency	0.76	1.56	2.18

kinnow producers adopted following three channels in marketing of their kinnows.

Channel I: Producer- village level commission agent/ contractor- retailer - consumer

Channel II: Producer- local retailer- consumer

Channel III: Producer- cooperative– retailer- consumer

Marketing cost, marketing margin, price spread and marketing efficiency under different channels: The marketing of kinnow is dominated by village level commission agent/contractor. More than 68 per cent produce was marketed through channel I. In channel II 25 per cent producers sold their produce directly to nearby local market retailers. These channels were preferred by producers because no marketing cost was borne by producer. In channel III cooperative was involved (rare cases) and the produce was directly purchased by the producers then went from retailers to consumers. Although the highest price was realized by producer in channel III but this channel was least preferred by producers which might be because farmers did not know how to retain customers for longer period (value addition) and the third was risk mitigation on unsold produce associated with this channel. In channel III cooperatives sold the produce either directly to consumer or retailer.

Marketing costs, margins and efficiency: The marketing cost incurred by producers was found to be Re 1.00 per kg in channel III followed by channel I and II. The major component of the marketing cost of the producer was cost incurred on

transportation cost, labour cost etc. The price spread was found to be minimum (Rs 5.30 per kg) in channel III which was very good for producers while it was found high (Rs 8.50 per kg) in channel II followed by the highest (Rs 17.00 per kg) in channel I. The market margin of consumer's price was found to be higher with the margin Rs 2.33 per kg in channel III followed by Rs 1.95 per kg in channel II and Rs 1.52 per kg in channel I. Hence channel III was the most admirable in terms of both consumer and producers. It is evident from Table 1 that channel III was the most efficient marketing channel with efficiency of 2.18 followed by channel II with efficiency of 1.56. The least efficient channel was channel I with marketing efficiency of 0.76. Therefore it is concluded that cooperative cum retailer (channel III) had been performing better than other intermediaries.

CONCLUSION

To reduce the spatial differences in the price of produce better transport, storage and village level processing unit facilities are required. Besides realizing remunerative price to the producers it will narrow down the spatial price differences and both consumers and producers will be benefitted.

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