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Post-Harvest Management Practices and Marketing of Minor Fruit (Jamun-Syzygium cuminii) in Sindhudurg District

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Abstract:
There are flaws in the current Jamun marketing system in the research field. The market was dominated by a small number of market intermediaries, and producer-sellers had less power to set the price of their produce. It is imperative that growers and others involved in the harvest, post-harvest handling, and marketing of Jamun in the Sindhudurg district fully commit to implementing appropriate harvest and post-harvest practices, given the incorrect grading and standardization of Jamun fruits, the lack of adequate market information, etc. Adopting appropriate procedures and methods from the point of harvest to the point of sale would aid in preserving the quality of the fruit that buyers want, which can bring in higher pricing and profit for the grower.

Keywords: Jamun, Harvesting, Grading. Transportation, Marketing

Introduction

The Myrtaceae family member known as jamun (Syzygium cuminii) is a significant native fruit with both commercial and medical value. Synonyms for Jamun include Indian black berry, Black plum, Java plum, Jambul, Jamun, Jam, Kalajam, Phalani, and Pharendra (Singh, 1997).

There are various applications for jamun fruits. The sweet and delightfully tasting jamun fruit is primarily used as a dessert and is well appreciated by the public. Before eating, the fruit is typically tossed with salt. The flavor of jamun fruit is spicy and subacid. In addition to being eaten raw, it may be used to make delectable drinks, pickles, wine, vinegar, jam, and jellies. A really cool beverage to have in the summer is jamun squash. A small amount of fruit syrup goes a long way toward treating diarrhea. For diabetic patients, a blend of equal parts mango juice and jamun juice works wonders in reducing thirst. Jamun fruit is used, especially in Goa, to make wine. In addition to its cooling and digestive qualities, vinegar made from the juice of slightly unripe fruit also has stomatic, carminative, and diuretic qualities. Because small jamun fruits had significant levels of acidity, tannins, and anthocyanins, they were determined to be suitable for use in the beverage sector even though they were not fit for table usage. There has also been reporting on Jamun's oil composition (Bose, 1985).

There is no information known about the acreage or production of Jamun in Maharashtra, India. Nonetheless, you may find this fruit tree practically everywhere in Maharashtra. The Konkan region also has jamun trees, which may be found in forests, on field borders, and beside roads in every district. The district of Sindhururg values the minor fruit crop known as jamun. Nonetheless, there is a dearth of data on this crop's production and area figures. According to current data from the Sindhudurg-Zilha Parishad's Agricultural Department, 0.30 hectares of land in the district are covered in jamun trees. The Public Works Department of Sindhudurg District believes that over 32,000 trees once lined the former Mumbai-Goa National Highway (NH-17) in Sindhudurg.

Despite the great potential of jamun, hardly much research has been done on this crop. The jamun fruit crop lacks cultivated varieties, however local cultivars found in various locations are superior and vary. A type of jamun known as "Konkan Bahadoli" was developed by Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth Dapoli. This type is appropriate for Maharashtra's Konkan and other tropical climates. This variety produces large, boldly shaped fruit with a high pulp percentage and an extended shelf life. This type yields between 125 and 150 kg per tree on average. Jamun has a short shelf life. An estimate states that throughout the harvest and post-harvest stages, 20–30% of jamun is lost. A significant amount of losses can be avoided and higher-quality fruits can reach consumers if sufficient care is taken from harvesting to final consumer marketing, which can help the producer obtain competitive rates. Thus, it was thought that a thorough analysis of current harvest, post-harvest, and marketing procedures would be helpful in pinpointing the most important issue and the actions required to address it. With the following particular goals in mind, this study was carried out at the

APMC Mumbai Byculla market and the expanding Sindhudurg district.

1) To study systematically the existing harvest and marketing practices of Jamun in Sindhudurg district and identify the most critical problem associated with it.
2) To suggest the possible steps for improvement of the present system.

Harvest and Post-harvest Practices.

Maturity:

Fruit reaches its stage of maturity when its growth and development are complete. The fruit jamun is climacteric. On the tree itself, it ripens. Pulp takes on a dark purple hue, while jamun turns a dark black tone. The fruit dries out and falls to the ground a day or two after it ripens.

Harvesting:

Harvesting is the process of taking food out of its growing medium. Post-harvest operations are any activities that come after harvest. Only in the morning may jamun fruits be gathered by scaling the tree. Growers may use bamboo sticks with nylon netting attached to the ring to create a basket. Fruit falls into the net and is emptied when the basket is full. To remove the fruit, place the ring behind it and pull it firmly to break the pedicle. Jamun fruits are grouped together, and when you pull on the bunch, the majority of the frits fall to the ground, injuring people and completely destroying the produce. This type of harvesting results in roughly 5–10% of the fruit being damaged, and some of the fruits are removed without pedicel.

Grading and sorting:

By visual inspection, fruits are manually sorted and graded into two categories: bold and tiny sizes. Fruits without pedicel are grouped with other fruits and disregarded.

packaging for market transit:

Growers use a sturdy bamboo basket to transport the fruits to the assembly center. Fruits are not properly packaged when being transported from the farm to the assembly center. The majority of containers were made of bamboo and had a 25–30 kg capacity each. Both green and dry leaves were utilized as packing material. Packaging was also done with gunny sacks. The fruits were not adequately protected against handling abuse and transit by this kind of packing. Furthermore, interior heat build-up from inadequate ventilation and surface roughness cause bruising to the product. Damage was also noticed when the produce was being loaded and unloaded.

Transportation:

A jeep, bullock cart, or head load is the most often utilized and accessible carrier for moving harvested fruits from a farm to a nearby assembly center. As an alternative, fruits were transported to the markets in Mumbai, Pune, and Kolhapur using tempos and luxury buses. Produce travels across several different types of road discontinuities, including potholes, bumps, rail tracks, inadequate packaging, a subpar suspension system in the transport truck, a lack of ventilation space, and a high static load on the lowest package, all of which can cause fruit damage. Additional incorrect loading and unloading procedures account for a significant amount of the damage. This leads to fruits that are of low grade. Transport distance and damage are directly correlated. Since the destination is farther away, the produce would sustain more harm.

Marketing:

Fruit post-harvest operations heavily depend on marketing. High transportation, grading, and packaging costs, unethical methods such as multiple market fees, unapproved deductions, a lack of storage facilities, etc., are characteristics of the current fruit trade. The system's unfavorable aspect is its lengthy chain of middlemen, which lowers the amount that consumers pay to support Jamun growers. The producers are dispersed throughout the larger regions. While fruit merchants, commission brokers, and retailers are well-organized, producers do not form any kind of collective organization. When it comes to fruit crops, some growers offer inexpensive costs on a contract basis, even throughout the flowering season. All handling phases are covered by an ideal and effective marketing strategy, starting with harvesting and ending with the commodity reaching consumers. The grower receives poorer returns and the consumer spends more than is necessary as a result of decreased marketing efficiency. Alternative marketing channels are required to promote these fruits in order to get over these issues.

It was noted that village traders, pre-harvest contractors, commission agents/wholesalers, retailers/hawkers, and pre-harvest contractors were all involved as intermediaries in the flow of Jamun fruits from Jamun growers to the final customer. The commodity travels through four distinct routes with various middlemen, as shown below.

Channel-I:

Producer → Pre-harvest contractor → Commission agent/Wholesaler → Retailer / Hawker → Consumer

Channel-II:

Producer → Village trader → Commission agent/Wholesaler → Retailer/Hawker → Consumer

Channel-III:

Producer → Commission agent/Wholesaler → Retailer/Hawker → Consumer

Channel-IV:

Producer → Pre-harvest contractor → Village trader → Commission agent/Wholesaler → Retailer/Hawker → Consumer.

Cost of marketing of *Jamun* :

Table 1 shows the calculated marketing costs for harvesting, assembling, transporting,

grading, and other incidental expenses incurred by the various agencies in various channels.

No jamun producers were discovered to use any cultivation techniques in the research area; instead, human labor was solely used to collect the fruits, and the labor costs incurred during fruit harvesting were accounted for as labor costs in the marketing process.

Table 1 shows that Channel-IV had the highest marketing cost per kg (Rs. 13.88), followed by Channel-I (Rs. 13.55). In Channels II and III, the cost of marketing per kilogram was Rs. 12.81 and Rs. 12.92, respectively. Together, market fees and transportation costs accounted for more than half of all marketing expenses across all channels. The cost of labour was the next significant factor, varying from 21.92% in Channel-I to 24.13% in Channel-IV.

Table 1 Cost of marketing of *Jamun* incurred in different channels of sale.

(Figures in Rs. Per kg)

Sr. No.	Item of cost	Channels			
		I	II	III	IV
1.	a) Laboure cost for harvesting assembling, grading and packing	2.97 (21.92)	2.85 (22.25)	2.96 (22.91)	3.35 (24.13)
2.	b) Cost of packing	1.56 (11.51)	1.24 (9.68)	1.24 (9.60)	1.38 (9.94)
3.	Cost on transport	3.64 (26.86)	3.24 (25.29)	3.34 (25.85)	3.67 (26.44)
4.	Market charges	3.75 (27.68)	3.75 (29.27)	3.75 (29.02)	3.75 (27.02)
5.	Rent of building and miscellaneous expenses	0.13 (0.96)	0.13 (1.01)	0.13 (1.01)	0.13 (0.94)
6.	Loss at farm level and in transport	1.50 (11.07)	1.60 (12.50)	1.50 (11.61)	1.60 (11.53)
	Total	**13.55** (100.00)	**12.81** (100.00)	**12.92** (100.00)	**13.88** (100.00)

(Figures in the parenthesis indicate percentage to total)

Channel-IV had the highest packaging cost (Rs. 1.56), followed by Channel-IV (Rs. 1.38), and Channels II and III (Rs. 1.24 apiece). Bamboo baskets were the containers utilized in each channel. However, the bamboo basket's pricing differed in the research area. This explained the variance in the cost of packaging. Fruit losses during the marketing process are indirect, and the middlemen in the market are responsible for bearing these losses. Consequently, fruit loss-related expenses were included as marketing expenses. This expense fluctuated between 11% and 12.50% across various sources.

Among the channels of Jamun trade in the current study, Channel-II was the most efficient and Channel-IV was the least efficient based on the per kg cost of marketing incurred on the various marketing channels of trade.

APMC Mumbai (Byculla market):

Fruits known as jamun were exchanged in the APMC Mumbai Byculla market. Jamun fruits are produced from March until the end of May. the most quantity of newcomers in April. Village dealers consign produce to commission brokers in the market. These commission agents sell it to the buyer on their behalf. Public auctions are used for sales. Prices are determined by the quantity, variety, and quality of fruits that are brought to the market. Jamun fruits are usually most expensive at the beginning of the season and get cheaper as the produce reaches its peak. Ten percent is the commission rate, and commission agents keep the commission for the produce they deal. Retailers visit the market early in the morning. The fruit is cleaned to a glossy finish, sorted, and any broken fruit is removed before being sent to the appropriate supermarket. Retailers are usually ordinary business owners or hawkers.

Quality:

The combination of factors that distinguish distinct produce items and are important in assessing the item's level of acceptance is known as quality. Because jamun fruits are climacteric in nature, their quality decreases as they go from the farm to the market. If the fruits are delivered to the market later than expected, their quality declines even more and their visually noticeable defects grow, resulting in a lower price.

Customers evaluate the quality of Jamun fruits using a variety of factors. Customers frequently look for faults that are visually noticeable, such as color, size, form, stiffness to rough, cleanliness, freshness, and lack of harm. In addition to these qualities, consumers frequently taste or smell fruits.

Problems observed with the present system.

Poor quality and lower prices of jamun that reaches the market are caused by pre- and post-harvest techniques and handling processes both on the farm and off. A significant amount of fruit is lost during fruit harvesting. Because the branches of the

jamun tree are so fragile, harvesting occasionally results in bodily harm to the harvester.

Because jamun fruits are delicate and perishable, they can get damaged during loading and unloading during transit. The loss and poor quality of fruits that reach the market are caused by a number of factors, including inadequate storage facilities, poor distribution, and poor planning and coordination between growers and commission agents in the market. Because of all these variables, the grower receives reduced pricing for his highly valued produce. In addition to adopting appropriate harvest and post-harvest handling practices, all phases of the process—from harvesting to retail sales—require planning and coordination within a time schedule for the advantage of growers and effective marketing.

Suggestions:

The present study's results and the investigator's overall observations during data collecting indicate that the following recommendations are highly beneficial for the development, implementation, and enhancement of Jamun's marketing strategy. The thin, velvety skin of the jamun fruit makes harvesting it extremely challenging. To preserve this quality, an appropriate device for gathering Jamun fruits must be designed and developed.Fruits that have been picked should not be left in the field, at the packing plant, in the market, or in areas that are exposed to wind, rain, or direct sunlight after harvest. Use of an appropriate and thoroughly cleaned collection container is advised. causes of contamination, such as strict adherence to worker hygiene regulations and the proper disposal of deteriorated product that shouldn't come into contact with healthy produce. Fruits should be properly and completely inspected before being sorted. Fruits that are young, damaged by birds, sunburned, bruised, scarred, infested with insects or pests, or manually damaged ought to be discarded. Fruits dropped during harvesting and loose fruits (fruits without pedicel) should be removed and may be sold separately.

Optimizing revenue requires effective visual grading of jamun fruits. Size, color, texture, and weight should all be considered in a scientific manner rather than using the oversimplified Bold and Small size classifications. Based on consumer preferences, growers may command greater prices thanks to this sophisticated grading system. Jamun is perishable, so it's imperative to invest in storage facilities with collaborative activities. Working together with important fruit crops in the Sindhudurg district, such as mangos, can enhance the efficiency of transportation and storage. By extending the shelf life and ensuring timely market delivery, this strategic integration eventually increases growers' profitability. The increased number of transit flaws brought on by shoddy packaging presents a problem for managing Jamun fruits after harvest. An improved packaging system with coregulated fiber boxes or containers with stiff walls to guard against mechanical dangers is suggested as a solution to this problem. Ventilation holes, aeration provision, and legible labeling are essential for better handling, maintaining quality, and successful marketing. Transportation is a contributing factor to damage, as it mostly uses rural roads. Avoiding overloading and implementing well-built, insulated containerized refrigerated transport trucks are among the recommendations. It is advised to set up processing facilities nearby in order to prolong the limited shelf life of jamun and produce a variety of goods, including pulp, syrup, squash, and powder.

Growers of Jamun are exploited by the current marketing system, as seen by their small portion of the rupee that consumers spend. To address this, institutional organizations such as growers' cooperatives must be established to oversee all aspects of marketing, including assembly, grading, packing, shipping, and actual marketing. In this endeavor, self-help groups, or SHGs, can be quite important. Since the producer's share is diminished by the current drawn-out market chain, cooperative market infrastructure is essential to maximizing the benefits to fruit growers. Expanding the cultivation area should be the primary goal of research and extension programs given the substantial medicinal benefit of jamun. This all-encompassing strategy aims to reduce post-harvest losses while simultaneously enhancing the financial situation of Jamun growers via efficient marketing and value-adding.

Conclusion:

Overall, the current study found that there are flaws in the current Jamun marketing system in the research area. The market was dominated by a small number of market intermediaries, and producer-sellers had less power to set the price of their produce. because Jamun fruits are not properly graded or standardized, there is little information available about the market, etc. Producer-sellers are frequently taken advantage of by traders, which lowers the producer's percentage of the final price. The growers of jamun require instruction in contemporary marketing methods and real-time market intelligence. Enhancing the marketing ecosystem for Jamun in Sindhudurg requires cooperative initiatives. Thus, growers and anyone involved in the harvest, post-harvest handling, and selling of jamun in the Sindhudurg area must make a firm commitment to implementing appropriate harvest and post-harvest procedures. Adopting appropriate procedures and methods from the point of harvest to the point of sale would aid in preserving the quality of the fruit that buyers want,

which can bring in higher pricing and profit for the grower.

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