

Insights into Chironji (*Buchanania lanzan* Spreng.) tribal sellers' strategies: Harvesting, post-harvest and marketing management practices

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ABSTRACT

Aim: The aim of the study was to evaluate the cultivation and utilization practices of chironji (*Buchanania lanzan*) in the Satpuda mountain region, an underutilized but valuable dry nut fruit crop.

Materials and Methods: Ten various villages and forest areas of Dhadgoan tahsil of Nandurbar district were selected. The study utilized a sample size of 50 chironji tribal sellers, selected through proportionate random sampling. Data was collected using a well-constructed and pre-designed interview schedule.

Results: The experiment revealed that all respondents manually harvested chironji fruits by shaking the trees once they reached maturity. A majority (76%) used traditional methods, operating small stone Chakkis to decorticate 10-15 kg of seeds daily, while 20% used locally fabricated motorized equipment to process 40-50 kg of seeds per day. Regarding marketing, all sellers pack the kernels in polythene bags and sell them to village merchants or local retailers, with no use of ICT for marketing purposes. Additionally, 80% of respondents utilized chironji kernels to prepare traditional sweets.

Conclusion: It was concluded that dependence on traditional techniques is underscore for harvesting, processing and marketing, highlighting opportunities for modernization to enhance the value and market reach of chironji.

Keywords: Chironji Tribal Sellers, Harvesting, Post-harvest Marketing Management

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Introduction

Chironji, also known as "Cuddaph almond" "Char" or "Pyar" is a fruit that grows well under forest conditions and is considered an underexploited resource. It provides substantial monetary benefits to tribal communities of India and is considered a valuable boon for them. The pulp of the mature fruit is tasty, sometimes taken raw or roasted; however, the oily nuts are highly prized for pudding making (Singh, 1982). The edible fruit mesocarp is also liked by children (Munde et al., 2003), and the pulp can be utilized to make a cooling juice. The kernel of chironji is rich in proteins (25.0-30.0%) and can yield sweet oil that can replace olive or almond oil to flavor confectionery and traditional sweet dishes such as Halua and Kheer in Northern India.

The oil content in kernel is 34-47 per cent. Proper harvesting, post-harvest management, and marketing are important steps in the cultivation of any fruit crop to attain a higher yield. Proper harvest stage, method, cleaning, grading, mechanical decortications, packaging, storage, and marketing practices regarding the production of high quality and getting consumer acceptance would be the requisite of good practices. Post-harvest management and marketing are the crucial stages in chironji culture to get superior returns. To achieve high-quality production and market acceptance, it is essential to meet the divergent factors namely, harvesting stage, method, cleaning and grading, mechanical decortications, packaging, storage, and marketing practices. With the objective, a study titled "Insights into Chironji (*Buchanania lanzan* Spreng.) Tribal Sellers' Strategies: Harvesting, Post-Harvest, and Marketing Management Practices" was conducted.

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Materials and Methods

The present study was conducted in the Nandurbar district of Maharashtra. Nandurbar district is known as the Chironji pocket of Maharashtra. Satpuda Mountain is renowned for the 'rich biodiversity of chironji genotypes', a famous under-exploited dry nut fruit crop. Hence, 10 various villages and forest areas of Dhadgoan tahsil of Nandurbar district were selected. The study utilized a sample size of 50 chironji tribal sellers, selected through proportionate random sampling. Data was collected using a well-constructed and pre-designed interview schedule, which was then analyzed using statistical methods, specifically frequency and percentages. These methods were employed to analyze the management practices of the tribal sellers, providing insights into their approaches and strategies related to chironji sales and operations.

Results and Discussion

A. Post-harvest management practices followed by the Chironji tribal sellers

1 Maturity:

Data showed that 80.00 percent of respondents' judge maturity by looking at the deep purple-coloured skin appearance on the fruit surface at harvest time (Table 1); however, 20.00 percent judge maturity as when fruits fall off from the trees. These results were in agreement with the works of Kumar *et al.* (2012) and Nishad and Naik (2017).

2 Harvesting:

The data revealed that most of the respondents (90.00%) prefer harvesting chironji fruits in the morning, while the harvesting techniques indicated that all (100.00%) of the respondents use bamboo poles, wherein they target semi-ripened fruits only (Table 1). This was consistent with previously conducted studies by Kumar *et al.* (2012) and Nishad and Naik (2017), which indicated that similar harvesting practices also applied.

3 Post-harvest treatment:

Concerning post-harvest retreatment, the data showed that the respondents fully adopted the drying method, while almost half of the total respondents (45.00%) of them adopted the method of cleaning the fruits to remove dust (Table 1). The findings were in line with those of Kumar *et al.* (2012) and Nishad and Naik (2017).

4 Grading:

It was depicted data where no adoption of grading practices was done by any respondents (Table 1). In fact, the results are therefore in line with those reported by Kumar *et al.* (2012), and Nishad and Naik (2017).

5 Sorting:

It was depicted the sorting practice among the respondents (Table 1). It was evident that total number of the respondents have adopted the sorting of immature/over-ripe fruit, and damaged and diseased fruits through complete methods. The findings were in tandem with those of Kumar *et al.* (2012) and Nishad and Naik (2017).

6 Storage:

Data showed that 100.00 percent of the respondents had totally adopted heaping under shade for storing the produce followed by keeping it in gunny bags. The findings are in accordance with those of Kumar *et al.* (2012), a Nishad and Naik (2017).

7 Decortications:

There are four methods of decortications *viz.*, manually operated small stone Chakki (Jatta), local artesian-made motorized machines, hand hammer or rubbing between a pair of stone-slab and mechanical methods, it was showed (Table 1) that most (76.00%) of respondents had fully adopted operated small stone Chakki (Jatta) method for decortications with WMS (3.00) and got the rank first followed by local artesian made motorized machines (20.00 per cent) with WMS (2.00) and got rank second while no one used improved mechanical methods for decortications. The findings are following Kumar *et al.*, (2012) and Nishad and Naik, (2017).

8 Packaging:

The data clearly showed that 100.00% of respondents use polythene bags for packaging chironji kernels, achieving the highest rank with a weighted mean score (WMS) of 3.00. Only one respondent used glass jars as packaging material (Table 1). These findings are consistent with the studies of Kumar *et al.* (2012) and Nishad and Naik (2017).

9 Post-harvest treatment:

The information from indicated that 100.00% of respondents are selling their chironji kernels to village merchants as well as local market retailers with a WMS 3.00 the best ranking (Table 1).

Table I: Respondent's distribution according to the adoption of post-harvest management practices by the Chironji tribal sellers.

Sr. No.	Aspects	Adoption		
		Complete (3)	Partial (2)	No (1)
		f (%)	f (%)	f (%)
A.	Method to assess the maturity			
a)	A deep purple skin colour appeared on the fruit's surface	40 (80.00)	10 (20.00)	00 (0.00)
b)	Dropping of matured fruits	10 (20.00)	40 (80.00)	00 (0.00)
c)	Fruit size	00 (0.00)	00 (0.00)	50 (100.00)
B.	Harvesting			
1	Time of harvesting			
a)	Morning	45 (90.00)	5 (10.00)	00 (0.00)
b)	Evening	00 (0.00)	00 (0.00)	50 (100.00)
2	Method of harvesting			
a)	With the help of Bamboo Stick	50 (100.00)	00 (0.00)	00 (0.00)
b)	Shaking Branches/ tree	50 (100.00)	00 (0.00)	00 (0.00)
3	Harvesting stage of Chironji			
a)	Un-ripe	00 (0.00)	00 (0.00)	50 (100.00)
b)	Semi-ripe	50 (100.00)	00 (0.00)	00 (0.00)
C.	Post-harvest treatment			
1	Cleaning of fruits to remove dust	45 (90.00)	05 (10.00)	00 (0.00)
2.	Drying	50 (100.00)	00 (0.00)	00 (0.00)
D.	Grading			
a)	Grading by size	00 (0.00)	00 (0.00)	50 (100.00)
b)	Grading by weight	00 (0.00)	00 (0.00)	50 (100.00)
c)	Grading by skin colour	00 (0.00)	00 (0.00)	50 (100.00)
E.	Sorting			
a)	Sorting of immature/over-ripe	50 (100.00)	00 (0.00)	00 (0.00)
b)	Sorting of damaged /diseased fruit	50 (100.00)	00 (0.00)	00 (0.00)
F.	Storage			
1	Method of storing			
a)	Heaping under shade	50 (100.00)	00 (0.00)	00 (0.00)
b)	Keeping in gunny bags	45 (90.00)	05 (10.00)	00 (0.00)
2	Type of storage			
a)	Simple storage/room storage	50 (100.00)	00 (0.00)	00 (0.00)
b)	Cold storage	00 (0.00)	00 (0.00)	50 (100.00)
G.	Decortications			
a)	Manually operated small stone <i>Chakki (Jatta)</i>	38 (76.00)	00 (0.00)	12 (24.00)
b)	Local artesian-made motorized machines	10 (20.00)	00 (0.00)	40 (80.00)
c)	Hand hammer or rubbing between a pair of stone-slab	01 (2.00)	00 (0.00)	49 (98.00)
d)	Mechanical methods	01 (2.00)	00 (0.00)	49 (98.00)
H.	Packaging			
a)	Polythene bags	50 (100.00)	00 (0.00)	00 (0.00)
b)	Glass jar	01 (2.00)	00 (0.00)	49 (98.00)
I.	Marketing			
a)	Village merchants and local market retailers	50 (100.00)	00 (0.00)	00 (0.00)
b)	Use ICT for marketing and group marketing	00 (0.00)	00 (0.00)	50 (100.00)
J.	Value Addition of kernels			
c)	Preparation of traditional sweets	40 (80.00)	10 (20.00)	00 (0.00)
d)	Oil extraction	00 (0.00)	00 (0.00)	50 (100.00)

It could also be seen that any use of ICT for the sake of marketing or by participating in group marketing never involved in these activities even through their use. However, such a result corresponds well with Kumar et al. (2012) and also Jeewan et al. (2021).

10 Value addition of kernels:

The data revealed that 80.00% of respondents use chironji kernels for preparing traditional sweets, which received the highest rank with a weighted mean score (WMS) of 3.00 (Table 1). However, none of the respondents opted for oil extraction from chironji kernels. These findings were in alignment with the studies by Ashish Kumar et al. (2018) and Nishad and Naik (2017).

Conclusions

It was concluded that hundred percent of the tribal vendors collect chironji fruits manually by using bamboo sticks and jolting trees by observing the ripening periods. Three-fourths of the tribal vendors follow the traditional decortication method that is manually driven small stone Chakki (Jatta) 76.00 percent and process 10 to 15 kg seed in a day. For kernel packing 100.00 percent of tribal sellers use polythene bags (100.00 per cent) and sold to village merchants and local market retailers (100.00 per cent), none of them use ICT for marketing and group marketing. In value addition very major portion of them has used chironji kernels for the preparation of traditional sweets (80.00 per cent) while none of the tribal sellers used kernels for oil extraction. There is a need to develop a marketing facility, cold storage structures, and processing units in a study area. During data collection, different tribal sellers of chironji have mentioned that develop a low-cost decortications machine and make it available on subsidy and also construct a cold storage unit facility near pockets.

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