Socio-Economic Factors Affecting NTFPs Income in Gujarat:A Study of the Dangs Range

Abstract

The NTFPs are collected from forests by tribal population and then sold to the Gujarat State Forest Development Corporation (GSFDC) which then sells collected produce in the national and international markets with or without value addition, depending upon the type of product. They serve as an essential source of income for tribal people and provide them employment at most time of year. For carrying out the present research the primary data on different income, employment and socio-economic characteristics of the respondents were collected for the year 2019-20 from selected respondents. Two talukas Ahwa and Waghai were selected randomly for the study. Five villages were selected purposively from both the talukas considering the population and marketing sites of NTFPs. 12 respondents from each village were selected randomly from NTFPs collectors. Thus, a sample of 60 respondents was selected for study.

It is observed from the results of income and employment analaysis that on an average total 369.64 Kg. NTFPs was collected per household. On an average, the highest income of Rs. 2901.899 per household (30.34 %) was generated through selling of Timru leaves followed by income of Rs.1958.5 per household from Mahuda seeds. On an average total 72.26 man-days of employment generated through collection of NTFPs. The highest employment of 21.40 days per households was generated from Mahuda flowers because the collection of Mahuda is labour intensive activity and time-consuming process. The results of effect of socio-economic variable on income of NTFPs revealed that the number of collectors had negative effect on NTFPs income. A unit increase in this found to reduce the income by Rs. 2240.58. Other variables like distance travelled between home and forest for point of sale, transportation cost and education were found statistically non-significant.

Key word: NTFPs, Income and employment, Socio-economic character

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Introduction

In Gujarat, 143 plant species has cultivated in natural ecosystem. Among these, 78 species occur in forest or other forms of natural vegetation, 23 species grown as weeds, 42 species grown as cash crop for other plant based products and 22 species cultivated as medicinal crop. The tribal people have been conserving plant and crop genetic resources as well as the knowledge on their utility without expecting any return. Apart from its contribution to forest revenue, NTFP contribute significantly in rural and tribal economy as about 60 per cent of the products that are consumed locally. It has been shown that the NTFP based small scale enterprises provide up to 50 per cent of income for 20 to 30 per cent of the rural labour force in India; whereas 55 per cent of employment in the forestry sector is attributed to the NTFP sector alone [3-5].

The major NTFPs in Gujarat include Timru (*Diosprosmelanoxylon*) leaves, Mahua (*Madhucaindica*) flowers, Kadaya (*Sterculiaurens*) and other types of gums. Unlike south and central parts, the North Gujarat inhabits mainly dry scrub forests; this type of forest is also found in the central and western parts of the state. The major NTFPs collected from this region include Timru leaves, Salai (*Boswelliaserrata*) Gum, and Honey (*Apis* spp.). In Kachch, the Northwest part of Gujarat, the Gugal (*Commiphorawightii***)** and Prosopis (*Prosopijuliflora*) gums are the major NTFPs [6-8].

The NTFPs are collected from forests by tribal population and then sold to the Gujarat State Forest Development Corporation (GSFDC) which then sells collected produce in the national and international markets with or without value addition, depending upon the type of product. GSFDC has classified NTFPs into five broad categories: (1) Timru leaves; (2) Mahua flowers; (3) Mahua seeds or Doli (as called in local parlance); (4) Gums and (5) Other NTFPs. The first four categories contribute some 85 to 95 per cent of the total value of NTFPs handled by the GSFDC (Kumar, 2015).

Objectives

1. To estimate the employment and income of households from NTFPs;
2. To estimate the effect of socio-economic characteristics of household on income from NTFPs;

Methodology:

The primary data on different income, employment and collection of different forest products, constraints faced by the respondents were collected for the year 2019-20 from selected respondents. Dangs Range comprises of three talukas. Out of these talukas, two talukas Ahwa and Waghai were selected randomly for the study. Five villages were selected purposively from both the talukas considering the population and marketing sites of NTFPs.

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12 respondents from each village were selected randomly from NTFPs collectors. Thus, a sample of 60 respondents was selected for study. The selected respondents were interviewed with the help of well-structured questionnaire and various socio-economic characteristics, information about the collection of NTFPs its income, employment, methods of selling *etc.* was recorded for the study.

Multiple regression models

The factors influencing income of households earned from forest produces were assessed by using the following multiple regression model (Kumar and Meena, 2018).

$$\mathbf{Y= a+\Sigma b_i X_i + u} \qquad \mathbf{(1)}$$

Where,

Y = Output,

X_i = Input variables used,

i = 1, 2, 3,4,5,6, ……n

a = Constant term,

b_i = Parameters to be estimated and

u = Random error term assumed to follow normal distribution with zero mean and constant variance.

$$\mathbf{Y= f (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9)(2)}$$

Where,

Y = Income earned from forest produces (Rs.)

X_1 = Average age of collectors (Years)

X_2 = Size of family (No.)

X_3 = Time spent on gathering forest produces (man days/year)

X_4 = Distance travelled between home and forest for gathering forest produces (Km.)

X_5 = Transportation cost (Rs)

X_6 = Distance travelled between home and point of sale (km)

X_7 = Dependency ratio (Percentage of dependent in the family)

X_8 = Average education (Average years of schooling of collectors)

X_9 = No. of collector

Result and Discussion:

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The employment and income of households from NTFPs

The details of collections, consumption and selling of NTFPs of households are given in Table 1. It is revealed that on an average, 33.54 Kg of. NTFPs were consumed by tribal forest dwellers in Dangss excluding Timru leaves collectors. On an average, consumption of Aritha (46.21 %) was higher as compared to other NTFPs, followed by consumption of Mahuda flowers (37.26 %), Mahuda seeds (15.02 %). The consumption of Honey (1.49 %) was very low whereas, Puwadseeds was not consumed at all by the respondents. The respondents consumed Timru leaves to the tune of 20.05 bunches of leaves. It is observed that average collection, consumption and selling of NTFPs was to the tune of 369.64 kg, 33.54 kg and 336.10 kg per household respectively. The higher collection was observed in Puwad seeds, while, the lowest was in case of Honey.

Table 1 Per year average collection, consumption and selling of NTFPs of selected households(N=60)

Sr. No.	Name of NTFPs	Quantity collected (kg)	Quantity consumed (kg)	Quantity sold (kg)
1.	Mahuda seeds	83.38 (22.55)	5.04 (15.02)	78.34 (23.30)
2.	Puwad seeds	126.42 (34.20)	0.00 (0)	126.42 (37.61)
3.	Honey	2.67 (0.72)	0.50 (1.49)	2.17 (0.64)
4.	Aritha	85.09 (23.01)	15.50 (46.21)	69.59 (20.70)
5.	Mahuda flower	72.08 (19.50)	12.50 (37.26)	59.58 (17.72)
	Total	**369.64 (100)**	**33.54 (100)**	**336.10 (100)**
6.	Timru leaves (in bunch)	2658.14	20.05	2638.09

Note: Figures in parentheses indicates percentage to total

The details of income and employments generated through sale of NTFPs are furnished in Table.2 The results showed that an average income of Rs.9563.36 per household was generated through sale of different NTFPs. So far as the product wise breakup of these income is concerned, it is observed that the highest income of 30.34 per cent was generated through sale of Timru leaves followed by the share of income through sale of Mahua seeds (20.47%), Puwad seeds (18.50%), Honey (11.34%)Mahuda flowers (10.59%) and Aritha(8.37%) respectively. The lowest income was generated through Aritha.

Table 2Per year average income and employment per household from NTFPs(N=60)

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Sr. No.	Name of NTFPs	Selling price of NTFPs (Rs / kg)	Income generated through NTFPs (Rs /household)	Employment days/year involved in collection of NTFPs
1.	Mahuda seeds	25	1958.50 (20.47)	15.55 (21.51)
2.	Puwad seeds	14	1770.00 (18.50)	12.51 (17.31)
3.	Honey	500	1085.00 (11.34)	8.11 (11.22)
4.	Aritha	12	835.08 (8.37)	6.19 (8.56)
5.	Mahuda flower	17	1012.86 (10.59)	21.40 (29.61)
6.	Timru leaves (Rs./bunch)	1.10	2901.89 (30.34)	8.50 (11.76)
	Total	-	**9563.34 (100)**	**72.26 (100)**

Note: Figures in parentheses indicates percentage to total

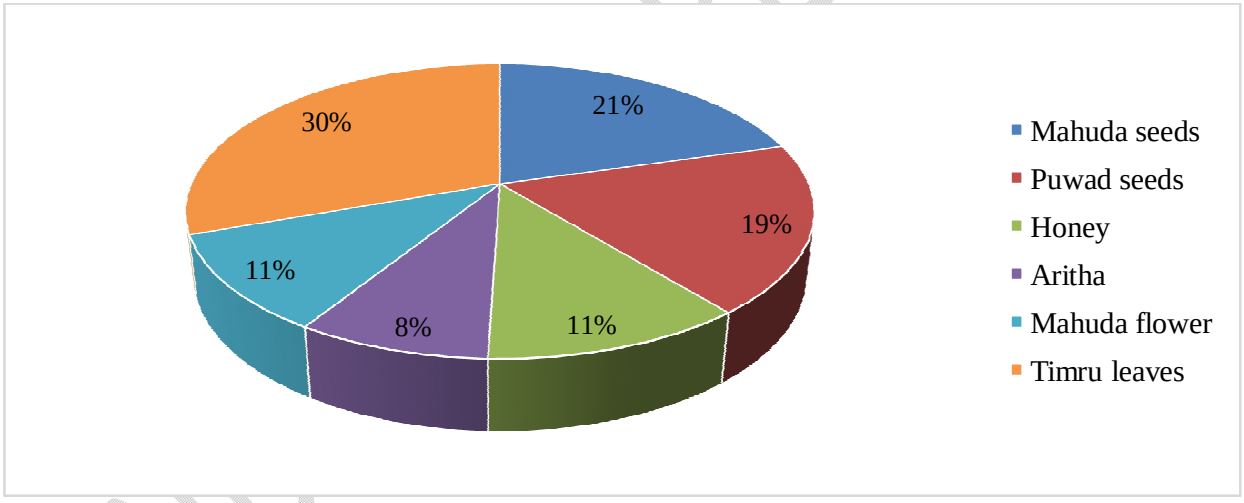

Fig.1 Per cent share of income generated from various NTFPs

The results furnished in Table 2 and Fig. 1 also showed the details of employment generated through collection of different NTFPs. It is observed that the highest employment of 21.40 man-days/year was generated throgh collection of Mahuda flowers followed byMahuda seeds (15.55 man-days/year),Puwad seeds (12.51 man-days/year), Timru leaves (8.50 man-days/year), Honey (8.11 man-days/year) and Aritha (6.19 man-days/year). On an average, total 72.26 man-days/year per households were generated in collection of NTFPs.

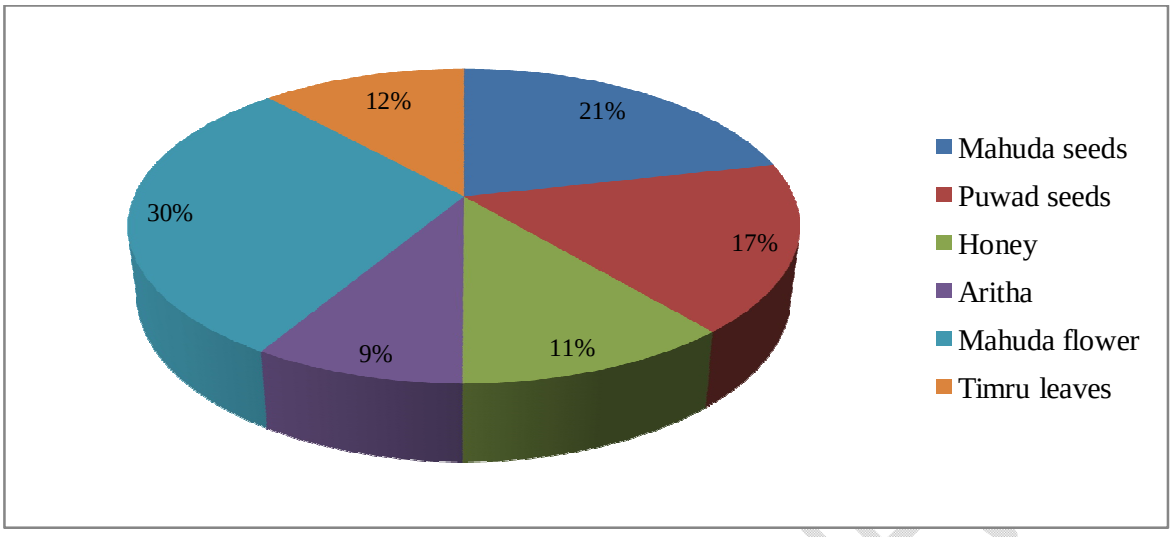

Fig. 2 Per cent share of employment generated from collection of various NTFPs

Effect of socio-economic characteristics of household on income from NTFPs

In order to test which socio-economic variable influences income of NTFPs, linear regression model was used and the results of the analysis is presented in Table .3 Different variable like age of collector, size of family, time spent on gathering forest produces, distance travelled between home and forest for gathering forest produces, transportation cost, distance travelled between home and forest for point of sale, dependency ratio, education and number of collector were tested to assess their effect on the NTFPs income. Out of these nine variables, six variables, *viz,*age of collector, size of family, time spent on gathering forest produces, distance travelled between home and forest for gathering forest produces, dependency ratio, and number of collector significantly affected the NTFPs income. The result also revealed that the coefficient of multiple determinations (R^2) was 0.67 which indicated that 67 per cent of total variation in household income was explained by the variables included in the selected regression model.

Age of household head was found positively related to the NTFPs income. Generally, it is well known that as elder the person more are the limitation toperform physical task but here because, they were more likely to be engaged in NTFPs extraction. Thus, higher age of household head positively affected NTFPs income. Other variables like size of family, distance travelled between home and forest for gathering forest produces, time spent on gathering forest produces and dependency ratio were also found to have significant affect on NTFPs income. Among these, the highest magnitude of effect on NTFPs income found due to the size of family to the tune of Rs.

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1689.65 per unit of the size of family. It also observed that a unit increase in time spent on gathering forest, dependency ratio and age of collector respectively increased NTFPs income by Rs. 86.19, Rs.80.84 and Rs. 32.81, respectively. The variable of number of collectors had negative effect on NTFPs income. A unit increase in this found to reduce the income by Rs. 2240.58. Dependency ratio showed that people from nuclear family and from joint family collect the NTFPs in the same proportion. Number of collectors were found to have negative affect on income of NTFPs, because when number more of person engaged in collection of forest produce, limited availability of NTFPs resulted in stable income from NTFPs.

Table 3 Socio-economic character of household on income from NTFPs

Sr. No.	Variables	Regression co-efficient	SE	P value
1.	Constant	-5958.58	2457.90	0.02
2.	Age of collector (Years)	32.81*	18.79	0.09
3.	Size of family (Number of person)	1689.65***	493.18	0.00
4.	Time spent on gathering forest produces (Man days)	86.19***	14.23	0.00
5.	Distance travelled between home and forest for gathering forest produces (km)	221.49*	131.88	0.10
6.	Transportation cost (Rs. per qtl.)	2.93	157.23	0.99
7.	Distance travelled between home and point of sale (km)	-34.39	345.85	0.92
8.	Dependency ratio (X_7)	80.84**	35.78	0.03
9.	Education (number of years of schooling)	3.92	62.63	0.95
10.	No. of collector	-2240.58**	899.57	0.02
11.	R^2	0.67		

Note: ***, ** and * indicate statistically significant at 1 %, 5 % and 10 % respectively.

Impact of other variables such distance travelled between home and forest for point of sale, transportation cost and education on income from NTFPs were found statistically non-significant. Impact of education on income from NTFPs found non-significant beasuse the educated collectors may be utilizing more time to other activities.

These results are in conformity with the finding of Kumar and Meena (2018 b). He reported among the six variables included in model, size of family, time spent on gathering forest products and distance travelled between home and forest for gathering forest produces

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had positive and significant impact on collection of minor forest produces by the tribal household and in turn the income derived from it.

In sum up, it is observed that variables such as age of collector, size of family, time spent on gathering forest produces, found to have significant and positive effect on the NTFPs income. Some variable like distance travelled between home and forest for gathering forest produces, education and distance travelled between home and forest for point of sale expressed non-significant results.

Conclusion:

It is observed from the results of income and employment analaysis that on an average total 369.64 Kg. NTFPs was collected per household. On an averageconsuption of Aritha (46.21 %) were found to be the highest followed by consumption of Mahuda flowers (37.26 %), Mahuda seeds (15.02 %) and Honey (1.49 %). On an average, the highest income of Rs. 2901.899 per household (30.34 %) was generated through selling of Timru leaves followed by income of Rs.1958.5 per household from Mahuda seeds. The minimum income of Rs.835.08 per household (8.37 %) was observed in case of Aritha. From these results, it can be concluded that NTFPs play critical role in providing subsistence and cash income to villagers. On an average total 72.26 man-days of employment generated through collection of NTFPs. The highest employment of 21.40 days per households was generated from Mahuda flowers because the collection of Mahuda is labour intensive activity and time consuming process.

The results of effect of socio-economic variable on income of NTFPs revealed that the number of collectors had negative effect on NTFPs income. A unit increase in this found to reduce the income by Rs. 2240.58. Other variables like distance travelled between home and forest for point of sale, transportation cost and education were found statistically non-significant.

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