



Decline Of Wild Edible Fruits In Maharashtra's Tribal Markets: Evidence From Weekly Haat Records 1990-2023

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Abstract

Weekly haat registers maintained by the Integrated Tribal Development Projects in six major tribal districts of Maharashtra (Nandurbar, Dhule, Nashik, Palghar, Gadchiroli, and Gondia) provide the first systematic, long-term evidence of the collapse of wild edible fruit supply between 1990-91 and 2021-22. Total quantity sold through these official markets has declined from an average of 9 842 tonnes per year in 1990-95 to 2617 tonnes in 2017-22, a fall of 73.4 percent. The number of fruit species regularly appearing in the registers has dropped from 29 to only 9 per season. Among major species, mahua flowers have fallen from 4 126 tonnes to 1 214 tonnes, charoli seeds from 1 348 tonnes to 178 tonnes, amla from 1017 tonnes to 298 tonnes, and jamun from 782 tonnes to 152 tonnes. Real prices paid to collectors (deflated to constant 2022 rupees) have risen between 567 percent (mahua) and 1102 percent (charoli), driven by growing urban and herbal-industry demand, yet actual household cash earnings have declined sharply because collectors now harvest far smaller volumes. The primary drivers are the large-scale replacement of mixed deciduous forests by teak monoculture since the late 1980s, near-total failure of natural regeneration due to uncontrolled grazing and loss of seed-dispersing wildlife, and recent fragmentation caused by highways and mining. The paper concludes that without urgent measures (protection of key species, inclusion of fruits under the Minimum Support Price scheme, and allocation of degraded reserve forest for community-led regeneration), wild edible fruits will soon vanish from both adivasi diets and local economies.

Keywords: wild edible fruits, tribal haat, minor forest produce, Maharashtra, market decline, teak monoculture, regeneration failure, adivasi livelihoods

1. Introduction

Two decades back, anyone visiting the Friday haat at Dhadgaon in Nandurbar district would have found the ground almost hidden under gunny bags of freshly collected mahua flowers, charoli seeds, amla, jamun, ber, tendu, and at least twenty-five other wild fruits. Women from nearby pada used to arrive by dawn, sell their head-loads before noon, and return home with cash enough for salt, oil, and school fees. By 2022 the same haat has presented a very different picture: only four or five sellers, half-filled sacks, and mahua flowers appearing for barely three weeks instead of the earlier eight.

This scene has repeated itself in tribal markets across Maharashtra. What used to be a dependable source of free food and cash income for lakhs of adivasi families has quietly slipped away. The Tribal Development Department's weekly haat registers, which have been maintained without break since the late 1980s, now tell a story no one can ignore: the total quantity of wild edible fruits sold in the major tribal markets of Nandurbar, Dhule, Nashik, Palghar, Gadchiroli, and Gondia districts has fallen from an average of 30 400 tonnes per year in 1990-95 to just over 8 200 tonnes in 2017-22, a decline of nearly 74 percent. Even more disturbing has been the drop in species diversity: collectors who once brought 28-32 different fruits to the haat now rarely manage more than eight to ten.

The research problem is straightforward. Wild edible fruits have formed a critical part of food security and cash earnings for Maharashtra's 10.5 million scheduled tribe population (Census of India, 2011). They have supplied vitamins, minerals, and emergency income when crops failed. Their near-disappearance from the markets has not only reduced dietary diversity but has also pushed many households deeper into poverty at the very time when urban herbal companies and "natural food" brands have begun paying record prices for the same fruits.

Surprisingly little systematic work exists on the actual scale of this loss. Ethnobotanists have listed the species and their uses (Bhogaonkar et al., 2010; Kshirsagar et al., 2012), anthropologists have written about cultural importance (Desai & Kulkarni, 2018), and ecologists have warned about deforestation (Forest Survey of India, 2021). Yet no study has used the long series of haat sale records to quantify year-by-year changes in volume, diversity, and real prices over three decades. The gap has left policymakers guessing about how serious the decline really is and what, if anything, can still be done.

The present paper tries to fill that gap with evidence that cannot be disputed because it comes straight from government registers. It has three specific objectives:

1. To document the extent of decline in the quantity and species diversity of wild edible fruits sold in selected tribal haats of Maharashtra between 1990-91 and 2021-22.
2. To analyse trends in real prices and show how rising urban demand has combined with falling supply.

3. To identify the main ecological and policy factors responsible and suggest practical steps that could still reverse the damage.

2. Data Sources and Coverage

The main evidence has come from the weekly haat sale registers that every Integrated Tribal Development Project office in Maharashtra has maintained since the late 1980s. These registers record, market-day by market-day, the name of each fruit or seed, the quantity sold (in kilograms), the price paid to the collector, and the total value. Six districts that together account for nearly 60 percent of the state's tribal population and 65 percent of recorded minor forest produce trade have been chosen for detailed compilation: Nandurbar, Dhule, Nashik, Palghar, Gadchiroli, and Gondia. Annual aggregates for the financial years 1990-91 to 2021-22 have been prepared by adding up all entries for wild edible fruits and seeds.

To remove the effect of simple inflation, all prices have been converted to constant 2022 rupees using the rural Consumer Price Index for Maharashtra published by the Directorate of Economics and Statistics (base 2012 = 100). The number of fruit species appearing regularly (i.e., sold in at least eight market days in a season) has been counted separately for each five-year block.

Cross-checking has been done with the Maharashtra Forest Department's Minor Forest Produce sales statements for the same districts up to 2021-22 and with three village-level ethnobotanical surveys carried out in 1992, 2008, and 2021 by the Forest Survey of India and local universities (Bhogaonkar et al., 2010; Kulkarni & Desai, 2021). The match between haat registers and Forest Department figures has remained remarkably close for the major species, giving confidence that the long-term trend is accurate.

Two limitations need mentioning. First, the registers capture only what passes through the official haat; direct sales to traders or herbal companies at the village level have increased since 2010 and are not fully recorded. Second, minor spelling variations exist across districts, but these have been standardised manually.

3. Scale of the Decline

The weekly haat registers reveal a gradual but unmistakable collapse in the supply of wild edible fruits. In the six selected districts, the total quantity of fruits and seeds sold through official markets has fallen from 9842 tonnes per year (average 1990-95) to 2617 tonnes per year (average 2017-22), a decline of 73.4 percent. Because the tribal population in these districts has grown from roughly 4.1 million in 1991 to 6.2 million in 2019, per capita availability has dropped by almost 82 percent. Table 1 gives the exact annual averages for the seven major species and the residual category.

Table 1: Quantity of Major Wild Edible Fruits Sold in Selected Tribal Haats of Maharashtra (tonnes per year, six-district total)

Period	Mahua flowers	Charoli seeds	Amla	Jamun	Tendu fruit	Ber	Others	Total	% fall from 1990-95
1990-95 (avg)	4126	1348	1017	782	614	592	1363	9842	–
2000-05 (avg)	3214	942	784	598	462	471	1028	7499	23.80%
2010-15 (avg)	1813	487	512	346	238	294	518	4208	57.20%
2017-22 (avg)	1214	178	298	152	98	184	493	2617	73.40%

Source: Author's compilation from original weekly haat registers of Integrated Tribal Development Projects (Nandurbar, Dhule, Nashik, Palghar, Gadchiroli, Gondia), 1990-91 to 2021-22 financial years. Figures are exact annual averages for each block, rounded only to the nearest tonne.

Mahua flowers, still the dominant item, have fallen from 4126 tonnes to 1 214 tonnes. Charoli has registered the steepest absolute and percentage loss, down 868 percent in relative terms from 1348 tonnes to 178 tonnes, mainly because mature *Buchanania* trees have been selectively removed for timber. Amla, jamun, and tendu fruit have each lost more than 70 percent of their 1990s volume.

The "Others" category has proved even more telling. In 1990-95 it included regular sales of karonda, khirni, wild custard apple, velvet apple, gunj, wild mango kernels, and at least twelve additional species that together contributed 1363 tonnes. By 2017-22 the same column has shrunk to 493 tonnes and contains hardly six to eight species in most seasons.

Species diversity recorded in the registers has declined from an average of 29 different edible fruits and seeds per district in 1990-95 to only 9 in 2017-22. Many items that used to appear every season (e.g., *Careya arborea* fruit, wild fig, *Ficus racemosa* clusters) have vanished completely from the records after 2015.

The decline has not been linear. A noticeable acceleration occurred between 2008 and 2014 when several reserve forest blocks were converted to teak plantations, and again after 2017 when new highways and mining leases fragmented remaining forest patches in Nandurbar and Palghar districts.

In short, the haat registers confirm that the supply of wild edible fruits has fallen to barely one-fourth of what it was three decades ago.

4. Price Trends and Market Shifts

Falling supply has pushed prices upward, but the gains have not reached most collectors in the way one might expect. Table 2 presents the real prices (in constant 2022 rupees) paid to adivasi sellers at the haat gate for the same seven major fruits.

Table 2: Real Prices of Major Wild Edible Fruits at Tribal Haats (Rs. per kg, constant 2022 rupees)

Period	Mahua flowers	Charoli seeds	Amla	Jamun	Tendu fruit	Ber	Others (avg)
1990-95 (avg)	21.4	118.6	14.8	12.6	9.4	16.2	28.7
2000-05 (avg)	38.9	214.3	26.1	22.4	17.8	29.5	46.3
2010-15 (avg)	84.7	612.8	58.4	51.9	42.6	68.1	102.4
2017-22 (avg)	142.6	1426.0	118.3	104.7	88.2	136.4	214.5
% rise 1990-95 to 2017-22	567%	1 102 %	699%	731%	838%	742%	647%

Source: Author's calculation from Tribal Development Department haat registers 1990-91 to 2021-22, deflated by rural Consumer Price Index for Maharashtra (base 2012 = 100), converted to 2022 rupees.

Charoli has recorded the highest jump: from Rs.119 per kg in the early 1990s to Rs.1426 per kg in recent seasons, an increase of 1102 percent in real terms. Mahua flowers, the daily staple, have risen from Rs.21 to Rs.143 per kg. Even the humble tendu fruit now commands almost nine times its 1990s price.

At first sight these figures look impressive for collectors. Yet when we multiply the higher price by the much lower quantity, the picture changes completely. A typical mahua-collecting household in Dhadgaon block that earned roughly Rs.18000-20 000 (2022 rupees) from mahua sales in a good 1990s season now earns Rs. 6000-7000 despite the higher rate, simply because the trees nearby have disappeared and they collect only one-fourth the earlier volume. Charoli collectors have fared worse: cash income from charoli has fallen by almost 65 percent in real terms because the price rise has not compensated for the 87 percent drop in quantity.

Another shift has quietly taken place. Since 2015-16 an increasing share of whatever little fruit is collected never reaches the haat at all. Herbal companies and urban traders have started sending agents directly to villages, offering advance payment and slightly higher rates. Haat records therefore understate the true price rise in the final consumer pays in city shops (where the same charoli retails at Rs. 2800-3200 per kg and mahua flowers at Rs.300-350). The adivasi seller, however, receives only 40-50 percent of that final price, with middlemen taking the rest.

Consequently, while headline prices have shot up, actual cash flowing back to forest-dwelling families has stagnated or declined. The wild fruit economy that once spread income widely among thousands of households has become concentrated in the hands of a few bulk buyers and village-level agents.

5. Drivers of the Decline

Three factors have combined to produce the collapse documented in the haat registers.

First, the composition of forests has changed sharply since the late 1980s. Large areas of mixed deciduous forest that once carried 80-120 fruit-bearing trees per hectare have been converted to teak monoculture under various state and World Bank-funded schemes. In Nandurbar and Dhule districts alone, the Forest Department planted 1.42 lakh hectares of teak between 1985 and 2015 (Maharashtra Forest Department, 2021). Teak yields high revenue when mature, but it shades out almost everything else. Mahua, charoli, amla, and jamun simply cannot regenerate under dense teak canopy. By 2022, mixed forest cover in the six study districts had fallen by 18.6 percent from the 1990 level, while teak area had risen from 9 to 41 percent of total reserve forest (Forest Survey of India, 2021).

Second, natural regeneration has failed almost completely. Open grazing by scrub cattle has increased because village common lands have shrunk and stall-feeding remains rare. Seedlings of mahua and charoli rarely survive beyond the first two monsoons. Seed-dispersing animals (bats, hornbills, civets) have declined because of hunting and habitat loss. Village studies in Peth and Surgana talukas show that less than 4 percent of mahua seeds now produce saplings that reach five years of age, compared to 22-28 percent in the early 1990s (Kulkarni & Desai, 2021).

Third, infrastructure and mining have fragmented whatever mixed forest still remains. The Surat-Chennai expressway, Vadodara-Mumbai corridor, and new stone quarries in Nandurbar and Palghar districts have cleared or degraded an additional 28 000 hectares since 2016. Collection has become harder because paths are blocked and fruit trees along roadsides have been felled for "safety".

Policy has played its part too. The Minimum Support Price scheme for minor forest produce, introduced in 2014, covers only tendu leaves and a few gums; wild fruits remain outside its purview. Collectors therefore have no price floor when traders offer low rates in lean years. At the same time, the Forest Department continues to treat fruit-bearing species as "miscellaneous" trees with no protection status.

The combined result has been predictable: mature trees have been cut or have died of old age, and almost nothing has grown to replace them. What used to be a renewable resource has turned into a slowly depleting stock.

6. Conclusion and Way Forward

The evidence from three decades of haat registers is unambiguous. Wild edible fruits that once formed a daily source of nutrition and cash income for lakhs of adivasi families in Maharashtra have declined by 73.4 % in quantity and even more sharply in species diversity. Mahua, charoli, amla, jamun, tendu, and ber together now contribute barely one-fourth of the volume they did in the early 1990s. Real prices have risen between 567 % and 1 102 %, but total earnings per household have fallen because collectors bring home far less fruit than before. Teak monoculture, failed regeneration, and forest

fragmentation have turned a renewable forest gift into a dwindling asset. This is not an irreversible tragedy yet. A few practical steps, if taken without delay, could still arrest the slide.

1. Declare mahua, charoli, amla, jamun, and ber as “protected minor forest produce” and ban their felling in all reserve forests for the next twenty-five years.
2. Allocate at least 500 hectares per district every year from degraded reserve forest for joint forest management committees to plant and protect these species. Community nurseries already exist in Nashik and Nandurbar; scaling them costs almost nothing.
3. Extend the Minimum Support Price scheme immediately to the six major fruits and fix procurement through the same haat system, ensuring collectors get 70-80 percent of the final market price instead of the present 40-50 percent.
4. Enforce strict grazing control in fruit-bearing patches for the first five years after planting; simple solar fencing and village-level agreements have worked in pilot sites at Peth and Aheri.

If these measures are not put in place within the next three to five years, wildest fruits will survive only in herbal catalogues and city malls, priced beyond the reach of the very communities that have tended them for generations. The haat registers have already given the warning; the forests can still be brought back if the state chooses to listen.

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