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Exploring Market Potential and Developing Linkages – A Case of Underutilized Fruit Products in India

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Abstract

Indian Institute of Horticultural Research, Bangalore, India, under the aegis of International Centre for Underutilized Crops (ICUC), trained the officials of Bharathiya Agro-Industries Foundation (BAIF), a non-governmental organization (NGO), on small scale processing and marketing of underutilized fruits in August 2004. As a result, small scale processing units were established at the community village level in the state of Karnataka, Maharashtra and Gujarat in India for processing of underutilized fruits like aonla, tamarind and jackfruit into different products. Later, a survey was undertaken to ascertain the processing and market potential of underutilized fruit products. The market survey in the Hassan district of Karnataka has indicated the presence of underutilized fruit products like citron pickles, tamarind paste and jackfruit chips, which are sold by the retailers in small quantities. The market survey of underutilized fruit products in Pune (Maharashtra) has indicated the trading of underutilized fruit products like aonla pickle, aonla squash, aonla supari and tamarind products like concentrate, pani puri masala in the market, though in small quantities. The market survey in the Dharmapur and Valsad markets, Gujarat has indicated the presence of underutilized fruit products like pachan aonla (digestive aonla), ber powder, salted ber and tamarind under different brand names like Oswal, Khelkar, Frootlet, etc. The share of the underutilized fruit products is small but these products have made their presence felt in the market. By and large, consumers have accepted the quality and price of the products of the small scale community processing unit. However, label needs improvement and is to be made more attractive. Thus, market research has helped in identifying the potential markets for the underutilized fruit products of the community level processing units. The institutional arrangements in the form of IIHR-BAIF have benefited the community at large and the women SHGs in particular.

Introduction

India enjoys a prominent position on the pomological map of the world. The varying weather conditions of this country provide suitable environment for growing a variety of fruits. These fruits are available in abundance and also in different seasons. This has resulted in limited scope for expansion of other minor fruits, though they are nutritious, and are the main source of livelihood for the poor. Most of the underutilized fruits of the tropics are often available only in the local markets and are practically unknown in other parts of the world. Today, consumers are

becoming increasingly conscious of the health and nutritional aspects of their food basket. The tendency is to avoid chemicals and synthetic foods and preference for nutrition through natural resources.

The underutilized fruits like aonla, tamarind, karonda, citron, jackfruit, etc. are the main sources of livelihood for the poor and play an important role in overcoming the problem of malnutrition. A large number of these fruits can grow under adverse conditions and are also known for their therapeutic and nutritive value and can satisfy the demands of the health-conscious consumers. However, some of these fruits are not acceptable in the market in fresh form due to their acidic nature and astringent taste. Hence, there is a need to concentrate on research efforts in

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diversification and popularization of such underutilized fruit crops. To achieve this, there is a need to create demand for such fruit crops in the domestic and international markets. This, to some extent, can be achieved through developing suitable processing and marketing strategies for these underutilized fruits.

Keeping the above in view, the officials of Bharathiya Agro-industries Foundation (BAIF), Pune, were trained at Indian Institute of Horticultural Research (IIHR), Bangalore, on small scale processing and marketing of underutilized fruit species in a public-private partnership (PPP) mode. They, in turn, trained the women self-help group (SHG) and established community village level processing units at their resource centres. Market research was initiated in the states of Karnataka, Maharashtra and Gujarat with the following objectives:

- Identification of marketable products from underutilized fruits species,
- Identification of potential markets and market-related problems for the products, and
- Establishment of linkages with the market for the underutilized fruit products produced by the communities.

Data and Methodology

Market surveys were made in the local and district markets in the vicinity of the community level processing units. In the case of BAIF Institute of Rural Development, Karnataka (BIRD-K), local market Tiptur and district market Hassan; for CRS, Pune market; and for DHRUVA-BAIF, Kaparada, Dharpur local markets and Valsad district market were selected for market research. The products sold by the wholesalers and the retailers were enumerated

and the share of different underutilized fruit products in the markets was estimated. Share of products of different brands in the respective markets was also estimated. Consumer survey for the underutilized fruit products produced by the respective community level processing units was conducted by the resource centres in the local markets. The underutilized fruits and their products used for market research are given in Table 1.

Results and Discussion

Market Survey for Underutilized Fruit Products in Karnataka

Pickle Market

The share of different pickles sold by the retailers in Tiptur is given in Table 2.

Popular brands of pickle in the local Tiptur market were: MN pickle (34.11%), A1 pickle (25.82%), MTR (16.44%), LM Pickle (11.84%), Supriya (4.52%), P&P (4.3%), Chinnies (1.68%) and DSK (1.29%). The retailers' margin was the lowest for MTR brand (7.5 – 10.0%), followed by MN Pickle (14.3%-50.0%), A1 (11.1% - 18.2%), Supriya (24.3%-33.3%), LM Pickle (28.6%-31.2%) and P&P brands of pickles (31.3%-50.0%).

Both wholesale and retail markets in the district of Hassan were surveyed and the shares of different types of pickles are presented in Table 3.

Popular Brands and Intermediaries Margin: The share of popular brands was: LMP (47%), Krupa (40%) and A-1 (12%) in the wholesale market. In the retail market, the share was: Krupa (37%), A-1 (22%), MNP (15%), LMP, Mother's and Priya (9% each). The

Table 1. Underutilized fruits and their products for market research

Sl No.	Underutilized fruit	Fruit product
1	Aonla	Pickle, Candy, Squash, Murabba, Dry aonla (supari) and Mouth freshener or Pachan aonla (digestive aonla)
2	Tamarind	Tokku (chutney), Pickle, Paste or Concentrate, Panipuri masala, Dry tamarind (powder), Candy
3	Karronda/Kerda	Pickle
4	Jackfruit	Chips, Papad
5	Citron	Pickle
6	Ber	Ber powder, Salted ber

Table 2. Share of different types in the local retail pickle market, Tiptur

Sl No.	Types	Share (%)
1	Mixed	37.34
2	Mango	32.49
3	Lime	20.59
4	Bitter gourd	4.30
5	Citron	2.60
6	Chillies	1.90
7	Tomato	0.78
8	Total	100.00 (77.45 kg)

Note: Figures within the parentheses indicate total quantity sold in a month

Table 3. Share of different types in the wholesale and retail pickle markets, Hassan

Sl No.	Types	Share (%)	
		Wholesale market	Retail market
1	Karonda	-	0.43
2	Amla pickle	-	3.90
3	Citron	36.81	32.39
4	Mango	8.35	25.35
5	Lemon	26.18	9.21
6	Mixed	28.65	28.71
8	Total	100 (376.43)	100 (72.29 kg)

Note: Figures within the parentheses indicate total quantity sold in a month

margin of the wholesalers ranged from 7 per cent to 20 per cent for Krupa brand, 10-16 per cent for LMP and around 11 per cent for A-1 pickles. The retailers' margin ranged from 10 per cent to 13 per cent for Mother's and MNP, 16 per cent for Priya. The retailers' margin for the locally popular brands of Krupa and LMP was 60 per cent to 70 per cent. The margin was around 48 per cent for A-1 brand of pickles.

Chips Market

Only specific groups of people consume jackfruit products. Accordingly, only a few retail condiments shops were selling jackfruit chips. 'Mangalore Chips' and 'Hot Chips' were the main brands of chips sold in the district market of Hassan. Polythene bags were being used as the packing materials for chips. The share of different types of chips is given in Table 4.

Table 4. Share of different types of chips in retail chips market, Hassan

Sl No.	Types of chips	Share (%)
1	Jackfruit	40.60
2	Banana	44.86
3	Potato*	16.54
	Total	100 (26.60)

Note: *Excludes the 'Lays', 'Chetoes' and other branded chips

Market Survey for Underutilized Fruit Products in Maharashtra

Pickle Market

Brands and Margins: The share of different brands was: Pravin brand (52.99%), Kamdhenu (16.50%), Maharaja (10.83%), Vrindavan (4.53%) and Bedekar (4.0%). Other brands in the market were: K Pra, Mother's, Nisarga, Savitri and Kasthuri. Retailers' margin ranged from 5 per cent to 15 per cent in the case of cooperative retail outlets like Sankalpa, Vrindavan and Savitri outlets. The margin of the private retailers was 15 per cent to 20 per cent for Pravin brand of products (pickles), 25 per cent for Maharaja Brand products (and tamarind) and 20 per cent for Kamadhenu pickles. The margin was up to 30 per cent in the case of some retailers, irrespective of the brand or the products sold. Pickles are sold in plastic packets of 200 g, 250 g and 350 g. Higher quantity of 500 g and 1kg are sold in plastic containers.

Squash Market

Aonla, pineapple and orange squash are sold in the market. Sankalpa and Maharaja are the popular brands.

Table 5. Share of different types in the retail pickle market, Pune

Sl No.	Types	Share (%)
1	Mango	63.02
2	Lime	2.95
3	Chillies	2.57
4	Aonla	13.02
5	Karonda	1.60
6	Mixed	15.86
7	Total	100.00 (96.95 kg)

Note: Figures within the parentheses indicate total quantity sold in a month

Aonla squash is sold in 500 mL and 650 mL bottles and pineapple and orange squash are sold in 700 mL bottles.

Marketing of Other Underutilized Fruit Products

Other underutilized fruit products like candy, murabba, supari, mouth freshener and tamarind products like tamarind concentrate, tamarind panipuri masala are being produced by women SHGs of Sankalpa and Maharaja (Narmada Food Products) and the Sankalpa products are sold only through Sankalpa, Vrindavan and Savitri outlets.

Conditions for marketing of new brand/products (pickle, murabba, squash and tamarind concentrate) were: (i) Sample to be given first, (ii) Payment after the sale of the products, (iii) Good quality and reasonable price, (iv) Small-sized packet (200 - 250 g), (v) A margin of 25 per cent to 35 per cent, and (vi) Weekly supply of a minimum of 10 kg.

Market Survey for Underutilized Fruit Products in Gujarat

The share of different types of pickles in Gujarat is presented in Table 6.

Table 6. Share of different types in the wholesale and retail markets, Dharampur

Types	Share (%)	
	Wholesale market	Retail market
Pickle	94.06	79.49
Underutilized fruit products	5.94	20.51
Total	100.00 (179.32 kg)	100 (119.23 kg)

Pickle Market

Vrindavan, Rasraj and Nilon's are the popular brands of pickles in Gujarat.

Marketing of Underutilized Fruit Products

In the wholesale market, various underutilized fruit products were: whole aonla in brine, pachan aonla, supari, imli sauce, swadist imli (imli candy), and bore koot (ber powder). The popular brands included Oswal, Shankar and Rukso brands of pachan aonla (aonla supari), Ahar brand of imli sauce, Tarun and Kelkar brands of bore koot (ber powder). In the retail market,

katti mitti imli (tamarind sweet-sour candy), karonda/kerda pickle, pachan aonla, bore koot were being marketed under the brands: Frootlet (Trimoorthy foods), Rasraj kerda pickle, Shankar pachan aonla and Kelkar bore koot.

Margin of Intermediaries: Wholesaler's margin ranged from 9 per cent (Rasraj) to 18-20 per cent (Vrindavan) and 20 per cent (other brands). Retailers' margin ranged from 5 per cent to 6 per cent (cashew kernels), 15 per cent to 25 per cent (aonla products), 20 per cent to 30 per cent for pickles (cooperative retail outlets), 15 per cent to 20 per cent (Vrindavan), 15 per cent (Rasraj), and 10 per cent to 15 per cent (Nilon's) pickles (private retailers). Margin for underutilized products was up to 20 per cent.

In the Valsad district market, pickles and different types of underutilized products were sold. Their share is presented in Table 7.

Table 7. Share of different types of products in wholesale and retail markets

Types	Share (%)	
	Wholesale market	Retail market
Pickles	89.80	88.72
Underutilised fruit products	10.20	11.38
Total	100 (425.88 kg)	100 (42.89 kg)

Pickle Market: Vrindavan, Ambica, Pranami, Bageshri, Mother's, Pravin, Pasand, Nilon's Rasraj were found the popular brands of pickles and mixed fruit jam was the most popular jam and Mehul, Kissan, Noble and Murohi were the popular brands.

Underutilized Fruit Products Market: Imli candy (tamarind) and salted ber were the underutilized fruit products traded in the wholesale market. Aonla murabba (Darthi brand), karonda pickle, swadist imli (Sagar brand), salted ber (HR), ber powder (Kaka), pachan aonla (Oswal brand) were being sold in the retail market.

Margin of Intermediaries: The wholesalers' margin for pickles was 4-11 per cent for Vrindavan pickles, 9-25 per cent for Ambica, 25 per cent for Pranami's, 20-22 per cent for jams, 20 per cent for imli candy and 33 per cent for salted ber and pachan aonla. In the pickle

market, the retailers' margin ranged from 20 per cent to 21 per cent for Mother's, 18-28 per cent for Vrindavan, 20-22 per cent for Pasand and Pravin, 18-20 per cent for Rasraj and 25-30 per cent for Nilon's. In the jam market, the margin was 9-10 per cent for Kissan, and 10-15 per cent for Noble. For pachan aonla, salted ber and imli candy, the margin was in the range of 25-30 per cent.

Retailers' conditions for selling the new underutilized fruit products were: (i) Sample to be provided, (ii) Sale after consumers' response, (iii) Credit sale, (iv) Good quality (v) Minimum 20-25 per cent margin, and (vi) Small-sized packet (100 g).

Consumer Survey

Tiptur, Karnataka

Tender Tamarind Tokku (Chutney): Tender tamarind tokku prepared by the Community Processing Unit was a rare product in the area and was liked by all the consumers for its taste, spiciness, crispness, thickness and colour. The packaging of the product in 100 g and 250 g plastic covers and 500 g in bottles was also acceptable to the consumers. Nearness to the house, cleanliness, good behaviour of the sales persons, good quality of the product and schemes giving some items/quantity free were some of the attributes necessary for marketing of the product. Attractive label should indicate the Date of manufacture, Date of expiry, ingredients, brand name and price.

Aonla Pickle: Regarding pickles, most of the consumers opined that they buy mango and lime pickles from the market. However, pickles of underutilized fruits like citron, aonla, karonda and amtekai (tender ambada – for pickle) are prepared in their house itself during the season and hence they do not buy them from the market.

Pune, Maharashtra

Aonla Pickle: The product is sold in 200 g and 1 kg packets which are acceptable to by the consumers. The quality was observed to be 'good' to 'excellent'. Nearness to the house, preference for small-sized packets and shop having all the consumable items were some of the attributes for marketing of aonla pickle through Sankalpa Outlet in Uralikanchan.

Aonla Supari: The consumption of supari was popular during travels and summer seasons. Small packets of 50-100 g were preferred by the consumers. Availability of the product nearer to home, good quality, good taste and crispiness were the important attributes for marketing of aonla supari. It is interesting to note that consumers were willing to pay 5 per cent more price for aonla supari, thereby indicating good demand for the same.

Aonla Murabba (jam): The consumers attributed the medicinal property of aonla and the excellent quality in terms of taste, colour and thickness for preferring aonla murabba. Non-awareness, non-availability of aonla murabba in the nearby shops may pose problems in marketing of the same.

Aonla Candy: Excellent quality in terms of taste and small-sized packets of 100 g and 5 pieces packets, nearness to house were the attributes for marketing of aonla candy.

Aonla Squash: Good quality in terms of sweetness, thickness, brightness of colour and right price and packaging in 500 mL bottles were the attributes of the consumers for consumption of aonla squash. It was observed that the label was too dull and license No. needed to be put on the label.

Vansda, Gujarat

Tamarind Chutney: It was found that tamarind chutney is sold throughout the year. The colour, sweetness, taste and spiciness of the chutney prepared by the women SHG of the Dhruva resource centre were observed to be good and at par with the market sample (Frootlet). Packaging needed to be improved. Preference was for 10-15 g sachet in a polythene pouch of 100-200 g. Pet jar or standy pouch of 100 g packing was also preferred by the consumers. Labelling needed some improvement. Manufacturing and expiry dates, ingredients, nutritional value needed to be printed on the label and the label should be made more attractive.

Aonla Supari: The consumers' preference was for 10-15 g sachet. Colour, and taste were found to be good. However, the 10-15 g sachet needed to be in 100 g polythene pouch. There was a need to improve the labelling. The label should contain the contents, ingredients, best use before date, manufacturing date and medicinal value of the product along with the price.

Table 8. Economics of small scale processing of underutilized fruits

Particulars	Underutilised fruit products			
	Tamarind chutney	Aonla pickle (raw)	Aonla pickle (hot)	Aonla squash
Total quantity prepared (kg/bottles)	300.00	208.00	500.00	5000.00
Gross returns (300 kg @ Rs 40/kg)	12000.00	8944.00	36000.00	200000.00
Cost of processing (Rs)	10218.50	7303.60	30024.18	75064.18
Net returns (Rs)	1781.50	1640.40	5975.82	124935.82
Cost of production (Rs/kg) (Rs/bottle)	34.06	35.11	50.04	15.01
Price realized (Rs/kg)/(Rs/bottle)	40.00	43.00	60.00	40.00
Net profit (Rs)	5.94	7.89	9.96	24.99

Economics of Small Scale Processing of Underutilized Fruits

Economics of processing of tamarind and aonla is presented in Table 8.

Tamarind Chutney: Cost of processing worked out to be Rs 34.06/kg. With a price of Rs 40/kg, the net profit would be Rs 5.94/kg (17.44%).

Aonla Raw Pickle: It was observed that the processor had to incur Rs 35.11 to produce one kg of pickle. The net profit worked out to be Rs 7.89/kg with a price of Rs 43/kg and the profit margin of the processor was 22.5 per cent.

Aonla Hot Pickle: The cost of processing of aonla worked out to Rs 50.04/kg of pickle produced. With a price of Rs 60/kg, the processors could realize a net profit of Rs 9.96/kg by preparing aonla pickle. The processor's margin was observed to be 19.92 per cent.

Aonla Squash: Cost of processing worked out to Rs 15.0/bottle (500 mL). With a price of Rs 40/bottle, the net profit would be Rs 24.99.

Conclusions

The study has revealed as follows:

- Institutional arrangements in the form of IIHR, Bangalore and NGO, BAIF for establishing the market linkages has benefited the women SHGs in Karnataka, Maharashtra and Gujarat.
- The market survey in the Hassan district of Karnataka has indicated the presence of underutilized fruit products like citron pickles, tamarind paste and jackfruit chips, which are sold by the retailers in small quantities.

- The market survey of underutilized fruit products in Pune (Maharashtra) has indicated the trading of underutilized fruit products like aonla pickle, aonla squash, aonla supari and tamarind products like concentrate, pani puri masala in the market, though in small quantities. Maharaja (Narmada Food Products) has been observed to be a strong competitor for the products of community level processing unit.
- The market survey in the Dharmapur and Valsad markets, Gujarat has indicated the presence of underutilized fruit products like pachan aonla (digestive aonla), ber powder, salted ber and tamarind under different brand names like Oswal, Khelkar, and Frootlet, etc. These have been found to account for 6-10 per cent of the wholesale trade and 11 -20 per cent of the retail trade in Dharampur and Valsad markets, respectively. The share of the underutilized fruit products is small but these products have made their presence felt in the market. By and large, consumers have accepted the quality and price of the products of the small scale community processing unit. However, label needs improvement and should be made more attractive.
- Economic analysis of small scale processing of underutilized fruits like tamarind and aonla has indicated that it was profitable to process these underutilized fruits into different products.

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