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## Marketing pattern analysis of Assam lemon: A case study in Nalbari district of Assam

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### Abstract

The current research was conducted with the aim of analysing the marketing trends of Assam Lemon in Nalbari district. The primary objective was to increase knowledge about the prevailing marketing channels in the designated region and promote awareness regarding them. The data pertaining to the marketing trends in the study area was gathered using the interview technique. Primary data was acquired through personal interviews utilizing specially designed pre-tested questionnaires. The participants included 100 Assam Lemon growers, 5 pre-harvest contractors, and 10 wholesalers and retailers each, representing different levels within the marketing channels. In the study area, three distinct marketing channels for Assam Lemon were identified: Channel I - Producer to Pre-harvest contractor to Wholesaler to Retailer to Consumer, Channel II - Producer to Wholesaler to Retailer to Consumer, and Channel III - Producer directly to Consumer. The findings of the study revealed that Channel III (Producer - Consumer) exhibited greater efficiency. However, it was observed that Channel I (Producer - Pre-harvest contractor - Wholesaler - Retailer - Consumer), which involved a higher number of intermediaries, proved to be the most effective in the study area. This effectiveness was attributed to 55 per cent of the marketed surplus flowing through this channel to distant markets. Unfortunately, this dominance of market intermediaries resulted in lower price realization for the farmers, impacting their earnings adversely.

**Keywords:** Marketing channels, marketed surplus, market intermediaries, Assam lemon, marketing efficiency

### 1. Introduction

Agriculture serves as the fundamental pillar of Assam's economy, playing a crucial and irreplaceable role. Over 70 per cent of the state's population is engaged in agricultural activities for their livelihood. Assam possesses a remarkable feature as it can cultivate a wide array of fruits and vegetables, encompassing nearly all varieties (Barman *et al.*, 2020) [1]. Assam has been blessed with a rich biodiversity of fruit crops, vegetable crops, fragrant plants, medicinal plants, spices, etc., making horticulture one of the key sources of producing revenue and contributing to the betterment of the standard of living of the people. The citrus belt in the world includes Assam. Citrus fruits are in great demand due to their high nutritive value. They are abundant in essential nutrients such as vitamin C (ascorbic acid), natural sugars, as well as vitamins A and B (Kumar & Sharma, 2019) [2]. Lemon (*Citrus limon* (L.) Burm.) holds a prominent position among the citrus fruits both in India and globally. It exhibits a variety of distinct forms that may exhibit slight variations from one another. With its wide adaptability, lemon stands as one of the most promising fruit crops worldwide (Haokip *et al.*, 2021) [3]. Assam Lemon is a native dwarf cultivar of citrus and a very important variety of lemon which is suitable for high density planting, locally known as '*Kaji Nemu*' in Assam. The largest and most widely cultivated citrus fruit in the state is Assam Lemon, which had a total cultivable area of 13802 hectares in 2018-19, a production of 1.19 lakh metric tons, and an average yield of 8645 kg/hectare annually (Statistical Handbook of Assam, 2020). Assam Lemon has high demand in the domestic market as well as in the external market. The prevailing climatic condition is congenial due to which the people of Assam can reap the benefits of it for its commercial cultivation.

Assam's Nalbari district, which is the state's largest producer of Assam Lemon in terms of both acreage and production, offers hospitable agro-climatic conditions for its commercial cultivation. In the aforementioned district, Assam Lemon is grown on 823 hectares of land and produces 7146 MT. Assam Lemon is grown by the farmers in the backyard of their houses as well as in their kitchen gardens due to its high market demand.

The majority of farmers in the region face significant challenges as they lack formal education, organizational structure, and proper assessment tools to evaluate the marketing potential of their produce. Consequently, they face challenges in bargaining and negotiating with market intermediaries, leading to selling their produce at lower prices. This lack of empowerment and resources keeps them trapped in a cycle where they are unable to expand and grow in the trading business, resulting in stagnation in their agricultural endeavours. Therefore, the focus of the current study was on the analysis of the marketing pattern, including the marketing channels, marketing costs, market intermediaries' margins, pricing spreads, producers' shares of consumer rupees, farmers' net prices, and the effectiveness of the channels' marketing.

**2. Methodology**

The primary focus of the current study was centered on Nalbari district in the state of Assam. The field survey for the purpose of collecting primary data from the farmers was started during the third week of August 2021 and was completed by first week of September 2021. The sample size consists of 100 respondents. To obtain the ultimate sample units i.e., the respondents a multistage purposive and random sampling was adopted and a total of 10 villages from Nalbari district were selected purposively where Assam Lemon is cultivated. Digheli, Tilana, Bhanukuchi, Balitara, Arora, Baralkuchi, Ahiyabari, Amayapur, Salbari, and Aohata were deliberately chosen as study locations due to their significant economic contributions in the production and marketing of Assam Lemon. In the present study, to gather primary data on marketing, a carefully designed pre-tested questionnaire was employed during personal interviews with the respondents. The aim was to assess the marketing efficiency and analyse the marketing margins of different intermediaries along with the price spread involved in the trading of produce. To achieve these goals, the study involved the participation of five pre-harvest contractors, ten wholesalers, and ten retailers. Various analytical methods employed in the research included:

**2.1 Marketing Cost**

The formula utilized to calculate the marketing cost was as follows:

$$C = CF + CM_1 + CM_2 + CM_3 + \dots + CM_n$$

Where,

C=Total cost of marketing

CF=Cost borne by the producer from the time the produce leaves the farm till it is sold, and

CM<sub>1</sub>, CM<sub>2</sub>, CM<sub>3</sub>, CM<sub>n</sub> = Cost incurred by different market intermediaries

**2.2 Marketing margin**

Marketing margin of market intermediaries was computed out as the difference between the total cost incurred by the intermediaries in purchasing the produce from the producer along with the cost of marketing and selling price of the market intermediaries and was calculated as:

$$A_{mi} = P_s - (P_p + MC_i)$$

Where, A<sub>mi</sub> = Absolute marketing margin of the i<sup>th</sup> market

intermediaries

P<sub>s</sub> = Selling price of the i<sup>th</sup> market intermediaries

P<sub>p</sub> = Purchase price of the i<sup>th</sup> market intermediaries

MC<sub>i</sub> = Marketing cost incurred by the i<sup>th</sup> market intermediaries

**2.3 Price spread**

Price spread in the context of agricultural marketing refers to the disparity or difference between the price paid by the final consumer for a specific quantity of a farm produce and the price received by the producer for the same amount of the product i.e.

Price spread = Price paid by the consumer – Price received by the producer

Symbolically P<sub>sd</sub> = P<sub>c</sub> – P<sub>F</sub>

Where

P<sub>sd</sub> = Price spread

P<sub>c</sub> = Price paid by the consumer

P<sub>F</sub> = Price received by the farmers for equivalent quantity of the produce

**2.4 Producer's share in consumer's rupee**

The calculation of the producer's share in the consumer's rupee was conducted using the following formula:

$$P_s = (P_f / P_c) \times 100$$

Where, P<sub>s</sub> = Producer's share in consumer's rupee

P<sub>F</sub> = Price received by the farmer for the equivalent quantity of produce

P<sub>C</sub> = Price paid by the consumer

**2.5 Marketing efficiency**

Marketing efficiency was calculated using Acharya's modified measure of marketing (MME) efficiency.

$$MME = P_f / (MC + MM)$$

Where

MME=Modified measure of marketing efficiency

P<sub>F</sub>=Price received by farmer

MC=Marketing cost

MM=Marketing margin

**3.Results and Discussion**

**3.1 Marketing channel, marketing cost, marketing margins, price spread and efficiency in the study area**

The marketing channel represents the path that a product takes from the producer to the final consumer. Analyzing this channel is essential to understand marketing efficiency in terms of price spread. An efficient channel involves fewer intermediaries, reducing costs at each stage, providing reasonable margins for intermediaries, and ensuring a larger share for the producer in the consumer's rupee.

In the study area, three marketing channels were identified, with pre-harvest contractors, wholesalers, and retailers entering the chain during peak seasons in June to July and December to January. Low market prices were observed during these periods due to increased supply of Assam Lemon (Kaji Nemu).

**Channel I**

Producer - Pre-Harvest Contractor – Wholesaler - Retailer - Consumer

In this channel, the producers sold their products to the pre-harvest contractors on pre-agreed price, who harvests the produce from the farmer's place and then sold the produce to the wholesalers. The wholesaler in this channel was dependent on pre-harvest contractor, rather than collecting directly from the farmer's place. The wholesaler transports the produce to the distant market and further sells the produce to the retailer and finally through the retailer the produce reaches the consumer. Table 1 and Fig. 1 shows that 55 per cent of the marketed surplus i.e., 65.16 quintal of Assam lemon moved through this channel. It is revealed from Table 2 that the total marketing cost incurred by the pre-harvest contractor in selling the products to the wholesaler in nearby markets was Rs. 125 per quintal of Assam Lemon in channel I. In channel I, wholesalers while receiving the products from the pre-harvest contractor, incurred marketing cost of Rs 255 per quintal of Assam Lemon as the transportation cost included under the marketing cost for delivering the products to the distant market was more as compared to delivering the products in nearby markets. In Channel I (Producer - Pre-harvest contractor - Wholesaler - Retailer - Consumer), the retailer incurred a marketing cost of Rs. 80 per quintal of Assam Lemon. This channel involved several market intermediaries, resulting in the highest total marketing margin of Rs. 740 per quintal of Assam Lemon. However, despite the higher marketing margin, the price received by the producer for Assam Lemon in this channel was the lowest, amounting to Rs. 800 per quintal. As a result, the producer's share in the consumer's rupee was the lowest among all the channels, comprising only 40 per cent of the final price paid by the consumer for the product. This suggests that the majority of the consumer's payment was absorbed by the various intermediaries in this marketing channel, leading to a relatively smaller share for the actual producer.

Due to increased supply in the market, producers lost their bargaining power as the produce cannot be stored after harvest. Furthermore, inadequate transportation facilities led to farmers' reluctance to sell their products directly, which, in turn, fostered the presence of middlemen who exercise significant control over the entire market. These findings align with the research conducted by Mahanta and Konwar (2014) <sup>[5]</sup>. Small growers face challenges in marketing their fruit at the retail level, and they lack the capacity to bear the risks associated with marketing their produce in distant markets. As a result, they are compelled to sell their produce at whatever price traders offer, especially during periods of market glut. This situation puts the small growers at a disadvantage as they may have limited bargaining power and are susceptible to price fluctuations in the market. Due to their constrained resources and inability to directly access retail markets, they become reliant on intermediaries, which can affect their profit margins and overall economic outcomes. The marketing channel with the involvement of multiple intermediaries, earning higher margins, was found to have the lowest efficiency, scoring only 0.67. This low efficiency indicates that the distribution of resources and profits within this channel may not be optimized, leading to potential inefficiencies and increased costs. In addition, the price spread observed was the highest, reaching Rs 1200 per quintal of Assam Lemon.

## Channel II

Producer - Wholesaler - Retailer - Consumer

In this channel wholesaler themselves visited farmer's field and collected Assam lemon from nearby village areas and further sold their products to the retailers in the nearby markets and finally through them the products reached the consumers. Table 1 and Fig 1. shows that 30 per cent of the marketed surplus i.e., 35.54 quintal of Assam lemon moved through this channel.

Table 2 clearly shows that in channel II, the wholesaler incurred a total cost of Rs. 125 per quintal of Assam Lemon. The wholesaler directly purchased the produce from nearby farmers and sold it to retailers in nearby markets. In this channel, the retailer bore a marketing cost of Rs. 70 per quintal of Assam Lemon. The total marketing margin earned by all intermediaries involved in this channel was Rs. 405 per quintal of Assam Lemon. The producer's share in the consumer's rupee was relatively higher in this channel, accounting for 60 per cent of the final price paid by the consumer for the product. The marketing efficiency of Channel II was found to be the second highest among the channels, with a value of 1.50. This indicates a reasonably efficient distribution of resources within this marketing channel. Moreover, the price spread in this channel was Rs. 600 per quintal of Assam Lemon.

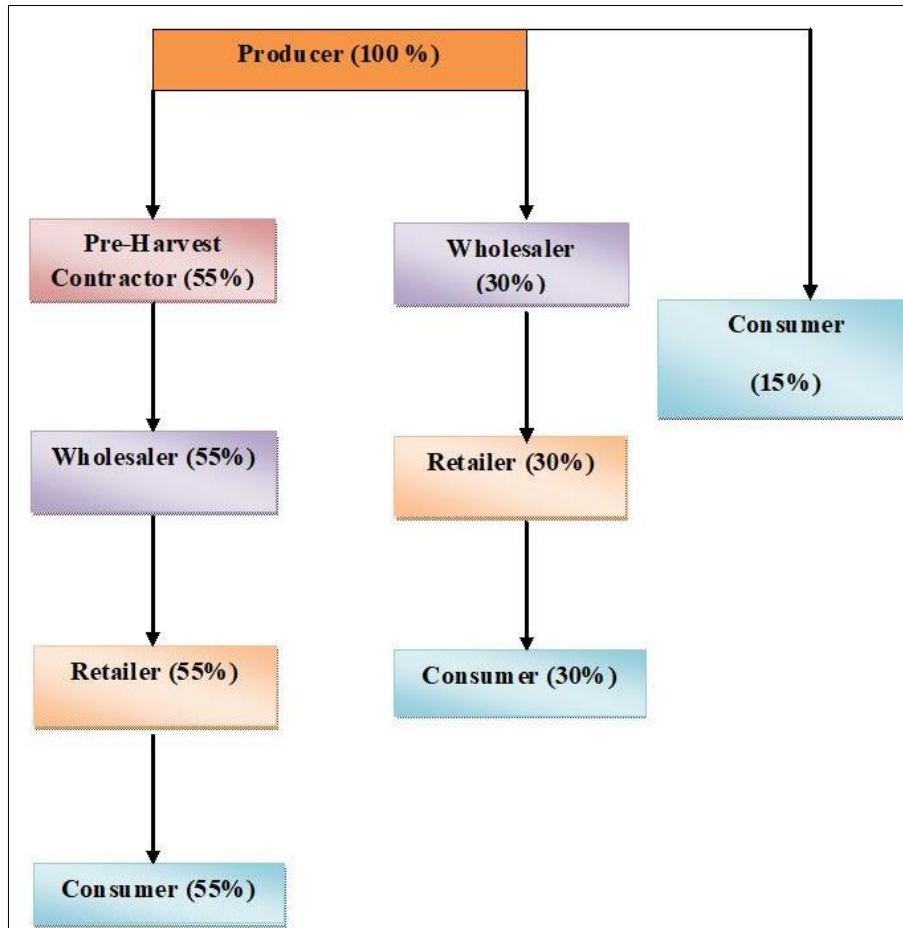
## Channel III

Producer - Consumer

In this channel, the producer directly sold their products to the consumer in the nearby markets. From Table 1 and Fig. 1 it is revealed that only 15 per cent of the marketed surplus i.e., 17.77 quintal of Assam Lemon moved through this channel. As during the peak season since the production was generally high and market price was generally low, so the farmers sold 15 per cent of the marketed surplus directly to the consumer to earn more profit. It is evident from Table 2 that marketing cost incurred by the producer was Rs. 100 per quintal of Assam Lemon in channel III. However, in case of selling the products to the pre-harvest contractor or wholesaler they did not incur any marketing cost as the products have been collected from the farmer's field by pre-harvest contractor or wholesaler. In Channel III, the producer's portion of the consumer's payment was at its peak, accounting for 90.91 percent. This indicates that the majority of the price paid by consumers for Assam Lemon went directly to the producers. The above finding is in close conformity with Yogi *et al.* (2021) <sup>[7]</sup> which revealed that direct sale in the local market resulted in higher share in the consumers' rupee wherein both producers' and consumers gained because net price received by the producers was highest in channel III and the price paid by the consumer was lowest in this channel. Marketing efficiency of this channel was found to be the highest (10) as the price spread was least (Rs.100) due to no involvement of market intermediaries which is in contradictory with the results of Narzary and Kalita (2019) <sup>[6]</sup>. The streamlined nature of this marketing channel, with fewer intermediaries involved, facilitated a more direct connection between producers and consumers. This high share for the producers demonstrates an efficient marketing system that allows them to retain a substantial portion of the revenue generated from product sales, promoting fairer income distribution for farmers.

**Table 1:** Marketing channels identified for Assam lemon and channel wise transaction

Particulars	Marketing channels	Quantity of commodity transacted (q)
Channel I	Producer – Pre-Harvest Contractor – Wholesaler –Retailer – Consumer	65.16
Channel II	Producer – Wholesaler –Retailer – Consumer	35.54
Channel III	Producer – Consumer	17.77
	Total	118.48



**Fig 1:** Flow chart showing marketed surplus of Assam lemon moving through the channels operating within the region

**Table 2:** Price- build-up of Assam lemon in identified marketing channels of the study area

Market player	Particulars (Rs/q)	Channel I	Channel II	Channel III
Producer	Gross Price	800	900	1100
	Marketing cost	0	0	100
	Net Price	800	900	1000
Pre-Harvest Contractor	Purchase Price	800		
	Marketing cost	125		
	Marketing margin	215		
Wholesaler	Purchase Price	1140	900	
	Marketing cost	255	125	
	Marketing margin	375	285	
Retailer	Purchase Price	1770	1310	
	Marketing cost	80	70	
	Marketing margin	150	120	
Consumer	Purchase Price	2000	1500	1100
Total marketing cost		460	195	100
Total marketing margin		740	405	0
Total Price spread		1200	600	100
Producer's share in consumer's price (%)		40	60	90.91
Efficiency		0.67	1.50	10

**4.Conclusion**

It can be inferred from the current study that marketing of Assam Lemon in the study area is extremely lucrative.

However, in the marketing aspect there are certain bottlenecks that exist such as lack of proper market and dominance of market intermediaries which results in low price realization of

the Assam Lemon growers as bigger markets were lacking near the producers' place so mostly, they were trapped in the hands of middlemen to market the produce to the distant markets. The analysis presented above highlights that the production of Assam Lemon follows three distinct marketing channels, serving as vital conduits connecting the producers to the ultimate consumers. The study provides valuable insights into the diverse pathways through which Assam Lemon reaches its end consumers. The channel with no involvement of intermediaries was found to be more efficient and the channel with a greater number of intermediaries involved was found to be the most effective as majority of the marketed surplus (55%) moved through that channel and was transported to distant places. Direct or cooperative marketing should be encouraged which will benefit the farming community immensely by increasing their share in producer's rupee and remove the exploitation and inefficiency due to involvement of too many market intermediaries. The results of Ali and Kachroo's study (2020) <sup>[8]</sup> strongly support the need to address the shortcomings in the current marketing system to ensure future progress and prosperity across all marketing levels. To ensure sustainability of the crop in the region, it is important that the government provides subsidy especially to the small and marginal category of the farmers (Hassan *et al.*, 2022) <sup>[9]</sup>. Furthermore, the State Government should formulate policies to establish a minimum support price for the farmers' produce. This measure would incentivize growers to engage in extensive cultivation in the district (Brahma *et al.*, 2020) <sup>[10]</sup> and in addition to that will control wide price variations so that the steady income of farmers is not hampered. Emphasis should be laid upon development of regulated market and export chain as Assam Lemon has tremendous potential for export which will be beneficial for the Assam Lemon growers to gain world-wide recognition. The study offers valuable insights for Government authorities to implement effective strategies and enhance the marketing pattern of Assam Lemon in the region. By addressing prevailing marketing challenges, farmers can become the primary beneficiaries, leading to improved marketing of Assam Lemon globally.

## 5. References

1. Barman S, Deka P, Borah D. Market Chain Analysis of Orange: A Case Study in Udalguri District of Assam. *International Journal of Current Microbiology and Applied Sciences*. 2020;9(11):2020-2023. <https://doi.org/10.20546/ijcmas.2020.911.240>
2. Kumar S, Sharma RR. Production and marketing constraints analysis of kinnow growers in Himachal Pradesh. *Agricultural Update*. 2019;14(1):52-57. <https://doi.org/10.15740/HAS/AU/14.1/52-57>
3. Haokip SW, Singh B, Sheikh KA, Shankar K, Debbarma R, Lalringheta J, *et al.* Growth and Yield Response to Application of Organic and Inorganic Nutrient Sources in Lemon [*Citrus limon* (L.) Burm.] cv. Assam Lemon. *International Journal of Plant & Soil Science*. 2021;33(2):46-52. <https://doi.org/10.9734/ijpss/2021/v33i230413>
4. Statistical Handbook of Assam. Directorate of Economics and Statistics. Government of Assam, Guwahati-28. 2020. <https://des.assam.gov.in/portlets/statistical-handbook>
5. Mahanta DK, Konwar A. Production and Marketing of Orange in Assam: A Study on Doomdooma Region of

Tinsukia District. *Journal of Agriculture and Life Sciences*. 2014;1(1):82-90.

[https://jalsnet.com/journals/Vol\\_1\\_No\\_1\\_June\\_2014/9.pdf](https://jalsnet.com/journals/Vol_1_No_1_June_2014/9.pdf)

6. Narzary E, Kalita DC. Marketing of Khasi Mandarin Orange in Sonapur Block of Kamrup District, Assam. *International Journal of Science, Environment and Technology*. 2019;8(4):854-860. <https://www.ijset.net/journal/2400.pdf>
7. Yogi V, Kumar P, Bishnoi S, Chauhan JK. An Economic Analysis of Price Behaviour of Kinnow Market in North-Western India (Punjab). *Indian Research Journal of Extension Education*. 2021;21(2&3):53-59. <https://seea.org.in/uploads/pdf/2021-66-53-59.pdf>
8. Ali J, Kachroo J. Marketing Analysis of the Commercial Cultivars of Apple in Mountainous and Inaccessible Areas of Chenab Valley. *Indian Journal of Economics and Development*. 2020;16(2):239-246. <https://doi.org/10.35716/IJED/19111>
9. Hassan B, Bhattacharjee M, Wani SA. Determinants of Apple Production among Agricultural Households in India. *Indian Journal of Economics and Development*. 2022;10(1):1-10. <https://doi.org/10.17485/IJED/v10.2021.272>
10. Brahma S, Nath RK, Roy KK, Sarma R, & Ahmed P. Production Constraints Faced by Mandarin Cultivators in Kokrajhar District of Assam-A Case Study. *International Journal of Current Microbiology and Applied Sciences*. 2020;9(6):81-85. <https://doi.org/10.20546/ijcmas.2020.906.010>