Marketing of sweet jelly seeds of palmyra fruit:
A study covering the tribal region of South Gujarat, India

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(Manuscript Received: 19-08-2020, Revised: 15-12-2020, Accepted: 30-01-2021)

Abstract
Palmyra is a naturally occurring palm in Gujarat’s southern region, spread randomly on all soil and land types. The major produce utilized from palmyra palm for livelihood by the tribal communities, contributing considerably to their income, is through sales of the immature soft jelly seed nuts of the fruit called “galeli”. The present investigation was carried out to study the marketing cost, margin, and price spread in galeli marketing. Primary data for the period collected from 2015-16 to 2017-18, were pooled from 50 palmyra palm growers selected randomly, representing five tribal villages of Mahua taluka of Surat district in the South Gujarat region. Two marketing channels viz., Channel-I: producer-consumer and Channel-II: producer - retailer - consumer were observed, and the marketing cost, incurred on galeli marketing in these channels were worked out, which was ₹51.64 and ₹ 33.94 per hundred galeli, respectively. The highest producer’s share in consumer’s rupee was worked out in Channel-I. The study showed that the major constraint faced by 78 per cent of the palmyra palm growers in the marketing of galeli was the poor functioning of the climber equipment and non-remunerative prices for galeli in the local market.

Keywords: Cost, galeli price spread, margin, marketing, palmyra palm

doi: 10.25081/jpc.2021.v49.i1.7053

Introduction
The palmyra palm, belonging to Arecaceae, is botanically known as Borassus flabellifer L. The centre of origin is the tropical region of Africa and Asia. This palm is found extensively in the southern states of India in the semi-arid tropical areas. The major states where palmyra palm are found are Tamil Nadu, Kerala, Andhra Pradesh, Odisha, West Bengal, Karnataka and Maharashtra. It is known by different names in different states like taad, nungu, talam, fan palm, toddy palm, tadi, kerigi, tala palm etc. Like coconut palm, right from the fruit to the root, every part of palmyra palm has economic value, and hence, the palm is known as “Kalpavriksha” in the Indian mythology (Anonymous, 2020). Different parts of the palm are used as food, wood, shelter and a source of toddy.

The sap collected from the top shoot of the tree has a very sweet taste. This sap, popularly known as neera in tropical parts of India, is used as a soft natural drink, particularly in the summer season. When this sap gets fermented, it becomes sour, known as “tadi” (toddy). Tadi is consumed in the coastal part of Maharashtra as a raw alcoholic beverage (Jana and Jana, 2017). The palm gives fruits, which look like coconut, of 10 to 18 cm diameter. The fruits in its early stage, bears three to four soft jelly seeds, sweet and juicy and tastes similar to coconut water. These jelly-like seeds sold in the market, are rich in vitamin A and C (FAO, 2020; Krishnaveni et al., 2020). Various other by-products like palm sugar and gur (molasses) are also prepared from the juice extracted from the tree trunk. Sugar obtained from palm fruit is healthy and more ecologically friendly (Veilmuthu, 2016). However, the commercialization of these palm products is still lacking.

In the southern region of Gujarat state, the plantation of palmyra palm is natural and found randomly on the uncultivated land, fallow land, and
cultivated area. The major produce obtained and utilized for marketing from palmyra palm are the immature soft jelly seed nuts of the palmyra fruit called “galeli” and “neera”. This palm is part of the life of tribal people of Gujarat from ancient period and is known as the taad tree in South Gujarat. The tribal farmers in this region utilize the natural plantations of palmyra palm for galeli marketing, while neera is extracted from the palm owned by the Mandali, i.e., the cooperative society. The galeli has a huge demand during the summer season and hence are harvested twice during the months of November-December and April-May. Harvesting and selling of galeli have contributed to considerable to the income and employment of tribal people of the South Gujarat region. However, considering its multiple uses and as a good source of food, it remains underutilized and hence needs more research to improve the economic potential of this crop. With this background the present investigation was conducted with the following objectives: to study the production and disposal pattern of galeli, to identify channels in the marketing of galeli, to work out marketing cost and price spread in galeli marketing and to study the constraints faced by palmyra palm growers.

Materials and methods

Mahua taluka from the tribal area of the Surat district of the South Gujarat region was selected for this study based on the high density of plantations of palmyra palm. About 50 tribal farmers, having palmyra palms and who sell of galeli, were selected randomly from five different villages of Mahua taluka. The primary data related to marketing galeli was collected with the help of a structured questionnaire by personal interview method for 2015-16, 2016-17 and 2017-18. Simple statistical tools were used for analysis purpose.

The total marketing cost incurred for galeli marketing was worked out as follows.

\[ C = CF + C_{m1} + C_{m2} + C_{m3} + \ldots + C_{mn} \]

where \( C \) = Total cost of marketing, \( CF \) = Cost borne by the palmyra palm grower in the marketing of galeli and \( C_{mi} \) = Cost incurred by the \( i^{th} \) middleman in the process of marketing

The margin of the middleman in galeli marketing was worked out by the formula:

\[ \text{Margin of } i^{th} \text{ middleman} = PR_i - (P_{pi} + C_{mi}) \]

where \( PR_i \) = Sale price of the \( i^{th} \) middlemen, \( P_{pi} \) = Purchase price of the \( i^{th} \) middlemen; and \( C_{mi} \) = Marketing cost incurred by \( i^{th} \) middlemen.

The price spread, i.e., producers share in consumers rupee, was worked out by using the formula:

\[ P_s = \frac{P_f}{P_c} \times 100 \]

where, \( P_s \) = Producer’s share in consumer’s rupee, \( P_f \) = Price of the produce received by the farmer and \( P_c \) = Price of the produce paid by the consumer.

Results and discussion

Production and disposal pattern of galeli

The production and disposal pattern of galeli by the tribal farmers of the South Gujarat region is presented in Table 1. It was observed that the overall average galeli production was 1707 per palm. Out of which, 55% was consumed, 22% was lost post-harvest, and the remaining 23% was sold.

### Table 1. Production and disposal pattern of galeli

| Particulars            | Quantity per palm (Nos.)          |
|------------------------|-----------------------------------|
|                        | 2016 | 2017 | 2018 | Overall   |
| Total production       | 1729 (100) | 1702 (100) | 1690 (100) | 1707 (100) |
| Consumption            | 53 (3)   | 67 (4)   | 45 (3)   | 55 (3)    |
| Post-harvest loss      | 23 (1)   | 25 (1)   | 19 (1)   | 22 (1)    |
| Quantity sold          | 1653 (96) | 1610 (95) | 1626 (96) | 1630 (96) |

Note: Figure in parenthesis indicate percentage to total production.
of total production, 96 per cent of galeli was sold while 3 per cent used for home consumption and one per cent accounted for post-harvest loss.

**Marketing channels and cost in galeli marketing**

Most of the tribal farmers harvest the palmyra fruits by themselves, while some of them employ hired climbers/labours for this purpose. After harvesting, to obtain galeli, cutting of the palmyra fruit was done by family members and hired labourers in some cases. On the same day, the galeli was sold to consumers directly in local markets of nearby towns and cities or to the retailers. In some cases, tribal farmers directly sold the palmyra fruit to the retailers. Singh *et al.* (2016) reported that the farmers either sold the majority of palm product through intermediaries or directly sell to consumers in the study region. Rupasena and Athula (1995) had made similar observation earlier in their study in Sri Lanka. In galeli marketing, two marketing channels were observed *viz.*, Channel I: producer - consumer and Channel-II: producer - retailer - the consumer.

The marketing cost incurred in these channels is presented in Table 2. It was observed that the total marketing cost in the marketing channels was worked out to ₹ 51.64 and ₹ 33.94 per hundred galeli. Labour charges for cutting palmyra fruit and selling galeli was the major cost item which accounts for ₹ 36.11, followed by transportation charges (₹ 15.53) in Channel-I. In Channel-II, the marketing cost incurred by the producer was ₹ 10.76 per hundred galeli, whereas the marketing cost incurred by the retailer was reported to ₹ 23.18 per hundred galeli.

**Price spread in galeli marketing**

The palmyra palm bear fruits two times during the year. Therefore, fruits are harvested twice, *viz.*, the first bearing during November-December and the second bearing during April-May. The production of fruits is less in the first bearing as compared to the second bearing. The prices of galeli were observed to be fluctuating between these two bearing periods. During the first bearing, *i.e.*, in

| Sl. no. | Particulars                                      | Channel I | Channel II |
|---------|--------------------------------------------------|-----------|------------|
| 1.      | Labour charges for cutting palmyra fruit         | 0.00      | 10.76      |
| 2.      | Labour charges for cutting palmyra fruit and selling galeli | 36.11     | -          |
| 3.      | Transportation charges incurred by producer      | 15.53     | -          |

A. Marketing cost incurred by producer  
1. Labour charges for selling galeli - 17.35  
2. Transportation charges incurred by retailer - 5.83

B. Marketing cost incurred by retailer - 23.18

C. Total Marketing cost (A + B)  
Table 2. Marketing cost in galeli marketing in South Gujarat region (₹ per hundred galeli)

| Sl. no. | Particulars                                      | Channel I | Channel II |
|---------|--------------------------------------------------|-----------|------------|
| Price received by producer | 780.26 (94) | 519.52 (91) | 360.00 (87) | 500.05 (63) | 365.98 (65) | 233.75 (58) |
| Marketing cost incurred by producer | 51.64 (6) | 51.64 (9) | 51.64 (13) | 10.76 (1) | 10.76 (2) | 10.76 (3) |
| Purchase price of retailer | - | - | - | 510.81 (64) | 376.74 (67) | 244.51 (61) |
| Marketing cost incurred by retailer | - | - | - | 23.18 (3) | 23.18 (4) | 23.18 (6) |
| Margin of retailer | - | - | - | 266.01 (33) | 164.08 (29) | 132.31 (33) |
| Price paid by consumer | 831.90 (100) | 571.16 (100) | 411.64 (100) | 800.00 (100) | 564.00 (100) | 400.00 (100) |

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November-December and in the month of April of the second bearing, the higher prices were observed, while in May, the galeli fetched less price in the market.

The marketing margin of intermediary and price spread in galeli marketing is presented in Table 3. During the first bearing, i.e., in November-December, the price of galeli in the market was ₹ 831.90 and ₹ 800.00 per hundred galeli, in Channel-I and Channel-II, respectively. Further, it was observed that during the second bearing, the prices obtained for galeli were in the range of ₹ 400.00 to ₹ 575.00 per hundred galeli. This implied that in comparison to the second bearing, higher prices were obtained during the first bearing for galeli. Table 3 depicts that during April, May and November-December, the price received by the producer was ₹ 519.52, ₹ 360.00 and ₹ 780.26, respectively, and price of galeli sold through Channel-I was higher as compared to Channel-II. The producer’s share in consumer rupee was highest in Channel-I, which worked out to be 91 per cent, 88 per cent and 94 per cent during April, May and November-December, respectively whereas for Channel-II, it was 65 per cent, 58 per cent and 63 per cent, respectively, leading to the observation that selling of galeli through Channel-I was more remunerative than Channel-II. The retailer’s share of marketing margin was found highest in price paid by consumer, which was 29 per cent during April and 33 per cent during May and November-December, followed by the retailer’s marketing cost.

**Constraints in production and marketing of galeli**

The constraints faced by the palmyra palm growers in the production and marketing of galeli are presented in Table 4. From the Table, it was observed that in the production of galeli, 78 per cent of respondents reported that the tree climber equipment was not suitable for climbing on the palm, whereas 52 per cent of growers reported that the premature fruit fall of palm was the major constraint. Difficulties faced by flying insects while climbing the palm was a problem faced by 48 per cent of the respondents. The other constraints faced by the respondents was that the labourers were not available readily, high cost of labour during peak season and lack of knowledge regarding other by-products from the palm.

In the marketing of galeli, 76 per cent of growers reported that no remunerative price was received for galeli during peak period, while according to 44 per cent of growers, galeli was highly perishable and could not be stored for a longer duration. The other constraints faced by growers in the marketing of galeli were lack of a

| Sl. No | Constraints                                                                 | No. of growers | Per cent |
|-------|-----------------------------------------------------------------------------|----------------|----------|
| A. 1. | Premature fruit fall                                                        | 26             | 52       |
| A. 2. | Tree climber equipment not suitable for climbing on palm                     | 39             | 78       |
| A. 3. | Labourers are not available readily                                         | 15             | 30       |
| A. 4. | High cost of labour during peak season                                       | 11             | 22       |
| A. 5. | Problem of flying insects like honey bees, flies while climbing on palm      | 24             | 48       |
| A. 6. | Lack of knowledge regarding other by-products from palm                      | 14             | 28       |
| B. 1. | Remunerative price not received during peak season                           | 38             | 76       |
| B. 2. | Specific market place not available for selling galeli                        | 15             | 30       |
| B. 3. | Highly perishable and not stored for longer duration                         | 22             | 44       |
| B. 4. | Lack of storage facility                                                     | 4              | 8        |
| B. 5. | Could not sell at distant market                                             | 11             | 22       |
specific market place for selling of galeli, lack of storage facility in the region and no feasibility for selling in distant markets.

Conclusion

The study implies that selling of galeli through Channel-I was more remunerative than Channel-II. In the production of galeli, most respondents reported that the tree climber equipment was not suitable for climbing the palm, and premature fruit fall was another major constraint. In the marketing of galeli, poor remuneration in terms of price and perishability, of the produce were the major issues.

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