



ESTIMATED COLLECTION AND VALUATION OF NON-WOOD FOREST PRODUCTS IN THE DANGS NORTH FOREST DIVISION OF GUJARAT STATE, INDIA

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Abstracts

Nowaday, the NWFPs studies are of interest to the researchers, because NWFPs play important role in the tribal economy while many of NWFPs species are unknown yet in the market. These NWFPs are one of the major source of subsistence economy in international, national and regional markets. These NWFPs are not only source of income to tribal peoples but also a source of food material for self-consumption. Therefore, in the present study an attempt has been made to find out the total number of NWFPs and its value in Dangs North Forest Division (DNFD) of Gujarat state which has 100% forest villages in its jurisdiction. During economic survey of NWFPs in DNFD, a total value worth of Rs. 236.6 lakh/annum was recorded as their contribution. These values have been contributed by 24 types of NWFPs which are categorized in the various forms viz., leaves (40%), fruits (16 %), flowers and seeds (15%), miscellaneous (14%), culms and stems (13%) and gums (2%).

Key Word: Valuation, Estimated, DNFD, NWFPs, Dangs, Gujarat

Introduction

The forest area in vicinity of the village is source of different kind of NWFPs which play an important role in the economy of regional, national and international markets. These NWFPs or NTFPs are estimated to contribute livelihood for about 1.4-1.6 billion forest dwellers world wide (Gevelt, 2013). In many rural areas, the people are traditionally dependent on forest resources for getting extra income through marketing of NWFPs (Olugbire, *et al.*, 2015; Yadav, *et al.* 2018). As per Food and Agriculture Organization (FAO, 1997) statement, it is estimated that the total value of world trade in NTFPs is approximately \$ 1100 million and it grows by nearly 20 % annually (Hammet, 1999) which means approximately \$ 60723.1 million in the year of 2018. The NWFPs are defined as “Goods of biological origin other than woods derived from forest” (FAO, 2014). NWFPs or NTFPs are recognized with different name by different bodies viz., Non Timber Forest Products (NTFPs), Non Wood Forest Products (NWFPs), Secondary Forest Products (SFPs) and Minor Forest Produces (MFPs) etc. The

NWFPs occur in different forms like leaves, stem, root, fruit, flower, seeds, gums, tannin, herb and miscellaneous. About 15000 flowering plant species are found in India out of which only 3000 species yielded NWFPs which are 20% of total flowering plant species (Murthy *et al.* 2005; Maithani, 1994). The Government of Gujarat, India, has established an organization named Gujarat State Forest Development Corporation (GSFDC) Ltd. which is responsible for procurement of NWFPs from tribal communities at announced rate for maximizing benefits to the tribal economy. GSFDC Ltd. is looking after collection and sale of NTFPs or NWFPs in Gujarat (Yadav, *et al.* 2018). However, GSFDC Ltd. handle only 10 nationalized and 54 non-nationalized NTFPs (Kumar, 2015; Yadav *et al.* 2018). In these days, NWFPs are being recognized as noticeable products by Governmental or Non-Governmental Organization due to their economic value in the forest and tribal area. These NWFPs are progressively attracting the attention of the researchers worldwide (Kleinn, *et al.* 1996). Therefore, an attempt has been made in this study to know the estimated quantity and value of NWFPs in DNFD of Valsad Forest Circle of Gujarat State, India.

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Study Area

The Dangs North Forest Division is situated at the northern end of the Western Ghat which has very rich biodiversity in its jurisdiction. As per Forest classification system of Champion and Sheth (1968), the forests of DNFD are classified in two main types *i.e.*, South Indian Moist Deciduous Forest and Southern Dry deciduous Forest. DNFD lies between Latitude 20°34'03" and 21°05'33" and Longitude 73°27'34" and 73°57'22". The division is surrounded by Tapi district of Gujarat and Dhulia district of Maharashtra in the north, the Dangs South Forest Division in the south, Maharashtra state boundary in the east and Vyarataluka (block) of Tapi district in the west.

Materials and Methods

During the study, RRA (Rapid Rural Appraisal) exercise was done to initiate primary level survey of households and villages for getting vital information. Selection of household was done in such way that represents all communities' presence in the selected villages and their dependency on forest (ADH-Acute Dependence Households, LDF-Low Dependence Households and NDH-No Dependence Households). Further more, information on NWFPs collection was collected through survey done using structured questionnaire of 10% household of selected village as described by Yadav *et al.* (2018). The village selection was done based on the stratified random sampling

process. The criteria of villages selection were various density classes of forest *viz.*, Very Dense (VD), Moderate Dense (MD), Open Forest (OF) and Degraded Forest (DF) of forest available in The Dangs North Forest Division. A total 10% of total forest villages of division were selected in the present study. Thus, 16 villages out of 155 total forest villages and 183 households were surveyed within 28 field days. The field visits for present study were carried out from December to October, 2011.

Results and Discussion

Quantitative assessment of NWFPs

In the primary survey, it has been found that the different communities collect these NWFPs throughout year for their daily subsistence and income generation. A total of 24 types of NWFPs (table 1) have been identified in DNFD out of which 23 types come from 21 plants species and one from animal's species *i.e.*, honey from honey bees. An another study in Uttara Kannada of Western Ghat showed that different types of forest *viz.* Evergreen, Semi-evergreen, Moist deciduous and Dry deciduous yielded variable types of NWFPs *i.e.*, 116, 98, 95 and 36, respectively (Murthy *et al.* 2005). Similar study done by Yadav *et al.* (2018) in Godhra Forest Division of Gujarat state indicated 45 types of NWFPs are identified in the form of leaves, flowers and seed, gums and tanning materials, fruits, bamboo and other miscellaneous items. In the study, NWFPs have been categorized in six groups, *viz.*, leaves, flowers and seeds,

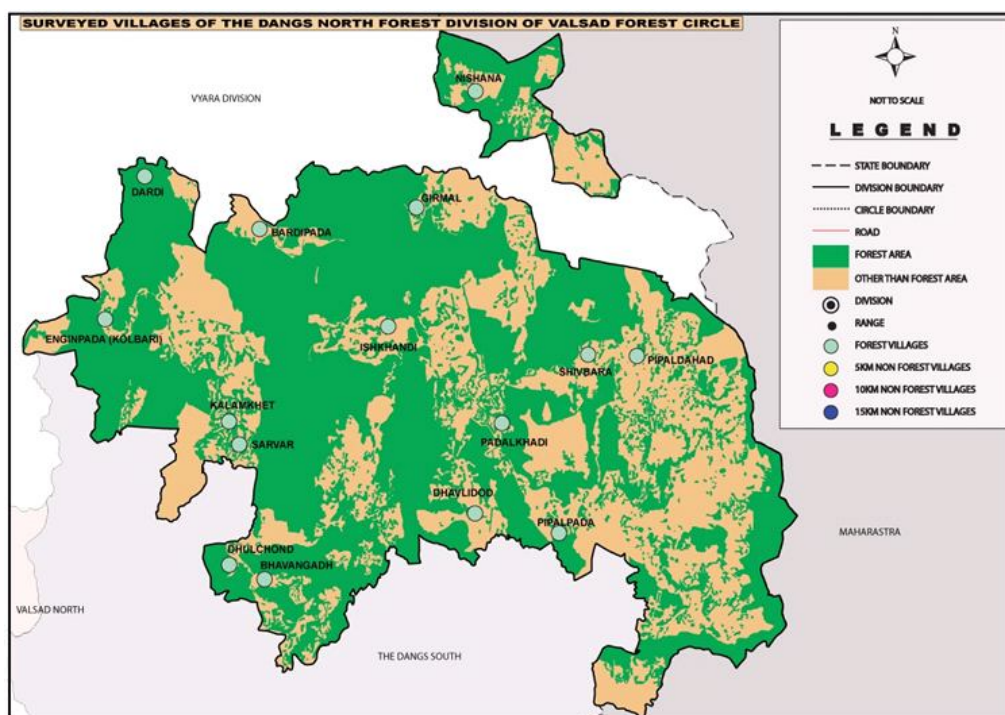


Fig. 1: Surveyed Forest villages of Different Density Classes in DNFD

Table 1: Total Estimated NWFPs collection and valuation in Dang North Forest Division

S.No.	Scientific Name	Vernacular name and type of NWFPs	Total estimated Collection/year	Total Value (lakhs/annum)
1. NWFPs in the form of leaves				
1	<i>Diospyros melanoxylo</i> Roxb.	Timru leaves (bundle)	11703679.83	93.63
2	<i>Bauhinia recemosa</i> Lam.	Asitro leaves (bundle)	111532.62	0.56
3	<i>Butea monosperma</i> (Lam.) Taub.	Khkhara leaves (bundle)	70497.79	0.21
2. NWFPs in the form of flowers and seeds				
4	<i>Madhuca indica</i> J.F. Gmel.	Mahuda flowers (kg.)	128183.87	16.66
5	<i>Madhuca indica</i> J.F. Gmel.	Mahuda seeds(kg.)	44973.68	6.3
6	<i>Cassia tora</i> L.	Puvadiya seeds (kg.)	132343.77	8.6
3. NWFPs in the form of culms and stems				
7	<i>Dendrocalamus strictus</i> (Roxb.) Nees.	Bamboo culm	483422.35	33.84
8	<i>Carviacallosa</i> (Nees.) Bremek	Karava stem (kg.)	83458.66	1.67
4. NWFPs in the Miscellaneous form				
9	Honey	Honey (kg.)	14710.04	29.42
10	<i>Terminalia acrenulata</i> Roth	Sadad barks (gm.)	0.78	0.00*
11	<i>Chlorophytum tuberosum</i> (Roxb.) Baker	Dholimushali tuber (kg.)	1012.40	3.54
5. NWFPs in the form of fruits				
12	<i>Carissa carandas</i> L.	Karamda fruits (kg.)	68376.85	13.68
13	<i>Diospyros melanoxylo</i> Roxb.	Timru fruits (kg.)	42458.27	6.37
14	<i>Garugapinnata</i> Roxb.	Kakad fruits (kg.)	72919.37	5.1
15	<i>Ziziphus sp</i>	Bore fruits (kg.)	23128.53	2.61
16	<i>Meynalaxiflora</i> Robyns	Adav fruits (kg.)	14664.36	2.2
17	<i>Agelemarmalos</i> (L.) Correa	Billi fruits (kg.)	11343.33	1.33
18	<i>Schleichera oleosa</i> (Lour.) Merr.	Kusum fruits (kg.)	14120.21	0.99
19	<i>Syzygium cumini</i> (L.) Skeels	Jambu fruits (kg.)	11102.24	3.33
20	<i>Tamarindus indica</i> L.	Khatiamli fruits (kg.)	9688.81	0.97
21	<i>Emblica officinalis</i> Geartn.	Amlafruts (kg.)	1778.34	0.27
22	<i>Annona squamosa</i> L.	Sitafal fruits	1693.11	0.47
6. NWFPs in the form of Gums				
23	<i>Firmiana simplex</i> (L.) W. Wight.	Kadayo gums (kg.)	1890.22	4.73
24	<i>Lanneacoromandelica</i> (Haut.) Merr.	Modad gums (kg.)	698.41	0.21
Total	-	24	-	236.6

*Used in self-consumption only, price is not available, kg- kilogram, gm- gram

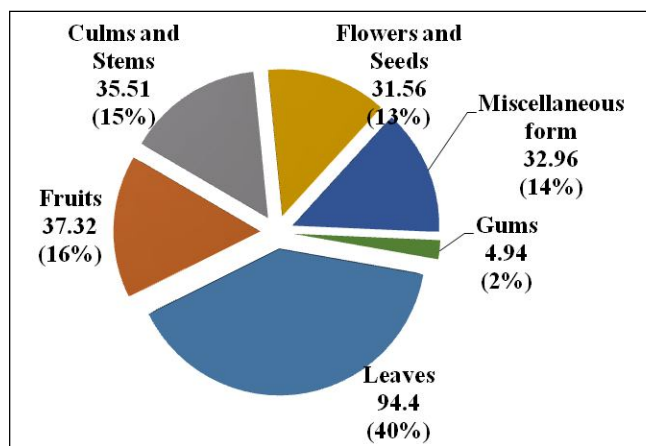


Fig. 2: Categorization and valuation of NWFPs in DNFD

culms and stems, miscellaneous forms, fruits and in the forms of gums etc. as given in the table 1. Furthermore, estimated value of different NWFPs have been calculated and it has been found that the total estimated value of NWFPs is Rs. 236.6 lakh/annum which is less than the total estimated value found to be Rs 341.7 million/annum in Godhra Forest Division (Yadav *et al.* 2018). Similarly, a case study on NWFPs done by Tewari D.D. (1998) in Soliya village of south Gujarat estimated economic the value of NWFPs to be worth of Rs. 1.2 million/annum.

Among all NWFPs, maximum estimated value comes from leaves (Rs. 94.4 lakh/annum) followed by fruits (Rs. 37.32 lakh/annum), flowers and seeds (Rs. 35.51 lakh/annum), miscellaneous (Rs. 32.96 lakh/annum), culms

and stems (Rs. 31.56 lakh/annum), and gums (Rs. 4.94 lakh/annum) as shown in fig. 2.

In the study, the *Terminaliacrenulata* Roth (Sadak bark) is found to be used for self-consumption only. Therefore, price could not be got during the study.

Conclusions

During this study, 24 types of NWFPs have been recorded from DNFD, out of which 23 types come from 21 plants and one from animal's, i.e., honey. The total estimated value of different forms of NWFPs is Rs. 236.6 lakh/annum which is dynamic as it can change over period of time. Maximum value has been received from leaves followed by fruits, culms and stems, miscellaneous, flowers and seeds forms and gums. However, the contribution of NWFPs in DNFD is low as compared to other studies done in Gujarat. Therefore, NWFPs production can be improved qualitatively and quantitatively by planting more NWFPs producing trees. In future, economic value of different NWFPs may be threatened due to over exploitation of particular NWFPs or may not be viable due to species loss.

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