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# Contribution of non-timber forest products towards rural income and employment in Mokokchung district of Nagaland

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**Abstract**
The study was conducted to assess the contribution of Non-Timber Forest Products towards rural economy in Mokokchung District of Nagaland. The survey was conducted in two blocks, namely Changtongya Block and Ongpangkong N Block comprising of 100 respondents from 10 selected villages. Data were collected from primary as well as secondary sources. Majority of the respondents were male. The highest contribution of annual income obtained from wage employment (45.7%) followed by NTFPs (30%). The NTFPs identified in the study area were grouped as wild fruits, wild vegetables, medicinal plants, fuel wood and other category. Among the types of NTFPs, highest contribution of average annual income was generated from others category *viz*, broom grass, wild meat, fish, etc. *i.e*. Rs. 26,756 (44.4%) followed by wild vegetables of Rs. 16,890.5 (27.9%). Maximum annual contribution under non- cash income was from fuel wood *i.e*. Rs. 6826 per household (49.9%). Wage earners contributed the highest in employment generation with 135 man days annually (33.5%) followed by NTFPs collectors with 117 man days (29.1%). Under gender wise collection of NTFPs, it was found that men spent more time (80 days) as compared to women (37 days) annually. Among the types of NTFPs, maximum time (34.31%) spent in collection of others category (broom grass, wild meat, fish, etc.) *i.e*. 40 days followed by wild vegetables 36 days (31.57%). It was also found that majority of the sample households went for NTFPs collection because of traditional norms, followed by good source of income. From the regression analysis, it was found that dependency ratio and employment from NTFPs affected positively and significantly towards NTFP income.

**Keywords:** NTFPs, income, employment, gender, factors

## 1. Introduction
Non-Timber Forest Products are biological resources of plant and animal origin, collected from natural forest, which includes man-made plantations, wooded land, farmlands, and trees outside forests (Melese, 2016) [7]. It can also be defined as any biological resources collected from wild by rural people for direct consumption/income generation on a small scale (Shackleton, 2004) [8]. This usually comprises of products which are used as cosmetics (oils), herbs, medicines, aromatic substances and flavorings, food, feed for animals, firewood, construction material, ornamental plants, paint and rubber, and also animal products from hunting.

At global level, around more than two billion people are abode in forest, depending on NTFPs for subsistence, livelihood security and income (Vantomme, 2003) [12]. Indeed Asia is the world largest producer and also consumer of NTFPs in the world (Vantomme *et al*. 2002) [13]. India is the seventh largest country in the world (India Year Book, 2007) and is a large developing country known for its diverse forest ecosystem and mega biodiversity. The forest cover of India as per the assessment (ISFR, 2017) [4] is 7, 08,273 sq. km., consisting of 21.54% of total geographical area. According to the Registrar General of India, a tentative number of villages in the country having forest land in the immediate proximity is roughly calculated at about 1,90,000 nos with a total population of 168 million (Forest Survey India, 2009).

More than 800 types of NTFPs are harvested in India (FSI, 2011) [2]. In Madhya Pradesh alone, the NTFPs of worth Rs. 21 billion annually are collected mostly by the tribal women (World Watch Institute, 1991). They contribute employment opportunity to a large segment of the tribal and other adverse rural communities (ISFR, 2017) [4]. They provide 50% of the household income for approximately one third of India's rural population (Kumar *et al*. 2008) [6]. It is estimated that 275 million poor rural people in India, rely on NTFPs for at least part of their subsistence and cash livelihoods (Kumar *et al*. 2016) [6]. NTFPs provide about 40% of total official forest revenues and 55% of forest - based employment (Tewari and Campbell, 1995) [10].

Nagaland, the 16$^{th}$ state of the Indian union is situated in the extreme North-Eastern state of India covering a geographical area of 16,579 sq. km. which constitutes 0.50% of the geographical area of India. As per interpretation of satellite data pertaining to Oct-Dec 2015, the forest cover in the state is 12,489 sq. km, which is 75.33% of the states geographical area. Non-Timber Forest Products (NTFPs) are decisive in meeting local communities' subsistence needs, providing a safety net in times of demand and accord to seasonal income. Nearly 60 percent of population living in and around forests in the State relies on

NTFPs as a critical component for their sustenance. Since NTFPs includes a large variety of seasonal products, returns are regular and quite continual. In addition to maintenance of income-generating potential, NTFPs also supply food security to large low-income populations (Nagaland state action plan on climate change, 2012).

According to Department of Environment Forest and Climate change, Government of Nagaland, Zunheboto district have the highest availability of revenues from NTFPs in the year 2016-17 followed by Dimapur. It also reported that there are about 53 important NTFPs species found and used extensively in Nagaland. Forest has always been intrinsically linked to the economy of the Nagas. There is large scope for development of NTFPs in Nagaland. The raw materials are available in plenty but the exploitation is minimum due to non- accessibility of market outlet and remoteness of the location. The study was conducted in Mokokchung District of Nagaland to study the status of contribution of NTFPs towards rural income in Nagaland, specific objective was to assess the contribution of NTFPs towards rural income and employment.

## 2. Materials and methods

The study is explanatory in nature which consists of both quantitative and descriptive type of research. The research study was conducted in Mokokchung District of Nagaland. Out of 6 R.D. Blocks in the district, two blocks namely, Changtongya block and Ongpangkong N block were chosen purposively for the study. From each village 10 respondents were purposively sampled which resulted to a total of 100 respondents from 10 villages. Data were collected from primary as well as secondary sources. The primary data were obtained from the sample households by using well-structured questionnaire/schedules and personal interview. It consists of socio-economic characteristics of the households, details of NTFPs, composition of income and employment from agri., NTFPs, allied activities, wage, etc. Secondary data were collected from secondary sources such as Department of Environment Forest and Climate change (Government of Nagaland), textbooks, journals, handbooks, articles, Statistical Handbook of Nagaland, etc. In addition to simple percentage analysis, mean, standard deviation, coefficient of variation, t statistics and multiple linear regression analysis were used in order to get valid conclusions.

Multiple linear regression analysis was applied to identify the factors influencing on contribution of income from NTFPs.

The following type of model was used in the study

$Y = a + \sum_{i=1}^{n} biXi + e$

Where,

Y = Annual income from NTFPs (Rs /yr)

a = Constant or intercept

bi = Regression coefficients

$X_1$= Size of the family (numbers)

$X_2$ = Adult literacy (percentage of educated adult members in the family)

$X_3$ = Dependency ratio (percentage of dependents in the family)

$X_4$ = Annual income from agriculture (Rs /yr)

$X_5$ = Annual income from allied activities (Rs /yr)

$X_6$ = Annual income from wage employment (Rs /yr)

$X_7$ = Annual employment from NTFPs (man days/yr)

e = Disturbance term

## 3. Results and Discussion

### Contribution of NTFPs towards income and employment

The study clearly revealed the contribution of NTFPs towards income and employment under the following sub-headings. The rural households derive income from various sources (agri., wage, other, etc.) including NTFPs. The following table reveals the proportion of income from these sources and more specifically the details of income from various types of NTFPs.

### Distribution of annual income from rural households

Table 1(a) shows the distribution of annual income in Changtongya and Ongpangkong N block inclusive of both cash and non-cash income. Income received from selling of NTFPs is counted as cash income and the value of NTFPs used for home consumption is counted as non-cash income. In Changtongya block, maximum annual households' income was obtained from wage *i.e.* Rs. 80,642.8 (41.8%) followed by NTFPs of Rs 62,093.6 (Cash & Non- Cash=32.2%), agriculture of Rs. 33,642.9 (17.4%) and other activities of Rs. 16,571.4 (8.6%). In case of Ongpangkong N block also maximum annual household income was obtained from wage *i.e*. Rs. 1,19,466.7 (54.4%) followed by NTFPs of Rs. 56,249.7 (Cash& Non- Cash= 26.1%), agriculture Rs. 30,000 (13.7%) and other activities Rs.12,833.3(5.8%).

**Table 1(a):** Distribution of annual income in Changtongya and Ongpangkong N block (Rs. / Households)

| S. No. | Source | Changtongya block | | | | | Ongpangkong N Block | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cash Income | Non-Cash income | Total income | S.D of Total Income | CV of Total Income (%) | Cash income | Non- cash income | Total income | S.D of Total Income | CV of Total Income (%) |
| 1 | NTFPs | 47938.6 (26.8) | 14155 (100) | 62093.6 (32.2) | 43284 | 69.7 | 43666.7 (21.2) | 12583 (100) | 56249.7 (25.7) | 42489.7 | 75.5 |
| 2 | Agriculture | 33642.9 (18.8) | - | 33642.9 (17.4) | 32625.7 | 96.9 | 30000 (14.6) | - | 30000 (13.7) | 15974.1 | 53.2 |
| 3 | Wage | 80642.8 (45.1) | - | 80642.8 (41.8) | 95454.3 | 118.4 | 119466.7 (58) | - | 119466.7 (54.4) | 84990.7 | 71.1 |
| 4 | Allied activities | 16571.4 (9.3) | - | 16571.4 (8.6) | 12526.6 | 75.6 | 12833.3 (6.2) | - | 12833.3 (5.8) | 12844.1 | 100 |
| | Total | 178795.7 (100) | 14155 (100) | 192950.7 (100) | 183890.6 | 95.3 | 205966.7 (100) | 12583 (100) | 219649.7 (100) | 156298.6 | 71.5 |

(*The figure in the parenthesis indicates percentage to the total)*

Table 1(b) represents the composition of annual income in total. It was recorded that maximum annual income of households was obtained from wage *i.e*. Rs. 92290 (45.7%) followed by NTFPs *i.e*. Rs. 60340 (Cash & Non- Cash = 30%), agriculture with Rs. 32550 (16.1%) and other activities with Rs. 16450 (8.2%).

It can be concluded that highest total income among the households were generated from wage sector followed by NTFPs. Tejaswi (2008) [9] also showed in their study that Wage earnings shared highest contribution to annual total income followed by NTFPs Collection in Western Ghats of Karnataka.

**Table 1(b):** Composition of annual income in total (Rs/Household)

| S. No. | Source | Total | | | | |
|---|---|---|---|---|---|---|
| | | Cash income | Non-cash income | Total income | SD of Total Income | CV of Total Income (%) |
| 1 | NTFPs | 46657 (24.9) | 13683 (100) | 60340 (30) | 42917 | 71.1 |
| 2 | Agriculture | 32550 (17.4) | - | 32550 (16.1) | 28625.9 | 87.9 |
| 3 | Wage Employment | 92290 (49.4) | - | 92290 (45.7) | 93734.45 | 101.6 |
| 4 | Allied activities | 15450 (8.3) | - | 16450 (8.2) | 12674.94 | 77.1 |
| | Total | 186947 (100) | 13683 (100) | 201630 (100) | 177952.3 | 88.3 |

(*The figure in the parenthesis indicates percentage to the total*)
*S. D- Standard Deviation, *C. V- Coefficient of Variation

**Pattern of income by types of NTFPs collected by sample respondents**

Table 2 represents the pattern of income from various types of NTFPs collected by rural household. It shows that in Changtongya Block, maximum average annual income was contributed from others category of NTFPs (Broom grass, fish, wild meat, etc.) comprising of Rs. 26,845.7 (43.3%) followed by wild vegetables of Rs. 17130 (27.6%), fuel wood of Rs. 8457.14 (13.6%), wild fruits of Rs. 6577.57 (10.6%) and medicinal plants of Rs. 3082.86 (4.9%). Under cash income, maximum contribution were from others category of NTFPs *viz*. broom grass, fish, wild meat, etc., of Rs. 23172.86 (48.4%) followed by wild vegetables of Rs. 15238.57 (31.8%), wild fruits of Rs.5525.7 (11.5%), medicinal plants of Rs. 2572.86 (5.4%) and fire wood of Rs. 1428.57 (2.9%). Under non-cash income maximum contribution was from fuel wood of Rs. 7028.57 (49.7%). Similarly, in Ongpangkong N Block, maximum income were contributed from others category of NTFPs *viz*. broom grass, fish, wild meat, etc., of Rs. 26546.67 (47.2%) followed by wild vegetables of Rs.16331.67 (29.0%), fuel wood of Rs. 6686.67 (11.9%), wild fruits of Rs. 5939.8 (9.8%) and medicinal plants of 2828 (4.7%). Under cash income also maximum contribution was from others category of NTFPs *viz*. broom grass, wild meat, fish, etc., of Rs.22, 666.67 (51.9%) followed by wild vegetables of Rs. 14833.33 (33.9%), wild Fruits of Rs. 3833.33 (8.8%) medicinal plants of Rs. 2401 (5.5%) and fuel wood of Rs. 1100 (2.4%). Under non- cash income maximum contribution was from fuel wood Rs. 6353.33 (50.5%).

In totality, maximum average annual income came from others category of NTFPs *viz*. broom grass, wild meat, fish, etc., of Rs. 26756 (44.4%) followed by wild vegetables of Rs. 16890.5 (27.9%) and fuel wood of Rs. 7926 (13.2%). Under cash income, maximum average annual income come from others category of NTFPs of Rs. 23021 (49.3%) followed by wild vegetables, wild fruits of Rs. 15117 (32.2%) and medicinal of Rs .5018 (10.6%) respectively. Under non- cash income maximum contribution were from Fuel wood of Rs. 6826 (49.9%).

**Table 2:** Pattern of income by types of NTFPs collected by sample respondents (Rs/annum/households)

| S. No. | Types of NTFPs | Changtongya Block | | | Ongpangkong N Block | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Cash income | Non-cash Income | Total Income | Cash Income | Non-cash Income | Total Income | Cash income | Non-cash Income | Total Income |
| 1 | Wild Fruits | 5525.71 (11.5) | 1051.8 (7.4) | 6577.57 (10.6) | 3833.33 (8.8) | 618.33 (4.9) | 4451.67 (7.9) | 5018 (10.6) | 921.8 (6.7) | 5939.8 (9.8) |
| 2 | Wild Vegetables | 15238.57 (31.8) | 1891.43 (13.4) | 17130 (27.6) | 14833.33 (33.9) | 1498.33 (11.9) | 16331.67 (29.0) | 15117 (32.2) | 1773.5 (12.9) | 16890.5 (27.9) |
| 3 | Medicinal | 2572.86 (5.4) | 510 (3.6) | 3082.86 (4.9) | 2000 (4.6) | 233.33 (1.9) | 2233.33 (4.0) | 2401 (5.5) | 427 (3.2) | 2828 (4.7) |
| 4 | Fuel wood | 1428.57 (2.9) | 7028.57 (49.7) | 8457.14 (13.6) | 333.33 (0.8) | 6353.33 (50.5) | 6686.67 (11.9) | 1100 (2.4) | 6826 (49.9) | 7926 (13.2) |
| 5 | Others | 23172.86 (48.4) | 3672.86 (25.9) | 26845.71 (43.3) | 22666.67 (51.9) | 3880 (30.8) | 26546.67 (47.2) | 23021 (49.3) | 3735 (27.3) | 26756 (44.4) |
| | Total | 47938.57 (100) | 14154.71 (100) | 62093.29 (100) | 43666.67 (100) | 12583.33 (100) | 56250 (100) | 46657 (100) | 13683.3 (100) | 60340.3 (100) |

It can be concluded that among the types of NTFPs the highest average annual income came from others category of NTFPs *viz*. broom grass, wild meat, fish, etc., followed by wild vegetables and in case of non-cash income highest income came from fuel wood as fuel wood is extensively used in rural areas of Nagaland for cooking purpose.

**Composition of annual employment of rural households**

Table 3 represents composition of annual employment of Sample households. In Changtongya block among the respondents, it shows wage earners with 131-man days per year (31.8%) in employment ranked the first, followed by NTFPs with 120-man days (29.2%), agriculture with 92-man days (22.5%) and allied activities with 68-man days (16.5%). Similarly, in Ongpangkong N block, it shows wage earners with 144-man days (38.1%) ranked the first followed by NTFPs collection with 111-man days (29.4%), agriculture farmers with 84-man days (22.4%) and allied activities with 38-man days (10%). In totality, it shows wage earners with 135-man days per year (33.5%) being the first, followed by NTFPs collection with 117-man days (29.1%),

agriculture with 90-man days (22.5%) and allied activities with 59-man days (14.9%).

It can be concluded that although wage earners generated the highest employment among the households, yet NTFPs created a significant number of man days in the study area. Tejaswi (2008) [9] also revealed in their study that most employment was generated by the wage sector (55%) followed by NTFPs collection (26%) and other sectors (19%). Kumar (2015) [6] also resulted that most employment (42.51%) was generated by the wage sector followed by NTFPs collection (31.67%).

**Table 3:** Composition of annual employment of sample households (Man days/household/year)

| S. No. | Source | Changtongya Block | | | Ongpangkong N Block | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | CV% | Mean | SD | CV% | Mean | SD | CV% |
| 1 | NTFPs | 120.2 (29.2) | 55.2 | 45.9 | 111 (29.4) | 80.3 | 73.3 | 117.4 (29.1) | 63.5 | 54.1 |
| 2 | Agriculture | 92.9 (22.5) | 72.5 | 78.1 | 84.6 (22.4) | 49 | 59.1 | 90.5 (22.5) | 66.3 | 73.3 |
| 3 | Wage | 131.3 (31.8) | 114.5 | 87.2 | 144.3 (38.1) | 76.8 | 53.2 | 135.2 (33.5) | 104.4 | 77.2 |
| 4 | Allied Activities | 68 (16.5) | 51 | 75 | 38.3 (10.1) | 41.8 | 109.1 | 59 (14.9) | 49.9 | 83.3 |
| | Total | 412.4 (100) | 293.2 | 71.1 | 378.2 (100) | 248.9 | 65.8 | 403 (100) | 284.2 | 70.5 |

**Gender wise collection of NTFPs by rural households**

Table 4 shows the details in respect to time spent in collection of NTFPs by different members of the sample households. In Changtongya block among the sample households, men spent maximum average time in collection of others category (39.37%) *viz*. wild meat, fish, broom grass etc., for 32 days, followed by wild vegetables (28.55%) for 23 days, fuel wood (16.85%) for 14 days, wild fruits (10.85%) for 9 days and medicinal plants (4.38%) for 4 days while women spent most of the time in collection of wild vegetables (32.87%) for 13 days, others category (32.61%) *viz*. broom grass, etc., for 13 days, wild fruits (15.9%) for 6 days, fuel wood (12.68%) for 5 days and medicinal plants (5.85%) for 2 days. The total average days spent by men for collection of NTFPs were 82 days and women 39 days. While in Ongpangkong N block, men spent maximum average time in collection of wild vegetables (33.5%) for 25 days, followed by others category (28.88%) *viz*. wild meat, fish, broom grass etc., for 22 days, wild fruits (18.29%) for 14 days, fuel wood (13.18%) for 10 days and medicinal plants (6.15%) for 5 days while women spent most of the time in collection of wild vegetables (41.97%) for 14 days, fuel wood (23.63%) for 8 days, others category (19.48%) *viz*. broom grass, etc., for 6 days, wild fruits (13.37%) for 4 days, and medicinal plants (1.55%) for 1 day. The total average days spent by men for collection of NTFPs were 76 days and women 32 days. In totality, men spent maximum average time in collection of others (36.52%) *viz*. wild meat, fish, broom grass etc., for 29 days, followed by wild vegetables (29.95%) for 24 days, fuel wood (15.73%) for 14 days, wild fruits (12.97%) for 10 days, and medicinal plants (4.83%) for 4 days while women spent most of the time in collection of wild vegetables (35.06%) for 13 days, others (29.55%) *viz*. broom grass, etc., for 11 days, fuel wood (15.47%) for 6 days, wild fruits (15.22%) for 6 days, and medicinal plants (4.7%) for 2 days. The total average days spent by men for collection of NTFPs were 80 days against 37 days only by women, for collection of NTFPs in a year.

**Table 4:** Gender wise collection of NTFPs by rural households (Mandays/ household/ year)

| Sl no. | Types of NTFPs | Changtongya Block | | | Ongpangkong N Block | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| 1 | Wild Fruits | 8.87 (10.85) | 6.21 (15.99) | 15.09 (12.51) | 13.87 (18.29) | 4.3 (13.37) | 18.17 (16.82) | 10.37 (12.97) | 5.64 (15.22) | 16.01 (13.68) |
| 2 | Wild Vegetables | 23.32 (28.55) | 12.77 (32.87) | 36.1 (29.94) | 25.4 (33.5) | 13.5 (41.97) | 38.9 (36.01) | 23.95 (29.95) | 12.99 (35.06) | 36.94 (31.57) |
| 3 | Medicinal Plants | 3.51 (4.38) | 2.27 (5.85) | 5.79 (4.8) | 4.67 (6.15) | 0.5 (1.55) | 5.17 (4.78) | 3.86 (4.83) | 1.74 (4.7) | 5.6 (4.79) |
| 4 | Fuel wood | 13.68 (16.85) | 4.93 (12.68) | 18.61 (15.44) | 10 (13.18) | 7.6 (23.63) | 17.6 (16.3) | 12.58 (15.73) | 5.73 (15.47) | 18.31 (15.65) |
| 5 | Others | 32.33 (39.37) | 12.67 (32.61) | 45 (37.31) | 21.9 (28.88) | 6.27 (19.48) | 28.17 (26.09) | 29.2 (36.52) | 10.95 (29.55) | 40.15 (34.31) |
| | Total | 81.73 (100) | 38.86 (100) | 120.59 (100) | 75.83 (100) | 32.17 (100) | 108 (100) | 79.96 (100) | 37.05 (100) | 117.01 (100) |

It can be concluded that in Changtongya Block, men spent more time (82 days) in collection of NTFPs as compared to women (39 days) as well as in Ongpangkong N block men spent more time (76 days) in collection of NTFPs as compared to women (32 days). In totality, men spent more time (80 days) in collection of NTFPs as compared to women 37 days. Among the types of NTFPs maximum time (34.31%) spent in collection by the sample households as a whole was in others category (Broom grass, wild meat, fish, etc.) 40 days (34.31%) followed by wild vegetables 37 days (31.57%) and fuel wood (15.65%) for 18 days.

**Factors influencing collection of NTFPs income/employment**

A trial had been made to identify the factors that are associated for increase/decrease in NTFPs income by the respondent households. Accordingly, a multiple linear regression analysis was carried out keeping NTFPs income as dependent variable. The following table 5 shows the result of the regression analysis. The estimated values of regression coefficients for variables *viz*. size of the family, adult literacy, dependency ratio, income from agril., income from allied, income from wage and employment from NTFPs collection were -3061.21, 4.43, 320.19, -0.17, -0.04, -0.05 and 559.70 respectively and the constant value was 5743.63 for Changtongya block. Whereas for Ongpangkong N block, regression coefficients for respective variables were 2463.08, 385.83, -25.31, 0.07, -0.25, -0.06 and 500.2 respectively and the constant value was 34186.13. The $R^2$ values in both the blocks were 0.88 respectively. And in case of total as a whole, the

estimated values of regression coefficients from the above respective variables were -1882.04, 42.86, 279.33, -0.14, -0.12, -0.05 and 554.08 respectively. The constant value was 806.65 and the $R^2$ value was 0.87.

**Table 5:** Factors influencing NTPFs income by using multiple linear regression

| S. No. | Block | Constant | Size of Family | Adult Literacy | Dependency ratio | Income from Agri. | Income from Allied | Income from Wage employment | Employment from NTFPs | $R^2$ | F-value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Changtongya | 5743.6 | -3061.2 (-1.6) | 4.4 (0.1) | 320.2 (3.2) * | -0.2 (-2.9) | -0.1 (-0.3) | -0.1 (-2.7) | 559.7 (16.7) * | 0.88 | 66.43 |
| 2 | Ongpangkong N | 34186.1 | 2463.1 (1.1) | 385.8 (3.5) * | -25.3 (-0.3) | 0.1 (0.7) | -0.3 (-2.0) | -0.1 (-2.9) | 500.2 (8.3) * | 0.88 | 23.80 |
| 3 | Total | 806.7 | -1882.1 (-1.2) | 42.9 (0.6) | 279.3 (3.5) | -0.1 (-2.9) * | -0.1 (-1.2) | -0.1 (-3.1) | 554.1 (19.8) * | 0.87 | 90.23 |

The figure in the parentheses indicates t- value.
*indicates significant at 5%

When the calculated t-value was compared with the table t-value, it showed that in Changtongya Block, two variables *i.e*. dependency ratio and employment from NTFPs were found significant, and in Ongpangkong N block, two variables *i.e*. adult literacy and employment from NTFPs were found significant. As a whole also two variables *i.e*. dependency ratio and employment from NTFPs were found significant. It can be stated that in Changtongya block, dependency ratio and employment from NTFPs were found significant and positively related with income from NTFPs. In Ongpankong N block, adult literacy and employment from NTFPs were found significant and positively related with income from NTFPs. In total, dependency ratio and employment from NTFPs were found significant and positively related with income from NTFPs. As the number of dependents increased, they preferred to go for NTFPs collection since they found it convenient compared to other activities. For every one percent increased in dependency, income from NTFPs increased by Rs.279.33 and for every one-man day increase in employment from NTFPs, NTFPs income increased by Rs. 554.08.

## 4. Conclusion

From the present study it can be concluded that highest income among the households was generated from wage sector followed by NTFPs. Again among the types of NTFPs, highest average annual income came from others category of NTFPs *viz*. broom grass, wild meat, fish, etc., followed by wild vegetables and in case of non-cash income (value of NTFPs used for home consumption) highest income came from fuel wood as fuel wood is extensively used in rural areas of Nagaland for cooking purpose. It can also be concluded that although wage earners generated the highest employment among the households, yet NTFPs created a significant number of man days in the study area. In totality, men spent more time i.e. creation of more mandays in collection of NTFPs as compared to women among the rural households. Among the types of NTFPs, maximum time spent in collection NTFPs by the sample household was in others category (Broom grass, wild meat, fish, etc.) followed by wild vegetables and fuel wood. Regression analysis showed that some factors vi. dependency ratio, employment in NTFPs and adult literacy etc. had some positive and significant affect on increasing the NTFPs income. Some other factors had shown some mixed response towards enhancement of NTFPs income

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