Chapter 5

Discussion

In this chapter, an analytical appraisal and logical reasons for the findings have been sought. The significant findings of the investigation are discussed under following heads and sub-heads:

5.1 Secondary Data

5.1.1 Present Situation of Tendu Leaf in Jharkhand

5.1.2 Sub-zone wise Average Production of Tendu leaf in Jharkhand

5.2 Primary Data

5.2.1 Socio-economic of Leaf Pluckers’

5.2.2 Socio-economic of Phad Munsis

5.2.3 Silvicultural Treatments

5.2.4 Community Organization
5.1 Secondary Data

5.1.1 Present Situation of Tendu Leaf in Jharkhand

The scrutiny of the fourteen year’s available data from the year 2002 to 2015 (Table 4.1.1, 4.1.2 and Fig. 4.1.2) revealed that the average collection of Tendu leaf was 4,74,900 standard bags per year which was 59.67% of the notified yield of 7,95,875 standard bags. The highest collection of Tendu leaf was 7,62,003 standard bags during the year 2012 which was 95.74% against the notified yield. Lowest collection of Tendu leaf was 2,87,847 standard bags in the year 2014 which was only 36.17% of the notified yield. The fluctuation in collection of Tendu leaves in different years may be attributed to various factors: environmental, managerial, social and market forces such as lack of sufficient buyers in auctions.

5.1.2 Sub-zone wise Average Production of Tendu leaf in Jharkhand

It is clearly noticed from the scrutiny of Table and Fig. 4.1.3 that all three agro-climatic sub-zones had clear cut effect on leaf production against the notified yield. The maximum and average production was 2,76,657 (76.24%) standard bags in sub-zone V followed by 60,067 (58.66%) standard bags in sub-zone VI, lowest was 1,38,176 (41.80%) standard bags in sub-zone IV against the separated and calculated notified standard bags of 362875, 102400 and 330600 respectively.

Reasons behind always below production against the notified yield and high fluctuation in production might be due to combined effects of microclimatic conditions, edaphic factors, biotic factors, and quality along with management.

5.2.1 Socio-economic of Leaf Pluckers’

5.2.1.1 Sex, Community and Members of Family

A perusal of the Table 4.2.1.1 revealed that out of 729 respondents 385 (52.81%) respondents were female and 344 (47.19%) respondents were male. Maximum 55.67% female respondents were in sub-zone V whereas the male respondents were higher 50.62% in sub-zone VI.

In overall, maximum 434 (59.53%) respondents were from Scheduled Tribe (ST) community followed by 251 (34.43%) respondents from Other Backward Class (OBC) community and 33 (4.53%) respondents from Scheduled Caste (SC) community. Only 11 (1.51%) respondents were from other communities (upper caste). Sub-zone wise maximum 232 (94.31%) respondents were from ST community in sub-zone V followed by 186 (76.54%) respondents of same community in sub-zone VI whereas only 16 (6.67%) respondents were in the sub-zone IV. In opposite, maximum 180 (75%) respondents were from OBC community in sub-zone IV followed by sub-zone VI with 57 (23.46%) respondents; only 14 (5.69%) OBC communities were responded from the sample. Alone and only 33 (13.75%) SC community was responded from sub-zone IV. There was no any SC respondent in sub-zone V and VI in the sample.
Total members of the family of all 729 respondents were 3379 with an average of 4.64 members per family. Out of which 1654 (48.95%) were male and 1725 (51.05%) were female. Percentage wise female respondents in sub-zone V and sub-zone VI were higher as 51.91% and 51.89% respectively whereas, male respondents were slightly higher as 50.61% in sub-zone IV. Of the families of 729 sample respondents, the sex ratio was 958. The sub-zone V and VI had the sex ratio of 926 and 927 respectively whereas sub-zone IV showed slightly different ratio of 1024.

From the above discussions regarding the sex, community and members of family; the female leaf pluckers formed the majority in Tendu leaf plucking, accounting of 52.81% of their total number. The comparatively lower percentage of female leaf pluckers in the sample was only incidental and not representative of the actual ratio of female to male leaf pluckers in the Jharkhand state since women, particularly tribal women have traditionally enjoyed more respect as economically valued member of their communities due to their major role in agriculture-cum-forest-based economy and fact that they are primarily responsible for household provisioning, they are the de facto managers of most household income, but amongst the most of the tribes management and control are shared by husband and wife although formal ownership remain with the male-head (IFAD, 1999; Bisht and Kothyari, 2010).
This finding is in conformity with the finding of Dawar (1994). The situation indicates that different types of forest fringe communities are engaged in *Tendu* leaf plucking in which most dominating community was Scheduled Tribes (59.53%) among overall respondents also in sub-zones V and VI the same community was dominating as 94.31% and 76.54% respectively and was common for all the sub-zones. The Other Backward Class was dominating in sub-zone IV by 75% and was common for all the sub-zones whereas, the Scheduled Caste and the other communities (upper caste) were only common for the sub-zone IV and formed only a small minority of 4.53% and 1.51% respectively in a overall situation. Heterogeneity with respect to community was observed more in the sub-zone IV which may develop more or less cohesiveness among them. Similar findings were also observed by Das (2009), Veeresh (2010) and NAIP (2014).

5.2.1.2 Age Groups of Family Members

It is evident from the data in the Table 4.2.1.2 that the percentage of age classes 0-6 (Child), 6-14 (Young), 14-19 (Teen youth), 19-40 (Middle youth), 40-60 (Mature youth) and above 60 (Old) was 3.75%, 12.48%, 11.03%, 33.11%, 35.80% and 3.79% respectively in which the sex ratio was 958 in overall prospective. Whereas, the productive and high potential youth groups (14 years to 60 years) were found 79.94%. The middle aged youths are generally full of all qualities and can get advantages of that as founded by Atmis *et al*. (2007), Bisht and Kothyari (2010), Sinha *et al*. (2010), Chatterjee and Das (2015) and Pal (2016). Apart from the above discussion, the sample respondents were on village
record and above young age group but, in case of *Tendu* leaf plucking the fact is that all age groups including quite a large number of below young age might have supporting their families in *Tendu* leaf plucking. This phenomenon was quite in agreement with findings of earlier workers such as Dawar (1994).

5.2.1.3 Occupation, Education and Experience (Coppicing, Pruning, Collection, Curing and Bagging)

It is clear from the Table 4.2.1.3 and Fig. 5.2.1.3a that, the majority of respondents (79.97%) were farmer-cum-labour as their main occupation. The percentage of respondents having occupation of labour and others were 19.62% and 0.41% respectively.

![Fig. 5.2.1.3a Occupation of Tendu leaf Pluckers’](image)

The farmer-cum-labour can be sequenced in order as sub-zone VI > sub-zone V > sub-zone VI. Whereas, occupation as labour can be sequenced in order as sub-zone IV > sub-zone V > sub-zone VI. It is again clear that it was sometimes difficult to differentiation between farmer and labour among the
respondents as the main and subsidiary occupation. The farming (agricultural crops cultivation and livestock rearing) might be the main occupation but, it might be also a fact that respondents were also engaged as labour for better livelihood option or the farming itself might have not supporting their livelihood very much round the year. In many cases they were earning more from labour than farming. However, the prime occupation of the areas was mainly farming and those respondents who engaged as wage labour and other activities as their main occupation were also associated with farming as their subsidiary occupation. This view was also held by Pandey (1999), Boaz (2004), Geetha and Devi (2008), NAIP (2014) and Pal (2016).

Data presented in the Table 4.2.1.3 and Fig. 5.2.1.3b revealed that maximum 46.23% of the respondents were illiterate, 27.30% were literate, 23.73% had education between 5th and 10th class and only 2.74% had education up to SSC and above. However, maximum illiteracy was observed in sub-zone IV (68.33%). The reasons may be lack of infrastructure, accessibility and socio-economic factors (Krishnamoorthy et al., 2003; Singh, 2005; Sinha, 2016).

![Fig. 5.2.1.3b Educational status of Tendu leaf Pluckers’](image)
The data (Table 4.2.1.3 and Fig. 5.2.1.3c) revealed that as a pooled 100% respondents had responded that they know about coppicing and collection. Regarding curing 49 (6.72%) had the technical knowledge and only 26 (3.57%) respondents had the technical knowledge of bagging. This finding was in agreement with the results obtained by Dawar (1994). There was no technical knowledge of pruning to any respondent. Apart from the coppicing, collection and pruning the rest two i.e. the curing and bagging requires more specific skills therefore, the work assignment were depending upon the primary buyers of Tendu leaf as observed during the field study because improper act of this two activities may cause a big loss to the buyers. External alternatives were also observed in this regard.

![Fig. 5.2.1.3c Technical Knowledge of Tendu leaf Pluckers’](image)

Fig. 5.2.1.3c Technical Knowledge of Tendu leaf Pluckers’
5.2.1.4 House, Land, Forestry, Livestock and Other Assets

The observations regarding type of house (Table 4.2.1.4 and Fig. 5.2.1.4a) revealed that maximum 95.47% respondents had tiled houses followed by *pucca* houses (3.98%) and there were only 0.55% thatched houses in overall situation. The findings show similarity with the findings of Pal *et al.* (2009) and Islam (2012). In all the cases, the majority of house type was found as tiled houses but, in case of sub-zone IV there was significant percentage shift towards *pucca* houses. This can be viewed as an indicator of change in the community. This might be due to better livelihood system, living standards and mix community competing each other in the area (IFAD, 1999).

![Fig. 5.2.1.4a House Resources of Tendu leaf Pluckers’](image)

Regarding size of land holding (Table 4.2.1.4 and Fig. 5.2.1.4b), maximum 66.26% respondents were holding up to 2.5 acres of land followed by 29.22% respondents under the category 2.5-5 acres of land, 1.78% respondents under the category 5-7.5 acres of land, 0.69% respondents under the 7.5-10 acres of land...
and only 0.55% respondents responded that they were holding more than 10 acres of land. Among land holders marginal and small farmers showed a big majority (95.48%). It could be recognized to the nuclear and neo-local structure of families. Marginal land holding was found maximum (74.58%) in the sub-zone IV whereas minimum (58.54%) in sub-zone V. There were 1.51% i.e. eleven respondents who were found as landless from the total sample. The finding was in accordance with the findings of Pandey (1999), Pal et al. (2009), NAIP (2014), Chatterjee and Das (2015) and Islam et al. (2015).

![Fig. 5.2.1.4b Land Resources of Tendu leaf Pluckers’](image)

It is evident from the data presented in the Table 4.2.1.4 and Fig. 5.2.1.4c that forestry was an asset from which the respondents mainly supported by the lac host plants, Mahua (*Madhuca indica*), wild fruits and bamboo clumps in the sample villages. The richness and maximum livelihood supporting vegetation were found in sub-zone V followed by sub-zone IV due to higher number of
responses. In sub-zone V lac host plants got maximum (69.29%) response followed by bamboo clumps (45.10%). In sub-zone IV bamboo clumps got maximum (33.83%) response followed by Mahua trees (32.94%). Differently, in sub-zone VI, maximum trees/plants responded of wild fruits (29.17%) followed by Mahua trees (25.25%). Among the respondents overall majority of response for the species was maximum 37.70% with bamboo clumps and for Mahua trees (35.33%). Lac host trees responded by the 18.61% respondents whereas, wild fruits got last position by 8.36% response. It is evident from above discussion that, sub-zones represented much variation of forestry species among the respondents as an asset for their livelihood support and sub-zone specific all species were almost equally contributing. This view was also held by Kusters and Belcher (2004), Kusters et al. (2005) and Malhotra and Bhattacharya (2010).

Fig. 5.2.1.4c Forestry Resources of Tendu leaf Pluckers’

It is clearly noticed from scrutiny of data in the Table 4.2.1.4 and Fig. 5.2.1.4c that, maximum poultry birds, goats and bullock were responded 25.93%, 25.71% and 24.33% respectively and was the main and common rearing.
Cows/buffalos responded 21.44%. Pigs and fishery were responded very less by 2.36% and 0.22% and were uncommon in the villages might be due to inaccessibility of resources and social regions. The high percentage of response in rearing of livestock was observed in sub-zone V followed by sub-zone VI. Pigs rearing trend responded high (86.79%) in sub-zone V less in sub-zone VI (13.21%) but 0% responded in sub-zone IV. Rearing in good numbers of livestock attributed to the fact as it was the most preferred secondary occupation than agriculture. Livestock is the ‘key’ to agriculture (IFAD, 1999) besides providing economic, nutritional, religious and recreational benefits to the villagers. The finding was in accordance with the findings of Bhairamkar and Kadam (1999), Pandey (1999) Singh et al. (2001) Prakash and Sharma (2008) and Pal et al. (2009).

**Fig. 5.2.1.4d Livestock Resources of Tendu leaf Pluckers’**
Regarding other assets (Table 4.2.1.4 and Fig. 5.2.1.4e), maximum 87.08% responded as cycle followed by motorcycle (9.40%), pump sets (2.68%) and bullock cart (0.84%) was the most influencing or supporting the day-to-day livelihood activities. Asset wise observation indicates that maximum respondents (40.27%) were responded the cycle in sub-zone V. Maximum (66.07%) was responded the motor cycle in sub-zone VI. Maximum pump sets were responded in sub-zone V (43.75%). Maximum bullock carts were responded (60%) in sub-zone VI. It is again clearly noticed from the Table that, maximum assets in terms of numbers were responded 226 in sub-zone V followed by 223 in sub-zone VI. From the above discussion, it could be attributed to the fact that other assets may indicate the economic activities and more livelihood options of the respondents. The finding are in accordance with the findings of Pandey (1999), Jha and Jha (2001) and Singha and Talukdar (2002).
5.2.1.5 Annual Income (in Rs.) from Existing Sources

The data pertaining to annual income (in Rs.) from existing sources have been presented in the Table 4.2.1.5 and Fig 5.2.1.5. The resources identified were a. Agriculture, b. Forestry (other than Tendu leaf), c. Livestock and d. Other sources (as labourer, business and services).

It is apparent from the Table 4.2.1.5 and Fig. 5.2.1.5a that maximum (45.13%) respondents were under lower income group i.e. annual income up to Rs.1000 followed by annual income between Rs.1000-2000 (22.77%), between Rs.2000-3000 (13.44%), between 3000-4000 (10.70%) and above Rs.4000 (7.96%) from agriculture. Whereas, sub-zone wise maximum lower income group i.e. annual income up to Rs.1000 were responded in sub-zone IV (62.50%) and maximum higher income group i.e. above Rs.4000 were responded in sub-zone V (13.01%) from agriculture. The reasons behind the trend of low annual income from agriculture might be due to typology of forest dependent farming systems, usually located on the upper land and also, mixed systems dependent on a combination of agriculture and forest, usually located in the middle land (IFAD, 1999). The other reasons may be the majority of the respondents were of small sized land holdings, more inclination as wage labourer, low production, lack of infrastructure facility, low fertility and mono-cropping, lack of working capital, market and many other factors.
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Fig. 5.2.1.5a Annual Income (in Rs.) from Agriculture

The scrutiny of the data (Table 4.2.1.5 and Fig. 5.2.1.5b) revealed that maximum (68.04%) respondents were under lower income group from forestry i.e. annual income up to Rs.1000 followed by annual income between Rs.1000-2000 (7.68%), Rs.2000-3000 (7.41%), Rs.3000-4000 (7.27%). Above Rs.4000 annual income from Forestry were responded only 9.60%. Whereas sub-zone wise maximum lower income group i.e. up to Rs.1000 from forestry were responded in sub-zone VI (98.35%) followed by sub-zone IV (85%) and sub-zone V (21.54%). Whereas maximum higher income i.e. above Rs.4000 were responded in sub-zone V (22.76%) followed by 4.17% in sub-zone IV and 1.65% in sub-zone VI from forestry. From the sample, overall maximum supporting sub-zone with respect to plant richness and annual income through forestry was observed in sub-zone V followed by sub-zone IV.
Reason behind the trend of lower income from forestry might be self use and consumption of forest products for subsistence was more and accesses to the common property like, forests especially its products sometimes become far reaching to the weaker section of the community within the same community (IFAD, 1999).

Fig. 5.2.1.5b Annual income (in Rs.) from Forestry (Other than Tendu Leaf)

The data in the Table 4.2.1.5 and Fig. 5.2.1.5c revealed that overall income category from livestock from Rs.1000 to Rs.4000 and above were found 65.29% which was quite better than agriculture and forestry as a source of income. Sub-zone wise higher income i.e. above Rs.4000 were responded in sub-zone V (27.64%) followed by sub-zone IV (10.42%) and sub-zone VI (7.82%). The overall maximum supporting through livestock with respect to richness of livestock was observed in sub-zone V.
Fig. 5.2.1.5c Annual income (in Rs.) from Livestock

The data (Table 4.2.1.5 and Fig. 5.2.1.5d) revealed that from the other sources maximum 37.86% were responded as they were earning annual income between Rs.10000-20000 followed by 34.71% in the category Rs.20000 and above, 15.23% under the category Rs.5000-10000 and 7.54% under the category of up to Rs.5000. Sub-zone wise minimum i.e. in the category of Rs.20000 and above were responded in sub-zone V (10.16%). Overall, the maximum annual income from other sources were responded by the respondents taking with higher side were observed in sub-zone VI followed by sub-zone IV. Sub-zone V got the last position. It is clear from the above discussion that other sources besides agriculture, forestry and livestock plays a big role for livelihood support may be in the form of labour in the village itself as an agriculture labour and/or wage provided through various schemes and projects by the government also, services
and small business. The situation also indicates deterioration and management issues of natural resources.

Above results is also conformity with the findings of Veeresha (2010), NAIP (2014) and FAO (2016).

5.2.1.6 Average Monthly Expenditure of Tendu Leaf Pluckers’

It is clearly noticed from the scrutiny of Table 4.2.1.6 and Fig. 5.2.1.6 that average monthly expenditure of Tendu leaf pluckers’ were between of Rs.1000-2000 (36.76%) followed by Rs.2000-3000 (28.67%), Rs.3000-4000 (15.23%), up to Rs.1000 (8.64%), Rs.4000-5000 (7.82%) and more than Rs.5000 (2.88%). In sub-zone wise higher expenditure i.e. more than Rs.5000 were responded maximum 4.07% in sub-zone V. Whereas expenditure up to Rs.1000 per month responded maximum 18.52% in sub-zone VI followed by sub-zone V (4.47%)
and sub-zone IV (2.92%). Overall the minimum expenditure trend was observed in sub-zone VI whereas more monthly expenditure trend was observed with sub-zone IV followed by sub-zone V. From the above discussion, minimum expenditure might be associated with income of the leaf pluckers’ as in case of sub-zone IV. But, expenditure trend with respect to higher income in case of sub-zone IV and V showed significant difference which might be due to saving habits, awareness and community composition of the village as discussed in the para 5.2.1.1. This result is also conformity with the findings of NAIP (2014) and FAO (2016).

![Pie Chart](image1.png)

**Fig. 5.2.1.6 Average Monthly Expenditure of Tendu Leaf Pluckers’**

### 5.2.1.7 Mortgage and Loan Status of Leaf Pluckers’

A perusal of Table 4.2.1.7 and Fig. 5.2.1.7a revealed that 96.57% respondents had no mortgage anything to anybody. The Table shows clearly that,
in the three major things namely land, kind and livestock; only 3.43% respondents were responded against the land.

![Fig. 5.2.1.7a Mortgage Status of Tendu Leaf Pluckers’](image1)

The scrutiny of the data (Table 4.2.1.7 and Fig. 5.2.1.7b) revealed that overall 3.98% leaf pluckers’ responded against the loan from SHG followed by 0.14% loan from Mahajan. Only 9.88% in sub-zone VI and 2.03% in sub-zone V showed loan through SHGs. There were no response against loan from bank and individual. It means there were 95.88% respondents have no loan from anywhere. This situation attributed to the fact that there might be lack of institution like; SHGs, CIGs, awareness, capacity building through training programmes for income generating activities also; lack of micro-credit in groups or individual linking with banks.
5.2.1.8 Number of Family Members in Leaf Plucking, Sorting & Bundle Making

The observation regarding number of family members in leaf plucking, sorting and bundle making (Table 4.2.1.8) revealed that overall largest number of the leaf pluckers’ families, accounting for 49.93% of their total number, had between 4-6 family members were engaged in leaf plucking followed by 41.70% with 1-3 family members, 13.41% with 7-9 family members and 0.69% with more than 9 family members were engaged in leaf plucking.

It is also noticed that the largest number of the leaf pluckers’ from sub-zone V, i.e., 69.51% with 4-6 family members followed by 65% with 1-3 family members in sub-zone VI, 13.41% with 7-9 family members again in sub-zone V. Engagement of more than 9 family members also represented by all sub-zones in very low percent.

The number of engaged members in sorting and bundle making were responded maximum 42.90% in sub-zone V followed by sub-zone VI (29.05%)
and 28.05% responded in sub-zone IV. Whereas, overall per family average number of engaged members in sorting and bundle making was calculated as 2.47 members for all the sub-zones. As calculated, sub-zone wise there were maximum 3.15 in sub-zone V followed by 2.16 in sub-zone VI and 2.11 per family average number of engaged member in sorting and bundle making.

From the above discussion, it confirms that more than one member of each of the pluckers’ families, depending on the total number of members in a family, engage themselves in Tendu leaf plucking and men, women and children take part in this activity. Dawar (1994), Lahangir (2011) and TRIFED (2016) have also recorded engagement of several members per family in Tendu leaf plucking endeavors.

5.2.1.9 Earning of Wages per Family by Leaf Plucking in the year 2013

Wage rates are always viewed opposite as low and reasonable or high between earner and payer. The illiterate and ignorant respondent leaf pluckers could not be expected to remember the amount of wages earned by their families by leaf plucking in few past seasons. Therefore, they were asked to stress on their memory and tell the approximate amount of wage earned by their families in the previous year, i.e., 2013 season. During the season, the approved rate was Rs.900/- per standard bag i.e., the wage per unit bundle containing 52 leaves was Rs.0.90/-. The data elicited from them in this respect are presented in the Fig. 5.2.1.9.
The data revealed that family wise maximum 28.53% response on wages earned between Rs.3000-4000 followed by 27.71% between Rs.2000-3000, 20.16% between Rs.1000-2000, 14.27% between Rs.4000-5000, 8.64% less than Rs.1000 and 0.69% more than Rs.5000 by per family through leaf plucking during the year 2013. There were 76.40% responded as a family that they were earned wages between Rs.1000-4000 during the year 2013 which could be viewed as majority group.

**Fig. 5.2.1.9 Earning of Wages per Family by Leaf Plucking in the year 2013**

Sub-zone wise observed that sub-zone V was the best performing and responded in ascending order from Rs.1000-4000 with a total of 71.95% whereas 26.42% responded between Rs.4000-5000 and 1.63% responded more than Rs.5000. No were responded as earning of wages below Rs.1000 by leaf plucking in the year 2013. Sub-zone VI performed second position responded in descending order from Rs.1000 to Rs.5000 with a total of 99.6% whereas only
0.41% responded more than Rs.5000. No were responded as earning of wages below Rs.1000 by leaf plucking in the year 2013. Sub-zone IV performed the last position, maximum 27.08% responded between Rs.2000-3000 followed by 26.25% below Rs.1000, 23.33% between Rs.3000-4000, 17.08% between Rs.1000-2000 and 6.25% between Rs.4000-5000. No were responded as earning of wages above Rs.5000 by leaf plucking in the year 2013.

However, the sample villages of sub-zones may not be the real representative for the whole area on earning of wage as the influencing factors could be species density, number of days for which they plucked the leaves and distance walked for leaf plucking. Also, the amount of wages earned by a family in a season of about 45 days will depend upon the number of leaf pluckers in the family. The results are in agreement with the work of Dawar (1994) and TRIFED (2016).

5.2.1.10 Time of Departure and Returning and hours spent each day in Leaf Collection, Sorting and Bundle making

It is evident from the data (Table 4.2.1.10 and Fig. 5.2.1.10a) that maximum 78.60% leaf pluckers’ responded departure time between 4am-5am followed by 16.05% between 5am-6am, 5.35% between 6am-7am. There was no any response after 7am for departure time for leaf collection.
Sub-zone wise, the maximum 85.60% responded for departure times between 4am-5am in sub-zone VI followed by sub-zone IV (83.75%), 66.67% in sub-zone V. It is clear from the data that most of the respondents (94.65%) were departure between 4am-6am in all the sub-zones.

Regarding time of returning (Table 4.2.1.10 and Fig. 5.2.1.10b) maximum 52.81% leaf pluckers’ responded 10am-11am as time of returning followed by 27.30% between 11am-12 noon, 12.07% between 12 noon-1pm and 7.82% before 10am. No were responded the time after 1pm.
Sub-zone wise maximum 90.12% responded between 10am-11am in sub-zone VI followed by 45% between 11am-12 noon in sub-zone IV and 36.25% between 10am-11am in the same sub-zone IV. There was wide range of time of returning in sub-zone V. maximum 32.11% responded between 10am-11am followed by 28.86% between 11am-12 noon, 19.92% between 12 noon-1pm and 19.11% before 10am in sub-zone V.

A perusal of Table 4.2.1.10 and Fig. 5.2.1.10c revealed that maximum 37.31% leaf pluckers’ were spending 5-6 hours for leaf collection followed by 34.43% (6-7 hours), 11.52% (4-5 hours), 10.01% (7-8 hours) and 6.72% leaf pluckers’ were spending 3-4 hours.

Sub-zone wise maximum 48.97% were spending 5-6 hours in sub-zone VI followed by 40% (6-7 hours) in sub-zone V. Sub-zone wise maximum time i.e. 6-8 hours were responded in sub-zone V (53.65%) followed by sub-zone IV.
(51.67%) and sub-zone VI (27.98%). Whereas minimum trend i.e. 3-5 hours were responded maximum in sub-zone VI (23.05%) followed by sub-zone V (21.95%) and sub-zone IV (9.58%) by the leaf pluckers. The reason behind spending more time in hours may be viewed in three ways; first, there might be richness of Tendu plant nearby or surroundings of the village, second, the reverse situation of former and third, wage payment might be good and prompt. The first and the last situation might have attracted the leaf pluckers’ in case of sub-zone V.

It is evident from the Table 4.2.1.10 and Fig. 5.2.1.10d that maximum (56.38%) leaf pluckers’ were spending 2-3 hours for sorting and bundle making followed by 32.37% (3-4 hours), 9.47% (4-5 hours), 1.37% (5-6 hours) and 0.41% responded above 6 hours.

Sub-zone wise it was observed that in sub-zone IV 81.25% leaf pluckers’ were spending minimum time i.e. 2-3 hours in sorting and bundle making, 75.72% in sub-zone VI and 13.01% in sub-zone V, whereas maximum time i.e. 3 hours to more than 6 hours responded maximum 87% in sub-zone V.

![Fig. 5.2.1.10d Sorting and Bundle making Hours by Tendu leaf pluckers’](image-url)
The scrutiny of the data revealed that there was clear cut impact of *Tendu* leaf with regard to hours (Table 4.2.1.10 and Fig. 5.2.1.10e). Maximum 30.73% responded that they were spending more than 10 hours followed by 28.94% responded 9-10 hours, 26.75% responded 8-9 hours, 9.88% responded 7-8 hours and minimum 3.70% responded 6-7 hours as per calculation for total hours derived from time of departure for leaf collection up to time for sorting and bundle making.

Sub-zone wise maximum 60.98% were spending more than 10 hours in sub-zone V followed by 20.42% responded in sub-zone IV and 10.29% in sub-zone VI. In a cumulative percentage of more than 8 hours to more than 10 hours, maximum 91.25% responded from sub-zone IV followed by 90.65% responded in sub-zone V and 77.37% in sub-zone VI.

![Fig. 5.2.1.10e Total Hours spent by Tendu leaf pluckers](image-url)
It was earlier discussed in the paragraph 5.2.1.9 that the influencing factors could be species density, distance walked for leaf plucking and the number of leaf pluckers in the family. The results are in agreement with the work of Dawar (1994). Since, the all Tendu leaf activities like; plucking, sorting and bundle making were the collective action performed by the members of the family; the data on the average number of leaves or leaf bundles collected by each plucker and the average number of days worked by each plucker were not available. In an assumption, by excluding the total hours in a day of each member of a Tendu leaf plucker’s family, taking single leaf plucker, as drawn from the above findings, a single leaf plucker was spending an average of 10 hours per day in leaf plucking, sorting and bundle making. It is a common belief that, on an average, a plucker collects 100 bundles of the leaf per day. Therefore, the plucker was earning Rs.100/- as per the collection rate during the year 2014 which was far below of minimum wage and his/her per hour earning was Rs.10. As per actual 8 hours the plucker was earning only Rs.80/- and his/her per hour earning was Rs.8/-. These views were also held by Dawar (1994), Saxena (2003), Lahangir (2011), Sharma (2011) and TRIFED (2016).

5.2.1.11 Average Distances Walked (Per Day) for Tendu Leaf Collection

The leaf pluckers not only leave their homes early in the morning but also walk a long distance, which is shown in the Table 4.2.1.11.

A perusal of Table 4.2.1.11 and Fig. 5.2.1.11 reveals that maximum (50.62%) leaf pluckers replied that they were walking 6-9 kilometers in a day.
followed by 32.92% responded 3-6 kilometers, 10.70% responded up to 3 kilometers and 5.21% responded more than 9 kilometers in overall situation.

Sub-zone wise maximum 84.17% responded 6-9 kilometers in sub-zone IV followed by 66.67% responded 3-6 kilometers in sub-zone V, 37.45% responded 6-9 kilometers in sub-zone VI and a minimum 0.81% responded up to 3 kilometers in sub-zone V. The pattern of distance walked for *Tendu* leaf collection was more equally scattered in sub-zone VI i.e., from 0 to 9 kilometers whereas, an average and balancing distance was observed in sub-zone V i.e., from 3-9 kilometers. But, in sub-zone IV it was observed from the data and the table that leaf pluckers were walking more long distance i.e., from 6-9 kilometers to above 9 kilometers.

<table>
<thead>
<tr>
<th>Sub-zone IV</th>
<th>Sub-zone V</th>
<th>Sub-zone VI</th>
<th>Overall (IV+V+VI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 3 km</td>
<td>Up to 3 km</td>
<td>Up to 3 km</td>
<td>Up to 3 km</td>
</tr>
<tr>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>15.83%</td>
</tr>
<tr>
<td>3-6 km</td>
<td>3-6 km</td>
<td>3-6 km</td>
<td>31.28%</td>
</tr>
<tr>
<td>6-9 km</td>
<td>6-9 km</td>
<td>6-9 km</td>
<td>31.28%</td>
</tr>
<tr>
<td>Above 9 km</td>
<td>Above 9 km</td>
<td>Above 9 km</td>
<td>Up to 3 km</td>
</tr>
<tr>
<td>15.83%</td>
<td>0.81%</td>
<td>0%</td>
<td>5.21%</td>
</tr>
<tr>
<td>6-9 km</td>
<td>3-6 km</td>
<td>6-9 km</td>
<td>30.89%</td>
</tr>
<tr>
<td>84.17%</td>
<td>66.67%</td>
<td>6-9 km</td>
<td>5.21%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Above 9 km</td>
<td>10.70%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6-9 km</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50.62%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Above 9 km</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32.92%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3-6 km</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30.89%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Above 9 km</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15.83%</td>
</tr>
</tbody>
</table>

**Fig. 5.2.1.11 Average Distances Walked (Per Day) for *Tendu* Leaf Collection**
From the above discussion it was found that only a very small number of lucky leaf pluckers i.e., 10.70% from sub-zone V and VI were living in the forest areas with abundant Tendu plants and bushes nearby their houses, walked a short distance up to 3 kilometers each day for leaf plucking. It would be again worth mentioning that these distances are only crude approximate averages told by the Tendu leaf pluckers and not accurately measures, which is very difficult, if not impossible. The result is also in conformity with the findings of Bhatt and Sachan (2004), Dawar (1994), Lahangir (2011) and Das (2015).

5.2.1.12 Opinion of Leaf Pluckers’ on Wage and Wage Payment

The scrutiny of data (Table 4.2.1.12) revealed as in the Fig. 5.2.1.12a that, among the 729 respondents maximum 68.04% responded as the wages were sufficient followed by 15.91% responded insufficient, 9.47% responded as reasonable/Govt. rate and minimum 3.43% responded lower rate.

Fig. 5.2.1.12a Opinion of Tendu Leaf Pluckers’ on Wage Rate
Maximum 83.74% sufficiency level was responded in sub-zone V and maximum 24.58% insufficiency was responded in sub-zone IV. Whereas, lower rate responded maximum 5.69% in sub-zone V followed by 3.29% in sub-zone VI and 1.25% in sub-zone IV.

As in Fig. 4.2.1.12b; overall 65.71% responded that wage payments were done weekly followed by 24.69% responded as fortnightly, 5.49% monthly and 4.12% responded that wage payments were promptly.

**Fig. 5.2.1.12b Opinion of Tendu Leaf Pluckers’ on Wage Payment**

As in Fig. 5.2.1.12c; maximum 65.98% responded as ‘No’ whereas, 34.02% responded as ‘Yes’. Sub-zone wise maximum 56.38% saving was responded in sub-zone VI and no savings responded maximum 82.08% in sub-zone IV with regard to opinion on savings from wage.
As discussed earlier in the paragraph 5.2.1.9 that, wage rates are always viewed opposite as low and reasonable or high between earner and payer. The above discussions are feelings and opinions of Tendu leaf pluckers’ on their own daily wage earnings by leaf plucking. It may be reiterated here that the leaf collection wage rate in 2014 season, when this study was conducted, were Rs.100/ per 100 bundles of leaves in Jharkhand. Interesting fact was that, from the overall, 68.04% leaf pluckers replied as sufficient and 9.47% replied as reasonable/government rate. Whereas, only 15.91% replied as insufficient and 3.43% replied as lower rate in opinion on wage and wage payment. Whatever may be our opinion but, situational opinion of Tendu leaf pluckers might be due to the lean period of agriculture i.e., the summer months when they had no other form of employment in such a situation at their door step. Here, the word ‘insufficient’ might be the reflection of ‘the wage which is insufficient to maintain something or anything by them’.

![Diagram](image-url)
Wage payment in all the cases was found weekly (65.71%) followed by fortnightly (24.69%). Promptly was responded only 4.12% whereas, monthly was responded by 5.49%. However, the promptness of wage payment was not a big issue among the leaf pluckers except some case of monthly payments in some sample villages of sub-zone V which may not be the representation of the area as discussed earlier and also, which may not be viewed as regular and can be rectified.

As discussed in above para, the wage earned by the leaf pluckers was insufficient to maintain something or anything by them in their families. A very small number of them responded that they saved some amount from their earnings from Tendu leaf plucking. Savings by the leaf pluckers might be depending not only on their wage earnings but also on the size of their family and their saving habits. These results are also in conformity with the findings of Dawar (1994) and Patra (2014).

5.2.1.13 Average Number of Leaf Bundles per day Prepared by each Family

Data regarding average number of leaf bundles per day prepared by each family have been presented in the Table 4.2.1.13 and Fig. 5.2.1.13. In a totality of all sub-zones maximum 50.34% responded average 100-200 number of leaf bundles were being prepared per day followed by 32.65% with an average of 200-300 numbers, 10.43% responded an average of up to 100 numbers and minimum 6.58% responded an average of above 300 numbers per day by the family.
Sub-zone wise maximum 55.83% responded an average between 100-200 numbers of leaf bundles was prepared per day by their families in sub-zone IV. Maximum 38.21% responded an average between 200-300 numbers in sub-zone V and also maximum 9.35% responded an average of above 300 numbers in the same sub-zone V. In the below category of up to 100 numbers of leaf bundles were maximum 12.92% responded in sub-zone IV followed by 10.29% responded in sub-zone VI and 8.13% responded in sub-zone V.

![Average Number of Leaf Bundles per day Prepared by each Tendu leaf Plucker’s Family](image)

Fig. 5.2.1.13 Average Number of Leaf Bundles per day Prepared by each Tendu leaf Plucker’s Family

A glance at Table 4.2.1.13 revealed that the largest number of leaf pluckers families, i.e., 50.34% followed by 32.65% collected 100-200 and 200-300 bundles each day. It would be again worth mentioning that a bundle contains 52 leaves in a bundle. A considerable number of the leaf pluckers families, forming 10.43% of them, collected up to 100 bundles per day. In initially, as stated earlier, the quantity of per day leaf collection varies according to availability of the leaves in different areas, or in the same areas, or in the same...
area at different times during a season. This finding is also in conformity with the findings of Dawar (1994), Mahapatra et al. (2010), Lahangir (2011) and TRIFED (2016).

5.2.1.14 Membership of Tendu Leaf Pluckers’ in different Institutions/Groups

The understanding of social composition and functioning of social institutions in the village settlements might be a key for the future strategy, planning and development.

The data (Table 4.2.1.14 and Fig. 5.2.1.14a) revealed that all respondents were adult and agreed that all (100%) were members of Gram Sabha. Out of 729, there were only 134 (18.38%) responded as they had membership of self help groups (SHGs); in which maximum 28.46% responded in sub-zone V followed by sub-zone VI (21.40%) and sub-zone IV (5%). Deficiency/shortage was also calculated from the total (729) as depicted in the Fig. 4.2.1.14b as maximum deficiency of 95% in sub-zone IV, followed by 78.60% in sub-zone VI and 71.54% in sub-zone V.
As evident from the Table 4.2.1.14 and Fig. 5.2.1.14c; out of 729 respondents only 62 (8.50%) responded as their membership of common interest group (CIG); in which maximum 22.22% responded in sub-zone VI followed by 3.33% responded in sub-zone IV. There was no any CIG member found in sub-zone V from the sample.

Regarding BPL (below poverty line) and APL (above poverty line), maximum 57.48% responded as BPL in cumulative basis for all the sub-zones and 42.52% responded as APL. Maximum families (86.59%) of Tendu leaf pluckers from sub-zone V were found under BPL whereas, minimum (32.08%) were found in sub-zone IV.
From the above discussion it was found that as per response and in principle, all (100%) adult male and female Tendu leaf pluckers’ were the members of Gram Sabhas. Self Help Groups (SHGs) and Common Interest Groups (CIGs) were also existing but, not covering all the Tendu leaf pluckers who were basically poor might be due to lack of literacy, awareness and external interventions/support. Similar observations were recorded by Yadav et al. (2015), Pal (2016).

5.2.2 Socio-economic of Phad Munsis

The socio-economic of Tendu leaf pluckers containing various issues related thereto have been discussed in the previous section (5.2.1). Now, the socio-economic of Phad Munsis (leaf collection centre in-charge) in Jharkhand is very important as they belong to the persons from the same village community, deals directly with the leaf pluckers and all the Tendu leaf activities viz., coppicing, collection, drying, curing, bagging and transportation from Phadi (Khalihan, Khalla) or collection centre to godown were looked after by them under the supervision of agents of contractors or officials of Jharkhand State Forest Development Corporation Limited. Phad Munsis are selected/appointed by the respective Gram Sabhas of the villages, each Phad Munsı has to enter into an agreement otherwise, he/she has to perform duties as per guidelines prescribed by the Jharkhand State Forest Development Corporation Limited and is bound by the terms and conditions thereof. In view of the key-role played by the Phad Munsis, a socio-economic study of was conducted to have an idea about them.
5.2.2.1 Sex, Age, Community and Family

Data presented in the Table 4.2.2.1 revealed that there was a predominance of males (95.83%) belonging to 83.33% of 18-50 years age-group followed by 16.67% of >50 years age. This was as expected, because younger and old persons would find it difficult to carry out the onerous and tedious job of a Phad Munsi involving accounting and record keeping and dealing with the leaf pluckers. Surprisingly, there was only one Phad Munsi was female out of 24 respondents.

The maximum number 13 (54.17%) of Phad Munsis belonged to Scheduled Tribe (ST) followed by 9 (37.50%) from other backward class (OBC) community and minimum 2 (8.33%) from other community (Fig. 5.2.2.1). Community wise dominance as 100% Phad Munsis were from ST community in sub-zone V followed by 66.67% Phad Munsis from OBC community in sub-zone IV whereas again 62.50% Phad Munsis were found from ST community in sub-zone IV. Respondents from other community were second (22.22%) dominating community in sub-zone IV whereas no any Phad Munsi found from Scheduled Caste (SC) community.

In sub-zone V all Phad Munsis belonged to STs which in sub-zone IV OBCs dominated. This indicated towards significant social differences in sub-zones.
Out of total 69 family members of *Phad Munsis*, there were 30 (43.48%) male and 39 (56.52%) female. The sex ratio was 769 and the average size of family was 8 members which were nearly double against the average family size of *Tendu* leaf pluckers’ as discussed earlier.

### 5.2.2.2 Occupation, Education and Experience

The data (Table 4.2.2.2 and Fig. 5.2.2.2a) revealed that majority of 70.83% *Phad Munsis* were farmers, 12.50% were students and equally minimum 8.33% responded each as agricultural labours and businessmen. Here, it has been found that the nature of occupation was significantly different with respect to *Tendu* leaf pluckers as the farmer, the agriculture labour, the student and the businessman. The students are getting involved in this job might be during their summer vacations. Agricultural labourers and businessman or shop-keepers did not take much interest in doing the job as *Phad Muni*.
Fig. 5.2.2.2a Occupational status of Phad Munsis

This is clearly noticed from scrutiny of Table 4.2.2.2 and Fig. 5.2.2.2b that majority (75%) of the Phad Munsis had education of SSC & above followed by 20.83% responded 5th -10th class and minimum 4.17% responded only as literate.

Fig. 5.2.2.2b Educational status of Phad Munsis

This was also expected, because their job involves account keeping and recording of the leaves collected/purchased by them and the expenses incurred in connection therewith.

As evident from the Table 4.2.2.2 and Fig. 5.2.2.2c that maximum 62.50% Phad Munsis had the working experience between 0-10 years, 20.83% responded
11-20 years, 8.33% responded 21-30 years and also 8.33% responded as working experience of 41 years and above. No were responded between 31-40 years of working experience.

Sub-zone wise, with more experience maximum 12.50% responded as experience of 41 years and above in sub-zone VI followed by 11.11% responded in sub-zone IV. The working experience between 21-30 years was alone and maximum 22.22% responded in sub-zone IV. The working experience between 11-20 years was maximum 50% responded in sub-zone VI followed by 14.29% responded in sub-zone V.

Sub-zone wise, with less experience i.e. 0-10 years was maximum 85.71% responded in sub-zone V followed by 66.67% responded in sub-zone IV and 37.50% responded in sub-zone VI. From the above discussion that there was a wide range of working experience having 0 to above 41 years but, significant change was observed in as in case of sub-zone V that new generations were

Fig. 5.2.2.2c Working Experience (in Years) of Phad Munsis
coming forward to carry over the responsibility of Phad Munsi having working experience of 0-10 years. This might be due to decisions of the respective Gram Sabhas or less interest towards this job.

The data (Table 4.2.2.2 and Fig. 5.2.2.2d) revealed that 100% Phad Munsi had the technical experience of coppicing and collection, 91.67% responded the technical experience of curing, 58.33% responded about the technical experience of bagging and no one had any experience of pruning.

![Fig. 5.2.2.2d Technical Experience of Phad Munsi on Tendu](image)

Above findings was in accordance with the findings of Dawar (1994).

### 5.2.2.3 House, Land, Forestry, Livestock and Other Assets

A perusal of the Table 4.2.2.3 and Fig. 5.2.2.3a revealed that maximum 66.67% houses were made of tiles on the roof followed by 25% responded pucca house and minimum 8.33% responded thatched house. The trend was same for sub-zone wise but, thatched houses were responded only from sub-zone VI.
As can be observed from the Table 4.2.2.3 and Fig. 5.2.2.3b, the majority of the Phad Munsis accounting 58.33% had land up to 2.5 acres i.e. marginal land holdings followed by 20.83% land between 2.5-5 acres i.e. small land holdings, 12.50% had more than 10 acres whereas minimum 8.34% between 5-10 acres.

Sub-zone wise the trend was similar but maximum 77.78% responded as marginal land holdings i.e. up to 2.5 acres in sub-zone IV. Whereas maximum 25% responded more than 10 acres land holding in sub-zone VI followed by 14.29% responded in sub-zone V from the sample.

Looking at Table 4.2.2.3 and Fig. 5.2.2.3c it was found that largest number of Phad Munsis accounting for 75% miscellaneous tree species other than
lac host plant, mahua trees, bamboo clumps and chironji tree species followed by 70.83% equally each for mahua trees and bamboo clumps, 25% responded lac host and minimum 20.83% responded chironji. Taking sub-zone wise, the richness of vegetation with *Phad Munsis* was maximum 442.86% in sub-zone V followed by 200.01% in sub-zone IV and minimum 175% in sub-zone VI from the sample.

Table 4.2.2.3 and Fig. 5.2.2.3d revealed that the largest number of *Phad Munsis* accounting 79.17% had goat rearing, which was emerged as common and the most acceptable activity for all the sub-zones followed by 66.67% responded bullock keeping, 54.17% responded rearing of poultry birds, 45.83% cow/buffalo rearing, 29.17% piggery and only 4.17% responded to fishery.
Fig. 5.2.2.3d Livestock resources of Phad Munsis

Sub-zone wise, livestock rearing was highly responded in sub-zone V; as largest number of Phad Munsis accounting for 100%, 85.71% and 71.43% against bullock, goats and pig rearing respectively. Second position got by the sub-zone VI; maximum responded 87.50%, 75% and 50% against poultry, goat and cow/buffalo respectively. Last position achieved by sub-zone IV where maximum responded 77.78%, 66.67% and 44.44% against goat rearing, bullock keeping and keeping of cow/buffalo respectively. There was no response against pig rearing in sub-zone IV. From the above, it is clear that the priorities were changing with areas or locations.

Table 4.2.2.3 and Fig. 5.2.2.3e revealed that the largest number of Phad Munsis accounting for 91.67% had their mobile phones as an asset followed by 79.17% responded cycle, 45.83% responded motorcycle, 20.83% responded pump
sets, 8.33% responded holler and equally 4.17% responded each against shop and tractor. Among the assets mobile phones, cycle, motor cycle were emerged as most important assets for the Phad Munsis whereas pump sets emerged up to some extent as an asset. The first three assets were differently responded than leaf pluckers by the Phad Munsis as these might be most useful and emerged as necessities to deal their work according to nature.

From the above discussions it is clear that the status of Phad Munsis were comparatively better than the Tendu leaf pluckers’ this might be due to their good education level, awareness and exposures even if the land situation was almost same with the leaf pluckers. Similar observations were recorded by Dawar (1994), NAIP (2014) and Islam (2015).

**Fig. 5.2.2.3e Other Assets of Phad Munsis**
5.2.2.4 Annual Income (in Rupees) from Existing Sources

It is evident from the data (Table 4.2.2.4 and Fig. 5.2.2.4a) that the largest number of Phad Munsis accounting for 58.35% had the annual income of Rs.5000 and above followed by 37.50% between Rs.1000-5000 and minimum 4.17% up to Rs.1000 from agriculture. Sub-zone wise maximum 71.43% responded Rs.5000 and above in sub-zone V followed by 62.50% responded in sub-zone VI and 44.44% responded in sub-zone IV. Only 12.50% responded up to Rs.1000 in sub-zone IV.

Fig. 5.2.2.4a Annual Income (Rs.) of Phad Munsis from Agriculture

This is clearly noticed from scrutiny of Table 4.2.2.4 and Fig. 5.2.2.4b that maximum 41.67% Phad Munsis had annual income of Rs.4000 and above from forestry. However, maximum 85.71% annual income i.e. Rs.4000 and above was responded in sub-zone V whereas up to Rs.1000 responded 44.44% from sub-zone IV which can be viewed as less income from forestry in sub-zone IV.
Fig. 5.2.2.4b Annual Income (Rs.) of Phad Munsis from Forestry

Data presented in Table 4.2.2.4 and Fig. 5.2.2.4c revealed that livestock were always provided an annual income of Rs.4000 and above to the 41.67% Phad Munsis in this regard. But in the contrary, 58.33% responded that they were earning Rs.1000 or below from livestock.

Fig. 5.2.2.4c Annual Income (Rs.) of Phad Munsis from Livestock

The observation regarding annual income from other sources Table 4.2.2.4 and Fig. 5.2.2.4d revealed that maximum 29.17% Phad Munsis had annual income between Rs.5000-10000 whereas 20.83% responded Rs.20000 and above.
Sub-zone wise maximum income range i.e. Rs.10000 to above 20000 was maximum 66.66% responded in sub-zone IV followed by 50% responded in sub-zone VI.

<table>
<thead>
<tr>
<th>Sub-zone IV</th>
<th>Sub-zone V</th>
<th>Overall (IV+V+VI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 5000</td>
<td>Up to 5000</td>
<td>Up to 5000</td>
</tr>
<tr>
<td>22.22%</td>
<td>14.29%</td>
<td>14.29%</td>
</tr>
<tr>
<td>5000-10000</td>
<td>5000-10000</td>
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</tr>
<tr>
<td>11.11%</td>
<td>57.14%</td>
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<tr>
<td>10000-20000</td>
<td>10000-20000</td>
<td>10000-20000</td>
</tr>
<tr>
<td>33.33%</td>
<td>28.57%</td>
<td>28.57%</td>
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<tr>
<td>20000 &amp; above</td>
<td>20000 &amp; above</td>
<td>20000 &amp; above</td>
</tr>
<tr>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Fig. 5.2.2.4d Annual Income (Rs.) of Phad Munsis from other sources

From the above discussion it is clear that in compare to the Tendu leaf pluckers the Phad Munsis were earning more from all existing sources might be due to awareness, higher literacy, assets and working capital which may automatically raised their confidence level for better planning and management for the resources as well as his family. These results are in agreement with the study of Veeresha (2010), NAIP (2014) and FAO (2016).

5.2.2.5 Average Monthly Expenditure of Phad Munsis

Table 4.2.2.5 and Fig 5.2.2.5 revealed that the largest number of Phad Munsis accounting for 29.17% had monthly expenditure of Rs.2000-3000 and minimum 8.33% responded as monthly expenditure of Rs.>5000 and also 8.33% responded as monthly expenditure up to Rs.1000. Sub-zone wise higher tendency of monthly expenditure i.e., above Rs.4000 was maximum 33.33% responded in
sub-zone IV followed by 28.57% responded in sub-zone V and 12.50% responded in sub-zone VI. It is clear that the Phad Munsis were found all categories of monthly expenditure and expending more as per their income to enhance their livelihood and living standard. Obviously, many of the Phad Munsis’ status were better than the Tendu leaf pluckers. The results are in accordance with the findings of NAIP (2014) and FAO (2016).

Fig. 5.2.2.5 Average Monthly Expenditure of Phad Munsis

5.2.2.6 Mortgage and Loan Status of Phad Munsis

Findings with regard to mortgage and loan status of Phad Munsis have been presented and depicted in the Table 4.2.2.6 and Fig. 5.2.2.6a and 5.2.2.6b. A considerable percentage (87.50%) of the respondents belongs to no mortgage category whereas 12.50% responded as their land were mortgaged. Regarding the loan status, the Phad Munsis with ‘no loan’ were accounting for 91.67% but, only two Phad Munsis (8.33%) responded that they had loan from Mahajans (moneylenders). It is clear from the above that the mortgage and loan were the
last options. Moneylenders were found easy accessible to Phad Munsis might be due to lack of village level micro-credit institution like; SHGs and bank linkages.

5.2.2.6a Mortgage Status of Phad Munsis

5.2.2.7 Loan Status of Phad Munsis

5.2.2.7 Earning of Remuneration as a Tendu Phad Munsi (year 2009 to 2013)

It is clearly noticed from the scrutiny of Table 4.2.2.7 and as depicted in the Fig. 5.2.2.7 that cumulative earning of remuneration as a Phad Munsi during the year 2009 to 2013 i.e., in five years was Rs.>40000 responded by only one (4.17%) respondent and minimum (less than Rs.5000/-) earning responded by 20.83% Phad Munsis.


**Fig. 5.2.2.7 Earning of Remuneration as a Tendu Phad Munsi (Yr. 2009 to 2013)**

Sub-zone wise only one (12.50%) *Phad Munsi* had earned Rs.>40000 in sub-zone VI, two (28.57%) responded between Rs.30000-40000 and most of *Phad Munsis* earned between Rs.5000 to Rs.20000 as remuneration during the year 2009-2013 i.e., the five years. It means the average remuneration to most of the *Phad Munsis* was around Rs.1000-4000 per year. This view was also held by TRIFED (2016).

**5.2.2.8 Time of Departure and Returning & hours spent each day in the Khalihan**

Data Table 4.2.2.8 and Fig. 5.2.2.8a revealed that the time of departure of *Phad Munsis* were maximum 37.50% responded between 4am-5am followed by 33.33% between 5am-6am, 12.50% between 6am-7am, 8.33% responded most early before 4am and also 8.33% responded very late after 7am for the Khalihan.
It is clear from the above that the majority of the *Phad Munsis* accounting for 70.83% leaving their homes for *Khalihan* between 4am-6am in all the sub-zones.

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**Fig. 5.2.2.8a Departure Time of Phad Munsis for the Khalihan**

Table 4.2.2.8 and Fig.5.2.2.8b further shows that time of returning from the *Khalihan* by the *Phad Munsis* were responded in a majority as between 6pm-7pm (54.17%) whereas 25% responded after 7pm in an overall situation. By taking only higher sides, sub-zone wise maximum 71.43% responded between 6pm-7pm in sub-zone V followed by maximum 62.50% between 6pm-7pm in sub-zone VI and maximum 55.56% responded after 7pm in sub-zone IV. From the above it is clear that in most of the cases the *Phad Munsis* in sub-zone IV were spending more time in comparison to sub-zone V and VI might be less availability of *Tendu* leaves in the area, long distance walked by the leaf pluckers which cause delay returning by the leaf pluckers and ultimately delay of *Phad Munsis* in the *Khalihan*. The reason may be viewed linking with the previous discussions in 5.2.1.10b and 5.2.1.11.
The data (Table 4.2.2.8 and Fig. 5.2.2.8c) revealed that more than 10 hours were responded by 30.73%, 9-10 hours by 28.94%, 8-9 hours 26.75%, 7-8 hours by 9.88% and minimum i.e. 6-7 hours responded by only 3.70% respondents. Most of the Phad Munsis (86.42%) were pointed out that they were spending 8 to more than 10 hours in each day in the Khalihan.

The above discussed findings comply with the findings of Dawar (1994) and Lele et al. (2015).

![Fig. 5.2.2.8b Returning Time of Phad Munsis from Khalihan](image)

The data (Table 4.2.2.8 and Fig. 5.2.2.8c) revealed that more than 10 hours were responded by 30.73%, 9-10 hours by 28.94%, 8-9 hours 26.75%, 7-8 hours by 9.88% and minimum i.e. 6-7 hours responded by only 3.70% respondents. Most of the Phad Munsis (86.42%) were pointed out that they were spending 8 to more than 10 hours in each day in the Khalihan.

The above discussed findings comply with the findings of Dawar (1994) and Lele et al. (2015).

![Fig. 5.2.2.8c Total hours spent each day by Phad Munsis in the Khalihan](image)
5.2.2.9 Distances Walked for Khalihan

The observation regarding distance walked for Khalihan by the Phad Munsis (Table 4.2.2.9 and Fig. 5.2.2.9) revealed that maximum 70.83% responded that they were walking less than 1 km for Khalihan whereas only 29.17% were walking between 1-2 kilometers. No one responded more than 2 kilometers in all the sub-zones. It means that in most of the cases the collection centre or Khalihan were very close to the house of Phad Munsis which might be due to better monitoring of the work and also availability of good open space. This finding was in accordance with the findings of Dawar (1994).

Fig. 5.2.2.9 Distances Walked by Phad Munsis for Khalihan

5.2.2.10 Opinion of Phad Munsis on Remuneration

A perusal of the Table 4.2.2.10 and Fig 5.2.2.10a revealed that the opinion of Phad Munsis on remuneration was unanimously more than half of the majority i.e., 62.50% responded lower rate; only 37.50% responded reasonable.

Fig. 5.2.2.10a Opinion of Phad Munsis on Remuneration Rate
Data regarding sufficiency of remuneration rate (Table 4.2.2.10 and Fig. 5.2.2.10b) revealed that response of the Phad Munsis with regard to the sufficiency was only 58.33% among them. Sub-zone wise sufficiency response was higher (57.14%) in sub-zone V followed by 50% sufficiency in sub-zone VI. In case of sub-zone IV, minimum 22.22% sufficiency was responded on remuneration rate.

**Fig. 5.2.2.10b Opinion of Phad Munsis on Sufficiency of Remuneration Rate**

Data regarding remuneration payment (Table 4.2.2.10 and Fig. 5.2.2.10c) revealed that maximum 66.67% responded that the remuneration payment was monthly followed by 29.17% responded weekly and minimum 4.17% responded fortnightly. However, the remuneration payment system to the Phad Munsis was significantly showed different among sub-zones as monthly to weekly.

**Fig. 5.2.2.10c Opinion of Phad Munsis on Remuneration Payment**
Regarding the savings from remuneration (Table 4.4.4.10 and Fig.5.2.2.10d) of Phad Munsis was significantly different with savings from wage of Tendu leaf pluckers’; out of 24 Phad Munsis 14 (58.33%) responded as ‘Yes’. More savings was observed among the Phad Munsis of sub-zone IV (66.67%) followed by sub-zone V (57.14%) and 50% in sub-zone VI.

![Figure 4.2.2.10d Opinion of Phad Munsis on Savings from Remuneration](image)

From the above discussion it is clear that opinion of Phad Munsis on remuneration rate, its sufficiency, duration and savings from it was one of the findings on one hand. On the other hand, from the field situation it was felt that this Tendu leaf activity by keeping the Phad Munsis in a centre was based on honesty, hard working and trusts. When all the things and situations remained good and normal, there was no matter of low, insufficiency and delay payment of remuneration. In general, the expenditure on Phad Munsi against the work drying of leaves and some cases curing and bagging were born by the Tendu leaf contractors/agents. Although expenses per S.B. (standard bag) is fixed by the Jharkhand State Forest Development Corporation Limited but, it may be equal or
negotiable or higher as a bonus. The above findings are in agreement with the findings of Dawar (1994) and Saxena (2003).

5.2.2.11 Organizational Awareness of Phad Munsis

Organizational awareness of Phad Munsis have been presented in the Table 4.2.2.11 regarding Panchayat Kanoon/ PESA Act; frequency of Gram Sabha meetings and need of other institutions like; SHGs, CIGs, Youth Club and Gram Sabha sub-committees.

It is clearly noticed from scrutiny of Table 4.2.2.11 and Fig. 5.2.2.11a that overall there was 50:50 awareness in percent with respect to Panchayat Kanoon/ PESA Act as responded ‘Yes’ and ‘No’ by the Phad Munsis. However, awareness level was maximum 66.67% in sub-zone IV followed by 42.86% in sub-zone V and minimum 37.50% responded in sub-zone VI.

![Fig. 5.2.2.11a Awareness Level of Phad Munsis on Panchayat Kanoon/ PESA Act](image)

While considering frequency of Gram Sabha meetings (Table 4.2.2.11 and Fig.5.2.2.11b). It is clear that maximum 41.67% responded as quarterly, 33.33%
monthly, 16.67% need based and 4.17% Phad Munsis responded equally for each as half yearly and annually. In sub-zone V the frequency of Gram Sabha meetings from monthly to quarterly responded maximum 85.71% followed by 77.77% in sub-zone IV whereas minimum 62.50% responded in sub-zone VI.

![Graphs showing frequency of Gram Sabha meetings](image)

**Fig. 5.2.2.11b Frequency of Gram Sabha Meetings**

Again from the Table 4.2.2.11 and Fig. 5.2.2.11c it is clearly noticed that, all (100%) Phad Munsis agreed that there was need of other institutions like; SHGs, CIGs, Youth Club and Gram Sabha sub-committees for village development.
From the above, it is important to discuss about the awareness level of Phad Munsis was comparatively more (Lele et al., 2015) than Tendu leaf pluckers; they were efficient and leading persons to execute the physical and financial activities to which the respective Gram Sabhas had selected. The awareness level of Phad Munsis in case of Panchayat Kanoon/ PESA Act was found 50% which could not be said good rather bad. The sources of information are most often inter-personal informal relationship with relatives, neighbors and friends. In rural areas still Radio is a common and most often electronic media for seeking news, information and entertainment besides educational and development programmes at homes and outside home i.e., at working and common places. Under the trap of poverty and hunger a person can’t learn or enjoy by himself due to every time struggle for his/her livelihood and existence. The frequency of Gram Sabha meetings in monthly to quarterly basis may be said as good which was responded 75% in overall situation which indicates that many
village issues might have discussed in Gram Sabhas. Need of other institutions like; SHGs, CIGs, Youth Club and Gram Sabha sub-committees in a common majority (100%) reflects that the Phad Munsis might have felt that community organizations is a must for poverty eradication and village development. The above findings comply with the findings of IFAD (1999), Prabhakar (2010), Veeresha (2010), Saxena (2015) and Pal (2016).

5.2.2.12 Membership of Phad Munsis in different Institutions/Groups

Data pertaining to membership of Phad Munsis in different institutions/groups have been presented in the Table 4.2.2.12 regarding Gram Sabha, SHG, CIG and BPL/APL.

It is evident from the data (Table 4.2.2.12) that all (100%) responded as they were member of Gram Sabha. Only two (8.33%) responded as they were member of SHG; one from sub-zone IV and another from sub-zone VI. Whereas, only one (4.17%) Phad Munsi was CIG member out of 24.

Table 4.2.2.12 and Fig. 5.2.2.12d indicates the overall 62.50% BPL (Below Poverty Line). On the question regarding BPL/APL maximum 85.71% of the respondents from sub-zone V responded as BPL followed by 75% responded as BPL in sub-zone VI and minimum 33.33% responded as BPL in sub-zone IV.

In the contrary, maximum 66.67% Phad Munsis from the sample villages of sub-zone IV were responded under APL (Above Poverty Line) category.
From the above discussion it was found that as per response and in principle, all (100%) Phad Munsis had the membership of Gram Sabhas. Self Help Groups (SHGs) and Common Interest Groups (CIGs) were also existing among them but, not covering all the Phad Munsis might be due to lack of awareness, external interventions/support and differences of male psychology versus female psychology in group formation. Even if the resources were available only 37.50% Phad Munsis were crossed the poverty line. Similar observations were recorded by Yadav et al. (2015) and Pal (2016).
5.2.3 Silvicultural Treatments

5.2.3.1 Initiation of Shoot Emergence

It is evident from the data on initiation of shoot emergence that the treatments had clearcut influence upon the initiation of shoot emergence (Table 4.2.3.1). It is obvious that the treatment which took the minimum days for initiation of shoot emergence performed the best result. Pruned (T₄) by taking minimum 8 days had shown the best performance among all the treatments. Coppice (T₁) got the second position (14 days), just followed by coppice-cum-split (T₂) by taking 15 days. Control burning (T₃) got ⁴ᵗʰ position. Control (T₅) with 29 days showed the most inferior result and did not maintain its uniformity in comparison to all other treatments. There was no significant effect of all three agro-climatic sub-zones. This phenomenon was quite in agreement with findings of earlier worker such as Kerketta et al. (2010). The reason for best performance of the treatment pruned (T₄) might be early defoliation of the leaves with lateral branches, higher reserved food material and plant hormone in the main stem and excellent coppicing power of the plant itself (Troup, 1985; Hartmann et al., 1993).

In case of coppice (T₁), coppice-cum-split (T₂) and control burning (T₃) the number of days for initiation of shoot emergence was comparatively more than the pruned (T₄) which might be due to high injury to the Tendu plant which might had affect the its physiology whereas, in case of Control (T₅) the initiation of shoot emergence was in the very last might be due to delayed old leaf
detachment from the plant as per plant’s phenology (Zobel and Talbert, 1984; Hartmann et al., 1993; Luna, 2006).

5.2.3.2 Number of Leaves per Plant

It is evident from the data taken for number of leaves per plant (Table 4.2.3.2) that both the treatments and climates had influence upon the above parameter. As per the pooled data, the number of leaves per plant were maximum in coppice (T₁) with the production of 44 leaves followed by coppice-cum-split (T₂) 31 leaves. Twenty five leaves were recorded with pruned (T₄) whereas, 23 leaves were recorded with control (T₅); both were statistically noted at par to each other. Minimum number of leaves i.e. 18 leaves per plant were recorded with control burning (T₃). The number of leaves in coppice (T₁) was found nearly double to the control.

As far interaction between treatments and agro-climatic sub-zones/environments was concerned, maximum number of leaves (45) were recorded in coppice (T₁) with sub-zone V followed by coppice-cum-split (T₂) by producing 34 leaves; 27 leaves in pruned (T₄); 25 leaves in control (T₅) and minimum 18 leaves were produced in control burning (T₃). Sub-zone V always showed superior performance taking with all treatments. Sub-zone IV and VI were statistically at par to each other but, significantly different to sub-zone V. From the observation it is clear that Diospyros melanoxylon was greater influenced by the various silvicultural treatments and by the climate in regard to
number of leaves per plant. The same has earlier been observed by Neelay and Sah (1980), Ghosh et al. (1976).

The probable reason for the number of leaves per plant might be due to production of prolific number of shoots in case of coppicing. The number of leaves was found minimum in case of control burning might be due to severe injury to the plant which might had badly affected the physiology of the plant in making them weak. Pruning and control treatments behaved similar with regard to number of leaves per plant might be due to physiology on emergence of new leaves being same as after leaf fall in control.

5.2.3.3 Leaf Area

A perusal of pooled data in the Table 4.2.3.3 revealed that Table shows that maximum leaf area was recorded with coppice (T\(_1\)) 231.08 cm\(^2\) followed by control burning (T\(_3\)) and coppice-cum-split (T\(_2\)) all above were statistically at par with each other. With the above treatments, pruned (T\(_4\)) and control (T\(_5\)) were found highly significant difference. Pruned (T\(_4\)) showed 181.50 cm\(^2\) leaf area whereas control (T\(_5\)) showed minimum 175.50 cm\(^2\) leaf area. Both were statistically at par to each other.

Interactions shows that 248 cm\(^2\) leaf area with coppice (T\(_1\)) in sub-zone VI showed the best followed by 229.50 cm\(^2\) and 215.75 cm\(^2\) in the rest sub-zone IV and V. Minimum leaf area observed in the control (T\(_5\)) of sub-zone V. Sub-zone IV and V were statistically at par to each other but significantly different to
sub-zone VI which was having marked difference in edaphic and climatic conditions. The findings comply with the findings of Oraon (2016).

The probable reason for the maximum leaf area in coppice might be due to efficient regulation of protein synthesis and their mobilization in leaves due to appropriate climatic conditions for the growth of the species in case of sub-zone VI. The rainfall during the experimental week might have also helped as evident from the data presented in the Fig. 3.1c. Increased root formation and nutrient uptake by roots are positively associated with formation of leaves and increase of leaf area.

5.2.3.4 Number of Coppice Shoots per Plant

Pooled data regarding number of coppice shoots per plant (Table 4.2.3.4) had an interesting phenomenon that there was highly significant influence of treatments on the number of coppice shoots per plant but climates had no significant influence in this regard. Five (5) number of coppice shoots produced with coppice (T₁) per plant followed by 4 shoots per plant in control burning (T₃) and 2 shoots per plant with coppice-cum-split (T₂). There were no emergence of coppice shoots in pruned (T₄) and control (T₅).

Maximum 6 number of coppice shoot per plant were observed in coppice (T₁) with sub-zone V followed by sub-zone IV with 5 shoots and sub-zone VI with 4 coppice shoots in the same treatment. The minimum number of coppice shoots observed in coppice-cum-split (T₂) with sub-zone VI.
Among the treatments, coppice (T₁) and control burning (T₃) were statistically at par with each other but coppice (T₁) was significantly different with coppice-cum-split (T₂). Also, coppice-cum-split (T₂) and control burning (T₃) were significantly at par with each other but significantly different with coppice (T₁). Coppice (T₁), coppice-cum-split (T₂) and control burning (T₃) were statistically highly significant with pruned (T₄) and control (T₅). There was no significant impact of climatic sub-zones on the parameter suggesting that mechanical injury sometimes triggers the coppice shoot production as a possible thrust perception response of the plant. The result is in conformity with the result of Bhagat et al. (1998).

Better performance of coppice (T₁) might be due to maximum number of nodes present in the plant collar zone and inherent excellent coppicing power of the species. Whereas, less production of coppice shoots in control burning (T₃) and coppice-cum-split (T₂) might be due to severe injury to the Tendu plants itself due to fire which also caused moisture stress into the soil while splitting after coppicing might have caused maximum injury as a result destruction of nodes at the basal area and induce the Tendu plants to destroy maximum energy in its wound healing process.

5.2.3.5 Thickness of Leaf

It is evident from the data taken for thickness of leaf (Table 4.2.3.5) that treatments had clearcut influence upon the above parameter. Control burning (T₃) produced most thin leaves (0.347 mm) and was significantly different with the
other treatments followed by coppice-cum-split (T₂) and coppice (T₁) with the thickness of 0.466 mm and 0.472 mm respectively; both (T₂) and (T₁) were statistically at par to each other. Pruned (T₄) got fourth position with a thickness of 0.513 mm and control (T₅) got last position with a thickness of 0.521 mm; both were also statistically at par to each other. Minimum thickness were observed in control burning (T₃) with a thickness of 0.334 mm in sub-zone V and 0.477 mm in sub-zone IV. Very thick leaves (0.525 mm) were observed in control (T₅) in sub-zone IV. There was no significant impact of climatic sub-zones in this parameter.

Better performance of control burning might be due to struggling of the Tendu plants for its survival and moisture stress into the soil, which might have resulted in multiple coppice shoots with thin leaves. Coppice and coppice-cum-split also exhibited medium thickness whereas, pruning and control found thicker than all treatments with respect to their degree of injury. Saha and Howe (2003) had found similar result in this regard.

5.2.3.6 Fresh weight of leaf

The scrutiny of data (Table 4.2.3.6) revealed that there was a significant impact of treatments on fresh weight of leaf. Coppice (T₁) achieved more weight (7.196 gm) followed by coppice-cum-split (T₂) got second position (7.055 gm), both were statistically at par to each other. Control burning (T₃) got third position by 6.311 gm and was statistically significant to all the other treatments. Pruned (T₄) got fourth position by getting 4.753 gm and control (T₅) got last position by
getting 4.651 gm. Both treatments were statistically at par to each other. Maximum fresh weight was achieved by coppice (T₁) 7.361 gm in sub-zone VI followed by 7.141 gm in sub-zone IV and 7.087 gm in sub-zone V.

Medium fresh weight (6.153 gm) was achieved by control burning (T₃) in sub-zone V followed by 6.284 gm in sub-zone IV and 6.496 gm in sub-zone VI. Minimum fresh weight was achieved by control (T₅) 4.487 gm in sub-zone V followed by 4.714 gm in sub-zone IV and 4.750 gm in sub-zone VI. Statistically sub-zone IV and V were at par to each other but significantly different with sub-zone VI. Also sub-zone IV and VI were statistically at par to each other but significantly different with the sub-zone V regarding this parameter.

The fresh weight of leaves might have much associated on the leaf area and thickness of leaf and also but least with the climatic conditions in the present study. Similar observations were recorded by Oraon (2016).

5.2.3.7 Dry weight of leaf

While considering the dry weight, treatments had significant effect on dry weight of leaf (Table 4.2.3.7). Coppice-cum-split (T₂) achieved maximum dry weight (3.879 gm) followed by 3.788 gm in coppice (T₁); both were statistically at par to each other. Medium dry weight was achieved by control burning (T₃) 3.226 gm which got third position and were statistically significant to all other treatments. Pruned (T₄) got fourth position by achieving 2.480 gm and control (T₅) got the last position by 2.154 gm. Both were statistically at par.
Maximum dry weight was achieved by coppice-cum-split (T2) 4.096 gm in sub-zone VI followed by the same treatment 3.919 gm in sub-zone IV and 3.624 gm in sub-zone V. Medium dry weight was achieved by control burning (T3) 3.067 gm in sub-zone V followed by 3.200 gm in sub-zone IV and 3.410 gm in sub-zone VI. Whereas, minimum dry weight was achieved by control (T5) 2.034 gm in sub-zone VI followed by 2.107 gm in sub-zone V and 2.320 gm in sub-zone IV. Similar findings reported by Oraon (2016).

Statistically, there was no significant difference among the sub-zones regarding dry weight of leaf. The dry weight of leaves might have much associated on the leaf area and thickness of leaf and also with the sunshine hours, temperature, relative humidity and wind velocity (Pandey, 1989).

5.2.3.8 Prominence of midribs/mid veins

As presented in Table 4.2.3.8 reflects the ocular and feels estimation of prominence of midribs/mid veins. Control burning (T3) achieved its superiority by without prominence in comparison to all other treatments. It was observed that with the control burning (T3) sub-zone VI achieved its superiority with without prominence of midribs/mid veins followed by sub-zone V and VI. Jointly, coppice (T1) and coppice-cum-split (T2) had the similarity as very less prominent midribs/mid veins and there were no difference of treatments and got the second position and a clear difference were seen in the sub-zone wise. Sub-zone VI had again proved its superiority in this regard followed by sub-zone V and got second
position; sub-zone IV got the last position. Pruned (T₄) got third position among treatments and the midribs/mid veins were prominent same as control (T₅). However, sub-zone VI had less prominent than sub-zone V and VI. Control (T₃) got fourth position among treatments and midribs/mid veins were prominent same as pruned (T₄) but, sub-zone IV had showed its high prominence of midribs/mid veins with compare to sub-zone V and VI. This finding was in agreement with the results obtained by Neelay and Sah (1980), Dawar (1994) and Oraon (2016).

Reasons behind the high or low prominence of mid rib/mid vein in Tendu leaf might be due to type of plant injury, moisture condition in the soil, growing environment and genetic character of the plant.

5.2.3.9 Colour of Dried leaf

Colour presentation as per ocular observations presented in the Table 4.2.3.9; following colour categories have been identified in the applied treatments which could be viewed descending colour quality order as:

1. Greenish white,
2. Greenish to greenish yellow/grey,
3. Greenish grey/brown,
4. Greenish brown,
5. Dull green to reddish brownish tinge, and
6. Dark green to brownish.
A further perusal of the Table and colour quality indicates that, the treatment control burning (T₃) with sub-zone VI proved its superiority followed by sub-zone V and sub-zone IV with the emergence of greenish white leaves. Two treatments coppice (T₁) and coppice-cum-split (T₂) had the similar second quality leaves of greenish to greenish yellow/grey in colour. Sub-zone V and VI had equally better in colour quality; sub-zone IV was also good but, less good than sub-zone V and VI.

Pruned (T₄) had the greenish grey/brown colour in which sub-zone IV was much good than sub-zone V and VI. Control (T₅) was the inferior and the colours of leaves were not uniform. However, sub-zone V had the greenish brown leaves with good colour appearance. But, sub-zone VI had the dull green to reddish brownish tinge colour and much better than sub-zone IV in which the leaves were dark green to brownish in colour. Maximum colour variations were shown in the control (T₅). The colour variations in Tendu leaf might be due to chlorophyll content, moisture content, thickness, optimum maturity, growing environment, presence of fungi, genetic character and management practices applied. Seemingly these factors were optimal for leaf colour traits in sub-zone VI while control burning further augmented superior leaf colour for bidi production.
5.2.3.10 Texture of Leaf

Texture presentation (Table 4.2.3.10) as per ocular and feel observations revealed that the textures observed with feel method were mainly of three categories as under:

1. Good body, soft, thin, free from hairs, depressed and few veins.
2. Semi coarse to coarse, slightly hairy, or velvety with slightly prominent veins.
3. Coarse body leaves, hairy and velvety with prominent veins.

Quality was superior with control burning (T₃) in sub-zone VI followed by sub-zone V and IV. Coppice (T₁) and coppice-cum-split (T₂) were the second and equally top quality but, lesser than control burning (T₃). All sub-zones were more or less equal with respect to texture of first category. Pruned (T₄) exhibited the texture as semi coarse to coarse, slightly hairy, or velvety with slightly prominent veins of second category. In second category sub-zone V was much better than sub-zone VI and IV. The last category was in control (T₅) which exhibited the texture as coarse body leaves, hairy and velvety with prominent veins. Among this category sub-zone V was much better than sub-zone VI but, sub-zone IV was the last one with respect to the texture. The findings comply with the findings of Neelay and Sah (1980) and (Dawar, 1994).
The texture variations in *Tendu* leaf might be due to thickness, optimum maturity, growing environment, genetic character and management practices applied which probably better noted for *Diospyros melanoxylon* in sub-zone V.

5.2.3.11 Shape and Size of Leaf

As obvious from the Table 4.2.3.11, it was found in ocular observation that the treatments coppice (T₁), coppice-cum-split (T₂) and control burning (T₃) showed the more uniform shape and size of leaf than the other treatments equally in all sub-zones i.e. there were no differences of uniformity in all sub-zones.

Pruned (T₄) also showed as uniform but less in shape and size of leaf equally in all sub-zones. No differences were found of sub-zones. Control (T₅) showed the long, oval and pointed tip/base or both or irregular shape and size of leaf than the other treatments in all sub-zones with respect to shape and size of leaf.

The shape and size variations in *Tendu* leaf might be due to management practices applied and genetic character of the plant. However, growth and uniformity of the plant can be maintained by silvicultural treatments as recorded in this study. The finding was in accordance with the findings of Ghosh *et al.* (1976).
5.2.4 Community Organization

5.2.4.1 Community Institutions

In all the 24 sample villages good to average set up and in some cases below average community organization was recorded which included Gram Sabhas, SHGs, CIGs and other institutions like; Forest Committees, Youth Clubs etc. It was unanimously felt that there is need of such institutions in the village, orientation of those institutions and capacity building of the Gram Sabhas in general and committees and groups in particular. These organizations could be effectively utilized for efficient collection, management and marketing of Tendu leaves in the state. They may also be used as sharing of benefits as per PESA Act.

In order to strengthen Panchayati Raj Institutions (PRIs) as per the spirit of the Constitution and the Jharkhand Panchayat Raj Act, 2001, the Department of Panchayati Raj, Govt. of Jharkhand has under taken several schemes such as training to PRIs Officials and Staffs, Grants to Gram Shabha etc. is also being undertaken with a vision to accomplish decentralized and good local self governance through empowered and efficient PRIs and mission as to empower Panchyats and representatives of PRIs to plan holistic development by making them realize their rights, entitlements and duties through effective delivery of services (DoPR, 2016).
5.2.4.2 Gram Sabha’s Strength

Based on important Gram Sabha characteristics and points scored by the respective Gram Sabhas (Table 4.2.4.1); it is clearly noticed from scrutiny of Table 4.2.4.2 as per the percentile grouping; Tiskopi, Chute, Bhelwara, Alkilwa and Nagi Gram Sabhas were kept under ‘good’ category. Banaso, Chilgo and Kharki were kept under ‘average’ category whereas, Banhe were kept under ‘below average’ category in sample Gram Sabhas selected from sub-zone IV.

The data in the Table 4.2.4.3 revealed that Dharibahar and Taraboga Gram Sabhas were kept under ‘good’ category whereas; Ambapani, Jampani and Joram Gram Sabhas were kept under ‘average’ category. Chetmal Gram Sabha exhibited as ‘below average’ as per the percentile grouping of the sample Gram Sabhas of sub-zone V.

The data in Table 4.2.4.4 revealed that Papragaru, Chorak Pathar, and Tirildih exhibited as ‘good’. The only Gram Sabha Uperbera was found as ‘average’ category whereas; Palobera, Bhalukpahari, Koiria and Padampur were exhibited as ‘below average’ according to the percentile for the sample Gram Sabhas of sub-zone VI.

On the basis of score distribution in different Gram Sabha Characters, percentile grouping (Table 4.2.4.2 to 4.2.4.4) and existence of different institutions like; SHGs, CIGs and other functional institutions as presented in the Table 4.2.4.1 and box plot given in the Fig. 4.2.4.1; out of 24 sample Gram
Sabhas 10 were emerged as ‘good’, 7 were ‘average’ and also 7 were ‘below average’ in performance which have been presented in the Table 4.2.4.6.

As far the important characteristics of Gram Sabha are concerned, all were equally important for the successful operation of Gram Sabhas. The characteristics of Gram Sabhas as responded by the different sample Gram Sabhas have been presented in the Table 4.2.4.2.5. However, from the Table 4.2.4.2.1, 2, 3 and box plot Fig. 4.2.4.2.2; the good thing was observed that the Gram Sabhas were utilizing the funds very well, the awareness level and active participation of members and meeting frequencies were also found good. Maintenance of books of records and proceedings was found in a medium range whereas, executive body of Gram Sabha, planning and vision, execution of decision taken in the Gram Sabha and monitoring of work and trade were exhibited quite less. Providing details of expenditure (Transparency)/ social audit showed very less attentions in most of the cases by the sample Gram Sabhas. The findings are in accordance with the findings of Dasgupta (2000), Veeresha (2010) Salgaonkar and Salgaonkar (2011).

From the above discussion under community organization; the community institutions and its strength particularly the Gram Sabhas were assessed as good, average and below average was situational during the study. Being in such categories also might be due to socio-economic conditions of the village community in general and as discussed previously in case of Tendu leaf pluckers’ and Phad Munsis’ in particular.