Marketing patterns of kiwi in West Kameng District of Arunachal Pradesh

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ABSTRACT

Kiwi fruit is the most suitable diversified crop among the temperate fruit crops in India and has emerged as an alternative income generating in Arunachal Pradesh. An attempt has been made to study the marketing of kiwi in Dirang market and Bomdila market of West Kameng district of Arunachal Pradesh during the year 2015-16. Primary data was collected from selected kiwi growers constituting eighty (80) growers and five (5) intermediaries operating at each level of marketing channels. Three distribution channels were identified viz., channel I (Producer- Wholesaler- Retailer-Consumer), channel II (Producer- Retailer-Consumer) and channel III (Producer- Consumer). Channel I was most popular channel where the farmer disposed maximum of their product. The producer share in consumer rupee was found to be higher under channel I *i.e.* 21.61 per cent in Dirang market and 24.69 per cent in Bomdila market, due to more marketing costs incurred by agencies involved and more marketing margins earned by them. Producer's share in consumer's rupee channel III was highest i.e., 126.18 per cent in Dirang market and 118.82 per cent in Bomdila market, due to absence of intermediaries as the produce was sold directly to the consumer. Channel III was found to be more efficient in Dirang market with efficiency of 18.65 as it involve direct marketing of the produce to the consumers which was followed by channel II (4.99) and channel I (2.82). Similarly, in Bomdila market, channel III was found to be more efficient with efficiency of 20.25 as it involve direct marketing of the produce to the consumers which was followed by channel II (5.37) and channel I (2.92).

1. Introduction

Kiwi fruits (*Actinidiadeliciosa Chev.*) is the most suitable diversified crop among the temperate fruit crops in India and has emerged as an alternate crop after apple in temperate fruit production due to climate change (*pramanick et al.*,2015). Kiwi is also known as Chinese gooseberry and it is among the very few recent introductions which have surpassed in popularity due to its tremendous commercial potential in the sub- Himalayan region of India. In India, Kiwi fruits are found to grow in cooler regions like Himachal Pradesh, Jammu and Kashmir, Arunachal Pradesh, Mizoram and the Nilgiri Hills. Kiwifruit is an actively growing vine of dioeciously nature (separate male and female plants) of humid subtropical region to most temperate climates. Due to

good shelf life and less insect pest and diseases it's becoming popular in suitable pockets of mountainous region of India especially in the northeast. In India kiwi occupies an area of 4 thousand hectare with a production of 11 thousand metric tonnes (NHB, 2015). In Indian scenario, Arunachal Pradesh ranks 1st in kiwi production with an area of 3379 hectare and 6047.34 metric tonnes (NHB, 2015). There are 21 districts in Arunachal Pradesh and kiwi is cultivated in 9 districts, out of which West Kameng district is the largest producer, followed by lower Subansiri and Tawang districts. N is the highest producer of Kiwi contributing 4120.94 million tonnes with an area of 1184 hectare (GoAP, 2015). The production of kiwi being seasonal and localized to favoured agro- climatic conditions coupled with the perishability of the produce pose

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several problems on marketing. Several constraints such as lack of transport, communication, weak cooperatives organisations and primary markets in the rural areas, distress sale and volatile behaviour of price were other problems faced by the fruit growers of hilly areas who were also exploited by middlemen resulting in the low rate of farmer's in consumer's rupee. In backdrop of above situation, the studies can be very helpful in identifying the alternative solutions that may be adopted by farmers, marketers and policy makers. Thus the objective are: (i). To identify the marketing channels involved in the marketing of kiwi and to (ii). To compute marketing costs, marketing margins, price spread, producer's share in consumer's rupee and marketing efficiency of different channels.

2. Methodology

A multi stage sampling was adopted for the selection of districts, blocks and villages. The study was conducted in West Kameng district of Arunachal Pradesh Total of 80 respondent farmers from two villages has been drawn by using probability proportionate to size sampling method. Two major markets namely Dirang and Bomdila market from the district were taken with five intermediaries at each stage. The required information was collected through personal interview method using well- designed and pre-tested schedules. This paper is based on primary data collected from a survey of kiwi production and consumption areas. Wholesalers and the retailers dealing in marketing of kiwi in the selected market were also interviewed.

Analytical Tools

The analytical measures to work out production costs, producer surplus, marketing cost, marketing margin, price spread and marketing efficiency were applied to meet the objectives of the study

Marketing Cost

$C = C_F + C_{m1} + C_{m2} + C_{m3} + \ldots + C_m$

$C = C_F + \Sigma C_m$

Where

C = Total cost of marketing of the commodity

C_F = Cost paid by the producer at the time the produce leaves the farm till he sells it, and

C_{mi} = Cost incurred by the ith middleman in the process of buying and selling the product

Marketing margin of middlemen

It is the different between the total payments (cost + purchase price) and receipts (sale price) of the middlemen (i_{th} agency). It is expressed as:

$A_{mi} = P_{ri} - (P_{pi} + C_{mi})$

Where,

A_{mi} = absolute marketing margin of ith middlemen

P_{ri} = total value of receipts per unit (sale price)

P_{pi} = purchased value per unit (purchased price)

C_{mi} = cost incurred on marketing per unit

Percentage margin of middleman

$$(P_{mi}) = \frac{P_{Ri} - (P_{pi} + C_{mi})}{P_{ri}} \text{ x } 100$$

Where,

P_{Ri} = Total value of receipts per unit of produce (sale price)

P_{pi} = Purchase value of goods per unit of produce (purchase price)

C_{mi} = Cost incurred in marketing per unit.

Thus it includes the profit of the middleman and the returns.

Producer's Share in Consumer's Rupee

$$P_s = \left(\frac{P_f}{P_r}\right) X 100$$

Where,

P_s = Producer's share in the consumer rupee.

P_f = Price received by the farmer per unit of output

P_r = Retail price per unit of output

Price spread

Price spread = $P_c - P_f$

Where,

P_c = price paid by consumer

P_f = price received by the producer

Marketing Efficiency:

Marketing efficiency was calculated using Acharya's modified marketing efficiency (MME) approach (Acharya and Agarwal, 2011)

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

Where,

MME = modified measure of marketing efficiency

FP = price received by farmers

MC = marketing cost

MM = marketing margins.

3. Results and Discussion
Marketing Cost and Marketing Margin of kiwi

The study of marketing costs and margins is important as they reveal the nature, extent, genuineness of various marketing charges and the efficiency of the system. The findings can be utilized to introduce appropriate marketing and price policy that aims to provide reasonable price to producer and to ensure them for due share in consumer's rupee. The result of finding can also be utilized

to identify the reason of high marketing costs and possible way to reduce them. It can also help in development and evaluation of the marketing policies like the regulation of the market charges for different market functionaries and functions. Thus, this section deals with the estimation of marketing cost, margins and price spread of each identified marketing channels for Dirang market.

According to market norms, market fee and commission charges have to be paid by retailers and wholesalers. The following three channels were identified in marketing of kiwi.

a) Channel- I: Producer- Wholesaler- Retailer-Consumer

b) Channel-II: Producer- Retailer- Consumer and

c) Channel-III: Producer- Consumer.

In channel-I (Producer Wholesaler Retailer Consumer), wholesaler purchase the kiwi produce from the producer at assembling centre in Dirang market. Thus, there were two intermediaries *viz.,* wholesaler and retailer between producer and consumer (Table1). The net price received by kiwi grower was reported as ₹60.98 per kg, which shared about 72.59 per cent of the consumer's rupee. The consumer's price was observed to be ₹ 84 per kg of kiwi under this channel. The marketing cost incurred by kiwi producer amounted to be ₹4.02 per kg in transportation (labour and vehicle), marketing fee charges, loading and unloading and contributed 4.78 per cent of the consumer's price. Among the cost component, transportation cost by labour (1.66%) was found to be the highest cost incurred by the producer. Further, the wholesaler incurred ₹2.3 per kg as marketing cost which comprised of loading and unloading (0.97%), wastage /spoilage (1.07%) and market fee charges (0.69%) of the consumer's price. Wholesaler market margin was accounted to be 7.7 per kg which contributed 9.16 per cent of consumer's price. The marketing cost incurred by retailer estimated to be ₹3.65 per kg of which transportation by vehicle (1.10%), cost of loading and unloading (1.01%), packing materials (0.41%), wastage/spoilage (1.03%) and market fee charges (0.77%) were the different types of cost incurred by retailer per kg of kiwi. The cost due to transportation by vehicle (1.10%) was highest among the costs incurred by retailer because of the lack of proper storage facility in the study area. The marketing margin earned by retailer accounted to be per kg of kiwi in channel-I of the market.

In Bomdila market under the same channel i.e., (Table 2), the net price received by kiwi grower was reported as ₹66.05 per kg, which shared about 73.38 per cent of the consumer's rupee. The consumer's price was observed to be ₹ 90 per kg of kiwi under this channel. The marketing cost incurred by kiwi producer amounted to be ₹3.95 per kg in transportation (labour and vehicle), marketing fee charges,

loading and unloading and contributed 4.38 per cent of the consumer's price. Among the cost component, transportation cost by labour (1.54%) was found to be the highest cost incurred by the producer. Further, the wholesaler incurred ₹ 2.47per kg as marketing cost which comprised of loading and unloading (1%), wastage /spoilage (1.03%) and market fee charges (0.71%) of the consumer's price. Wholesaler market margin was accounted to be 7.53 per kg which contributed 8.36 per cent of consumer's price. The marketing cost incurred by retailer estimated to be ₹4.16 per kg of which transportation by vehicle (1.36%), cost of loading and unloading (1.03%), packing materials (0.38%), wastage/spoilage (1.05%) and market fee charges (0.77%) were the different types of cost incurred by retailer per kg of kiwi. The cost due to transportation by vehicle (1.36%) was highest among the costs incurred by retailer because of the lack of proper storage facility in the study area. The marketing margin earned by retailer accounted to be per kg of kiwi in channel-I of the market.

In channel-II (Producer Retailer Consumer), retailer purchased the produce from the producer in Dirang market. Thus, there are one intermediary *viz.,* retailer between producer and consumer (Table 1). The net price received by kiwi producer was reported as ₹65.98 per kg, which shares about 82.47 per cent of the consumer's rupee of kiwi. The consumer's price was observed to be ₹80 per kg of kiwi under this channel. The marketing cost incurred by kiwi producer was ₹4.02 in transportation (labour and vehicle), market fee charges, loading and unloading and accounted as 5.02 per cent of the consumer's price. Among the cost component, transportation cost by labour (1.75%) was found to be the highest cost incurred by the producer. The marketing cost incurred by retailer was estimated to be ₹ 3.04 per kg of kiwi of which cost of loading and unloading (1.11%), packing materials (0.43%), wastage/spoilage (1.3%) and market fee charges (0.8%) were the different types of costs incurred by retailer. The cost due to wastage/spoilage was highest (1.3%) among the cost incurred by retailer. The marketing margin earned by retailer accounted as ₹6.96 per kg of kiwi in channel-II in the market.

In Bomdila market under the same channel (Table 2), i.e., channel II, the net price received by kiwi producer was reported as ₹71.05 per kg, which shares about 83.58 per cent of the consumer's rupee of kiwi. The consumer's price was observed to be ₹85 per kg of kiwi under this channel. The marketing cost incurred by kiwi producer was ₹3.95 in transportation (labour and vehicle), market fee charges, loading and unloading and accounted as 4.64 per cent of the consumer's price. Among the cost component, transportation cost by labour (1.39%) was found to be the highest cost incurred by the producer. The marketing cost incurred by retailer was estimated to be ₹ 3.08

per kg of kiwi of which cost of loading and unloading (1.12%), packing materials (0.41%), wastage/spoilage (1.23%) and market fee charges (0.84%) were the different types of costs incurred by retailer. The cost due to wastage/spoilage was highest (1.23%) among the cost incurred by retailer. The marketing margin earned by retailer accounted as ₹6.92 per kg of kiwi in channel-II in the market.

In channel-III (Producer Consumer), also known as direct marketing, the kiwi consumer purchases the produce directly from the producer assembling point (Table 1). Thus, there were no intermediaries between producer and consumer. The net price received by kiwi producer was reported as ₹ 70.98 per kg, which shares about 94.64 per cent of the consumer's rupee. The consumer's price was observed to be ₹75 per kg of kiwi under this channel. The marketing cost incurred by kiwi producer was ₹ 4.02 on in transportation (labour and vehicle), marketing fee charges, loading and unloading accounted to be 5.36 per cent of the consumer's price.

Similarly, in Bomdila market under same channel (Table 2), i.e., channel III the net price received by kiwi producer was reported as ₹ 76.05 per kg, which shares about 95.06 per cent of the consumer's rupee. The consumer's price was observed to be ₹80 per kg of kiwi under this channel. The marketing cost incurred by kiwi producer was ₹3.95 on in transportation (labour and vehicle), marketing fee charges, loading and unloading accounted to be 4.93 per cent of the consumer's price.

Price spread of kiwi

The price spread of kiwi in Dirang market of West Kameng district under respective channel is presented in Table 1. The study revealed that net price received by kiwi producer was observed to be highest in channel-III, which amounted to be ₹ 70.98 per kg   (94.64% of the consumer's rupee). It was followed by channel-II, accounted to be ₹ 65.98 per kg (82.47% of the consumer's price) and channel-I accounted to be ₹ 60.98 per kg (72.59%). It was evident from the study that channel-III was more efficient in which marketing cost (5.36%) was found to be least followed by channel-II (8.82%) and channel-I (11.86%). Hence, increase in the marketing cost reduced the share of margin of kiwi producer in consumers rupee. Consequently, kiwi producer received higher share under channel-III (95.06%) of consumer's price. It may be due to absence of intermediaries and less marketing cost incurred by kiwi farmers in channel-III. It is very clear when we look on price spread Producer share in consumer price was found to be more on channel-I (22.61%), followed by channel-II (10.71%) and it was negligible in channel-III. The study also found that the channel-III had the highest share of market margin accounting for 15.53 per cent of the consumer's price which

was followed by channel-II (8.7%) and channel-I (86.12%). The consumer's price was observed to be highest in channel-I (₹84), followed by channel-II (₹ 80) and channel-III (₹ 75).

The price spread of kiwi in Bomdila market of West Kameng district under respective channel is presented in Table 2. The study revealed that net price received by kiwi producer was observed to be highest in channel-III, which amounted to be ₹ 76.05 per kg (94.64% of the consumer's rupee). It was followed by channel-II, accounted to be ₹ 71.05 per kg (83.58% of the consumer's price) and channel-I accounted to be ₹ 66.05 per kg (73.38%). It was evident from the study that channel-III was more efficient in which marketing cost (5.36%) was found to be least followed by channel-II (8.82%) and channel-I (11.86%). Hence, increase in the marketing cost reduced the share of margin of kiwi producer in consumers rupee. Consequently, kiwi producer received higher share under channel-III (95.06%) of consumer's price. It may be due to absence of intermediaries and less marketing cost incurred by kiwi farmers in channel-III. It is very clear when we look on price spread in which it was found to be more on channel-I (22.61%), followed by channel-II (10.71%) and it was negligible in channel-III. The study also found that the channel-III had the highest share of market margin accounting for 15.53 per cent of the consumer's price which was followed by channel-II (8.7%) and channel-I (86.12%). The consumer's price was observed to be highest in channel-I (₹ 84), followed by channel-II (₹ 80) and channel-III (₹ 75).

Marketing efficiency

Marketing efficiency measures the degree of market performance. Higher marketing efficiency in value indicates, the channel is more efficient. A change that reduces the cost of accomplishing a particular function without reducing consumer's satisfaction indicates an improvement in the efficiency. In Dirang market of West Kameng district marketing cost highest in channel-I (₹9.97/kg) followed by channel-II (₹7.06/kg) and channel-III (₹ 4.02). The marketing efficiency was found to be highest in channel-III with marketing efficiency of 18.65, and ranked as first. It may be due to lesser price spread in channel, which is followed by channel-II with marketing efficiency of (4.99) and channel-I (2.82). The channel-I shown the lowest efficiency among the channels, it may be due to highest price spread (marketing cost and marketing margin). Similarly, in Bomdila market of West Kameng district marketing cost highest in channel-I (₹ 10.58/kg) followed by channel-II (₹7.03/kg) and channel-III (₹ 3.95/kg). The marketing efficiency was found to be highest in channel-III with marketing efficiency of 20.25, and

ranked as first. It may be due to lesser price spread in channel, which is followed by channel-II with marketing efficiency of (5.37) and channel-I (2.92). The channel-I shown the lowest efficiency among the channels, it may be due to highest price spread (marketing cost and marketing margin)

Hence, study suggests to standardize the different marketing costs prevailed in the market to enhance the efficiency of existing channels in the market. Especially the marketing costs which had been incurred by producers found to be highest among all. Alternative steps should be taken to reduce such costs so that profits can be maximised

4. Conclusion

It was observed that the price of kiwi registered high fluctuations within a year as well as between the years. Channel I was the most popular channel in both market where the farmer disposed maximum of their produced and disposing more quantity through this. Channel I was the most preferred channel due to wholesaler purchase kiwi in large quantities. The price spread was found to be higher under channel I in both the markets due to more marketing costs incurred by agencies involved and more marketing margins earned by them. Producer's share in consumer's rupee was highest under channel III as the produce was sold directly to

Table 1. Marketing cost, margin and price spread of kiwi in Dirang market of West Kameng district 2015-16, (₹/Kg)

Particulars	Channel-I	Channel-II	Channel-III
Net price received by the growers	65(77.38)	70(87.5)	75(100)
Cost incurred by the growers			
i. Transportation charges (human labour)	1.4(1.66)	1.4(1.75)	1.4(1.86)
ii. Transportation charges (Vehicle)	1.32(1.57)	1.32(1.65)	1.32(1.76)
iii. loading and unloading charges	0.74(0.88)	0.74(0.92)	0.74(0.98)
iv. Packing charges	-	-	-
v. wastage/ spoilage	-	-	-
vi. Market fee charges	0.56(0.66)	0.56(0.7)	0.56(0.74)
Total (i to vi)	4.02(4.78)	4.02(5.02)	4.02(5.36)
Producer margin	60.98(72.59)	65.98(82.47)	70.98(94.64)
Price received by the wholesaler	75(89.28)	-	-
Cost incurred by the wholesaler	-	-	-
i. Transportation charges (human labour)	-	-	-
ii. Transportation charges (Vehicle)	-	-	-
iii. loading and unloading charges	0.82(0.97)	-	-
iv. Packing charges	-	-	-
v. wastage/ spoilage	0.9(1.07)	-	-
vi. Market fee charges	0.58(0.69)	-	-
Total (i to vi)	2.3(2.73)	-	-
Wholesaler margin	7.7(9.16)	-	-
Price received by the retailer	84(100)	80(100)	-
Cost incurred by the retailer	-	-	-
i. Transportation charges (human labour)	-	-	-
ii. Transportation charges (Vehicle)	0.93(1.10)	-	-
iii. loading and unloading charges	0.85(0.01)	0.89(1.11)	-
iv. Packing charges	0.35(0.41)	0.35(0.43)	--
v. wastage/ spoilage	0.87(1.03)	1.1(1.3)	-
vi. Market fee charges	0.65(0.77)	0.7(0.8)	-
Total (i to vi)	3.65(4.34)	3.04(3.8)	-
Retailer margin	5.35(6.36)	6.96(8.7)	-
Price paid by the consumer	84(100)	80(100)	75(100)
Marketing cost	9.97(11.86)	7.06(8.82)	4.02(5.36)
Net marketing margin	13.05(15.53)	6.96(8.7)	-
Price spread	19(22.61)	10(10.71)	-
Producer's share in consumer's rupees (%)	72.59	82.47	94.64
Note: Figures in the parentheses are percentage of the price paid by the consumer			

Table 2. Marketing cost, margin and price spread of kiwi in Bomdila market of West Kameng district, 2015-16 (₹/Kg)

Particulars	Channel-I	Channel-II	Channel-III
Net price received by the growers	70(77.77)	75(88.23)	80(100)
Cost incurred by the growers			
i. Transportation charges (human labour)	1.39(1.54)	1.39(1.63)	1.39(1.73)
ii. Transportation charges (Vehicle)	1.25(1.38)	1.25(1.47)	1.25(1.56)
iii. loading and unloading charges	0.75(0.83)	0.75(0.88)	0.75(0.93)
iv. Packing charges	-	-	-
v. wastage/ spoilage	-	-	-
vi. Market fee charges	0.56(0.62)	0.56(0.65)	0.56(0.7)
Total (i to vi)	3.95(4.38)	3.95(4.64)	3.95(4.93)
Producer margin	66.05(73.38)	71.05(83.58)	76.05(95.06)
Price received by the wholesaler	80(88.8)	-	-
Cost incurred by the wholesaler	-	-	-
i. Transportation charges (human labour)	-	-	-
ii. Transportation charges (Vehicle)	-	-	-
iii. loading and unloading charges	0.9(1)	-	-
iv. Packing charges	-	-	-
v. wastage/ spoilage	0.93(1.03)	-	-
vi. Market fee charges	0.64(0.71)	-	-
Total (i to vi)	2.47(2.74)	-	-
Wholesaler margin	7.53(8.36)	-	-
Price received by the retailer	90(100)	85(100)	-
Cost incurred by the retailer	-	-	-
i. Transportation charges (human labour)	-	-	-
ii. Transportation charges (Vehicle)	1.23(1.36)	-	-
iii. loading and unloading charges	0.93(0.03)	0.89(1.12)	-
iv. Packing charges	0.35(0.38)	0.35(0.41)	--
v. wastage/ spoilage	0.95(1.05)	1.05(1.23)	-
vi. Market fee charges	0.7(0.77)	0.72(0.84)	-
Total (i to vi)	4.16(4.62)	3.08(3.62)	-
Retailer margin	5.84(6.48)	6.92(8.14)	-
Price paid by the consumer	90(100)	85(100)	80(100)
Marketing cost	10.58(11.75)	7.03(8.27)	3.95(4.93)
Net marketing margin	13.37(14.85)	6.92(8.14)	-
Price spread	20(22.22)	10(11.76)	-
Producer's share in consumer's rupees (%)	73.38	83.58	95.06
Note: Figures in the parentheses are percentage of the price paid by the consumer			

the consumer. Channel III was found to be most efficient in both the market with market efficiency of 18.65 in Dirang market and 20.25in Bomdila market. This was mainly due to absence of intermediaries. Kiwi production being a capital intensive enterprise and marketing is still unorganized, credits from banks and financial institutions should be made available for the resource poor farmers for production and marketing.

1. References

Acharya, S.S., and Agarwal, N.L (2011).Agriculture marketing in India (fifth edition).Oxford and IBH publishing Co. Pvt. Ltd., New Delhi, pp 48.

Ferguson AR (2008) Kiwifruit. springer.

Ferguson AR and Bollard EG (1990). Domestication of the kiwifruit. Kiwifruit: Science and Management, pp 165-246.

GoAP. (2015). *Directorate of Horticulture Arunachal Pradesh.*

Mani G, Kundra A & Haque A (2018) *Kiwi value chain in Arunachal Pradesh: issues and prospects. Agricultural Economics Research Review 31(1): 123-130. DOI: 10.5958/0974-0279.2018.00012.5*

NHB. (2015). Indian Horticulture Database. National Horticultural Board. *Ministry of Agriculture, Government of India.*

Pramanick, K.K., Shukla, A.K., Kumar, J., and Watpade, S. (2015). Effects of bioregulator, summer and winter pruning and nutrient spray on fruit grade and yield of kiwifruit. *National Academy of Agric. Sci.,* **33** (2): 1033-1038.