Chapter 6

Summary

This study summarizes the findings of Productivity, Silviculture and Socio-economics of *Diospyros melanoxylon* Roxb. in Jharkhand. Focusing on background and present situation for better understanding of the forest communities in general and *Tendu* leaf pluckers’ in particular for further developmental strategy and policy formulation.

Socio-economic development occurs in response to the impacts of new technologies, changes in laws, changes in the physical environment and ecological changes of the society.

The state and the central governments have continuously sought to empower the local populations, and several steps have been taken to establish ownership rights of the collectors over non-timber forest products. This has culminated in the 73rd constitutional amendment in 1996 that has given the ownership right over non-timber forest products to the *Gram Sabhas* (local groups or entities).
Despite immense potential of revenue generation and socio-economic upliftment of rural population residing in forest fringe areas limited efforts have been taken up to systematically assess _Tendu_ leaf production and impact of silvicultural practices therein. Prior to the enactment of Forest Rights Act, 2006, NTFP was not defined clearly in any Act, not even in PESA. On 6th September, 2012, the Ministry of Tribal Affairs, Government of India has published the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Amendment Rules 2012 which are legally more imposing/binding in nature. Overall socio-economics of collection and trade of _Tendu_ leaves has also been inadequately addressed to incorporate in the policy formulations.

In the Vth schedule areas the forest dwellers are territorial communities, confined more or less to a particularly geo-political areas delineated traditionally, and these areas are one of their identity marks. These areas holds great significance for their existence, livelihood and development remain the most disadvantaged section of Indian society in terms of poverty, poor nutrition and health status, illiteracy and lack of access to social and technical services. In addition, the households face inter-related problems of land scarcity, low agricultural productivity and the absence of economic alternatives which in turn lead to environmental degradation. This viscous cycle of low productivity and decreasing income has progressively undermined livelihood security and has been accompanied by the weakening of community institutions, the worsening of gender relations, increasing economic stratification within the communities and increasing
integration into wider political and economic structures by which they are powerless to influence.

Despite the considerable efforts for development and commitment to upholding distinctive features of these areas in the Constitution, there is increasing acceptance, even within the government, that these areas have had limited impact on well-being. Interventions for development have neither increased livelihood security nor enabled different communities to develop in the ways that are compatible with various self-defined priorities in the Vth schedule areas but, have tended to promote dependency rather than build self-reliance.

However, despite negative socio-economic changes within the communities, the society especially tribal society remains relatively more egalitarian than mainstream Indian society. In many tribal groups and settlements some degree of consensus-based decision-making and the resolution of practical problems through collective effort remains a reality and in some others the nature of these social institutions are being effectively reshaped by a new generation of tribal leaders that are responding to changing tribal priorities (IFAD, 1999). In this context, the Extension of Panchayat Act of 1996 may represent a unique opportunity for communities in these areas to gain greater control over their own development and the management of their natural resources.
Thus, the present study was carried out to find out the silvicultural, social and economic implications of *Diospyrous melanoxylon* Roxb. in Jharkhand with following objectives:

1. *To study productivity and quality of tendu leaves in different Agro-climatic zones of Jharkhand,*
2. *To study various silvicultural operations in Diospyrous melanoxylon Roxb. and their impact on production and yield,* and
3. *To assess the communities strength in ownership and trade of tendu leaves with special respect to PESA Act, 1996.*

The technical programme of work i.e. silvicultural treatments was conducted in all three agro-climatic sub-zones of Jharkhand state namely Central-north Eastern plateau zone (sub-zone IV- humid and sub humid tropical monsoon), Western plateau zone (sub-zone V- sub humid to subtropical) and South Eastern plateau zone (sub-zone VI- humid to sub-tropical) which falls under agro-climatic zone 7 i.e., Eastern Plateaus and Hill Region.

The study was conducted during the year 2015 from the last week of February, 2015 up to second week of May, 2015; located at 22° 28’03.8”N latitude and 84° 32’07.6”E longitude, 22° 50’30.5”N latitude and 85° 59’43.7”E latitude & 23° 19’12.4”N latitude and 85° 33’25.3”E longitude of which the altitudes were 342 m, 267 m and 518 m, respectively from mean sea level and nearly 100 km or far away from each other to capture maximum geographical and climatic variation of Jharkhand. The
observations taken were i) Initiation of Shoot Emergence, ii) Number of Leaves per Plant, iii) Leaf Area, iv) Number of Coppice Shoots per Plant, v) Thickness of Leaf, vi) Fresh weight of leaf, vii) Dry weight of leaf, viii) Prominence of midrib/mid vain, ix) Colour of dried leaf, x) Texture of Leaf, and xi) Shape and Size of Leaf.

The socio-economic study was conducted in randomly selected 24 sample villages of 5 districts which were covering all sub-zones of Jharkhand. Primary data for socio-economic were collected during the year 2014 by making sample surveys of the leaf pluckers’ and Phad Munsis’ from target villages and areas of Jharkhand in the field during the Tendu leaf collection season i.e. April to June months.

Questionnaire formats were developed and used for socio-economic of Tendu leaf pluckers from the 30% sample of leaf pluckers in a village considering the equal representation of all class and categories and accordingly family wise respondents from the target villages in all agro-climatic sub-zones of Jharkhand. A total of 729 leaf pluckers’ and 24 Phad Munshis were interviewed in 24 villages followed by focus group discussions (FGD). The villages selected were Alkilwa, Banaso, Belwara, Kharki, Nagi and Banhe (Hazaribagh district), Chilgo, Chute and Tiskopi (Bokaro district), Ambapani, Chetmal, Dharibahar, Jampani, Joram, Koronjo and Taraboga (Simdega district), Bhalukpahari, Chorok Pathar, Koira, Padampur, Palobera, Tirildih and Uperbera (Saraikela-Kharsawan district) and Papraguru (East Singhbhum district).
The parameters selected for assessing socio economic of *Tendu* leaf pluckers’ were 1) Age, 2) Sex, 3) Family, 4) Education, 5) Occupation, 6) Community, 7) Experience, 8) House, 9) Land, 10) Forestry, 11) Livestock, 12) Other assets, 13) Annual income from existing sources, 14) Average monthly expenditure, 15) Mortgage and loan status, 16) Number of family members in leaf plucking, sorting and bundle making, 17) Earning of wages per family by leaf plucking in the year 2013, 18) Time of departure 19) Time of returning, 20) Total hours spent each day in leaf collection, sorting and bundle making, 21) Average distances walked for *Tendu* leaf collection, 22) Opinion on wage and wage payment, 23) Average number of leaf bundles per day prepared by each family, and 24) Membership in different Institutions/Groups.

The parameters selected for assessing socio economic of *Phad Munsis* were 1) Age, 2) Sex, 3) Family, 4) Education, 5) Occupation, 6) Community, 7) Experience, 8) House, 9) Land, 10) Forestry, 11) Livestock, 12) Other assets, 13) Annual income from existing sources, 14) Average monthly expenditure, 15) Mortgage and loan status, 16) Total remuneration from the year 2009 to 2013, 17) Time of departure, 18) Time of returning, 19) Total hours spent each day in the *Khalihan*, 20) Distances walked for *Khalihan*, 21) Opinion on remuneration, 22) Organizational awareness, and 23) Membership in different Institutions/Groups.

*Gram Sabha/Tola Sabha* strength was assessed with the help of questionnaire by giving the equal points (10) for the following characters assuming that all characters
were equally important for the proper functioning of Gram Sabha; i) Structure (Executive body of Gram Sabha with different committees and sub committees), ii) Awareness and active participation of the members, iii) Planning and vision, iv) Meetings frequency, v) Maintenance of books of records and proceedings, vi) Convergence with the line departments and NGOs, vii) Execution of decisions taken in the Gram Sabha, viii) Monitoring of work and Trade, ix) Utilization of funds, and x) Providing details of expenditure (transparency)/ Social audit. Observations were grouped into three classes as 0-25%, 25-75% and above 75% using percentile.

The method applied was focused group discussion (FGD) with the 20-30 key persons of the village in which the group was heterogeneous in nature containing adult male and female then points were given for each village. Finally, apart from the above Gram Sabha characters and structures other institutions of Gram Sabha like; Self Help Groups (SHGs), Common Interest Groups (CIGs) for other income generating activities and Youth Clubs etc. were also kept in consideration to access the Gram Sabha’s strength. Based on important Gram Sabha characteristics and points scored by the respective Gram Sabhas, the Gram Sabhas were grouped as good, average and below average.

Based on both primary as well as secondary data, the significant findings are mentioned below.
Productivity and quality of *tendu* leaves in different Agro-climatic zones of Jharkhand:

- On the basis of secondary data, the average collection of *tendu* leaf in Jharkhand was 4,74,900 standard bags per year which was only 59.67% of the notified yield of 7,95,875 standard bags. The average production was highest in sub-zone V, accounting for 2,76,657 (76.24%) standard bags followed by 60,067 (58.66%) standard bags in sub-zone VI and the lowest was 1,38,176 (41.80%) standard bags in sub-zone IV.

- On the basis of primary data, the maximum number of leaves can be obtained through coppicing. By which on an average 435800 leaves per ha. i.e., 8.72 standard bags per ha. can be achieved. As far productivity of sub-zones are concerned, sub-zone V was the most productive sub-zone which can produce 452500 leaves (9.05 standard bags) per ha., keeping with second position, sub-zone IV can produce 430000 leaves (8.60 standard bags) per ha. whereas, sub-zone VI can produce 425000 leaves (8.50 standard bags) per ha. if all factors remains positive.

- Quality of leaves was judged on the basis of their colour, texture, prominence midrib/mid veins, size, shape, body and condition. The best quality produced with the control burning treatment with respect to all above parameters in all sub-zones under study. However, under this treatment sub-zone VI showed its superiority.

- Treatment wise, coppicing also proved its second position superiority in quality after control burning with additional advantage of its quantity.
Coppicing treatment showed its superiority in sub-zone V but, in case of rest of the two sub-zones the different quality parameters were balancing both the sub-zones, therefore, sub-zone VI can be given advantage of climate for second position due to warmer than sub-zone IV which could be said as good for Tendu leaves.

Silvicultural operations in *Diospyros melanoxylon* Roxb. and their impact on production and yield:

The most important and feasible silvicultural operations applied to study their impacts were; coppicing, coppicing-cum-splitting, control burning and pruning to compare with sole (control) crop.

- **Impact on quantity production:**
  - Coppice treatment (T₁) exhibited its superiority in terms of maximum number of coppice shoots (5 shoots) per plant, number of leaves (44 leaves) per plant, leaf area (231.08 cm²), fresh weight (7.196 gm) of leaf but, quite good dry weight (3.788 gm) of leaf. Coppice (T₁) and Coppice-cum-split (T₂) were statistically at par to each other in terms of leaf area, thickness, fresh weight and dry weight of leaf. Overall all treatments were found significantly different than control but, there was no significant difference between Pruned (T₄) and Control (T₅) in terms of quantity.
  - As far the quality is concerned Control burning (T₃) proved its superiority by minimum thickness (0.347 mm), leaf area (227.16 cm²),
number of coppice shoots (4 shoots) per plant, fresh weight (6.311 gm) which, dry weight (3.226 gm), without prominent of midrib/mid vein, greenish white in colour, more uniform and texture as good body, soft and free from hairs.

- Likewise, second quality achieved jointly by Coppice (T1) and Coppice-cum-split (T2) which had medium but good leaf area, good quality thickness, weight, very less prominent midrib/ mid vein, greenish to greenish yellow/grey colour, same texture as Control burning (T3) but, comparatively less and more uniform in shape and size. Both the treatments were statistically at par in many respects like; leaf area, thickness, fresh weight and dry weight.

Communities strength in ownership and trade of *tendu* leaves with special respect to PESA Act, 1996.

**Tendu Leaf Pluckers:**

**Socio-personal Status**

- The female leaf pluckers formed the majority in *Tendu* leaf plucking, accounting of 52.81% of their total number. 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.

- The 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 overall situation.

- 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 percentage of respondents having occupation of labour and others were 19.62% and 0.41% respectively.

- 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%).

- 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.

- Maximum 57.48% responded as BPL in cumulative basis for all the sub-zones. 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.
Maximum 46.23% of the respondents were illiterate, 27.30% were literate, 23.73% had education between 5<sup>th</sup> and 10<sup>th</sup> class and only 2.74% had education up to SSC and above. However, maximum illiteracy was observed in sub-zone IV (68.33%).

All (100%) respondents had responded that they know about coppicing and collection. Regarding curing 49 (6.72%) had the technical knowledge while only 26 (3.57%) respondents had the technical knowledge of bagging.

Largest number of the leaf pluckers’ families, accounting for 49.93% of their total number, had between 4-6 family members was 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. 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.

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 calculated as 2.47 members for all the sub-zones.

**Economic Status**

95.47% respondents had tiled houses followed by pucca houses (3.98%) and there were only 0.55% thatched houses in overall situation.
• 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%). There were 1.51% i.e. eleven respondents who were found as landless from the total sample.

• The richness and maximum livelihood supporting vegetation were found in sub-zone V. All 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.

• Livestock 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.

• 37.86% were responded as they were earning annual income from other sources 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 maximum i.e. in the category of Rs.20000 and above were responded in sub-zone VI (48.56%).
• 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 was responded maximum 4.07% in sub-zone V.

• There were 95.88% respondents have no loan from anywhere. Overall 3.98% leaf pluckers’ responded against the loan from SHG followed by 0.14% loan from Mahajan.

• 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. 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. 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. 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.
• 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.

• Regarding time of returning (Table 4.2.1.10b 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.

• 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%) in Tendu leaf collection.

• 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.
Regarding total hours, 30.73% leaf pluckers 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. *Tendu* leaf pluckers (60.98%) of sub-zone V were spending more than 10 hours and the earning opportunity was also high. Whereas, sub-zone IV was spending more time in leaf collection than sub-zone V but, earning opportunity was less due to far and less availability of leaves.

- Maximum (50.62%) leaf pluckers replied that they were walking 6-9 km in a day followed by 32.92% responded 3-6 km, 10.70% responded up to 3 km and 5.21% responded more than 9 km in overall situation. Sub-zone wise maximum 84.17% responded 6-9 kilometers in sub-zone IV followed by 66.67% responded 3-6 km in sub-zone V, 37.45% responded 6-9 kilometers in sub-zone VI and a minimum 0.81% responded up to 3 km in sub-zone V. 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 km to above 9 kilometers.

- 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. 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.
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.

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.

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.

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% Tendu leaf pluckers.

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. The largest number of leaf pluckers families, i.e., 50.34% followed by 32.65% collected 100-200 and 200-300 bundles respectively each day.

**Phad Munsis:**

**Socio-personal Status**
- There was a predominance of males (95.83%) belonging to 83.33% of 18-50 years age-group followed by 16.67% of more than 50 years age.
- 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. 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.
- 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.
- Majority of 70.83% Phad Munsis were farmers, 12.50% were students and equally minimum 8.33% responded each as agricultural labours and businessmen.
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.

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. 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.

100% Phad Munsis 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.

**Economic Status**

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.

Majority of the Phad Munsis accounting for 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.

The Phad Munsis accounting for 75% had 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.

- The largest number of Phad Munsis accounting for 79.17% had goat, 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. 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.

- The 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, motorcycle were emerged as most important assets for the Phad Munsis whereas pump sets emerged up to some extent as an asset.
• 58.35% *Phad Munsis* 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.

• 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.

• 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.

• A total of 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.

• 29.17% *Phad Munsis* 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.
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).

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. Sub-zone wise only one (12.50%) Phad Munsis 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.

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.

Time of returning from the Khalihan by the Phad Munsis was 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.

- 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.
- Maximum 70.83% responded that they were walking less than 1 km for Khalihan whereas only 29.17% were walking between 1-2 kilometers.
- The opinion of Phad Minsis on remuneration was unanimously more than half of the majority i.e., 62.50% responded lower rate; only 37.50% responded reasonable.
- 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.
- Maximum 66.67% responded that the remuneration payment was monthly followed by 29.17% responded weekly and minimum 4.17% responded fortnightly.
- Savings from remuneration 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.
• There was 50:50 awareness in percent with respect to *Panchayat Kanoon* / PESA Act as responded ‘Yes’ and ‘No’ by the *Phad Munsi*. 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.

• Regarding frequency of *Gram Sabha* meetings, it was clear that maximum 41.67% responded as quarterly, 33.33% monthly, 16.67% need based and 4.17% *Phad Munsi* 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.

• All (100%) *Phad Munsi* agreed that there was need of other institutions like; SHGs, CIGs, Youth Club and *Gram Sabha* sub-committees for village development.

• 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. Only one (4.17%) *Phad Munsi* was CIG member out of 24.

• 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.
• **Gram Sabhas:**

  o Based on important *Gram Sabha* characteristics, points scored by the respective *Gram Sabhas*, percentile grouping and existence of different institutions like; SHGs, CIGs and other functional institutions; 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.

  o 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.

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

  o On the basis of score distribution in different *Gram Sabha* Characters, percentile grouping and existence of different institutions like; SHGs, CIGs and other functional institutions, out of 24 sample *Gram Sabhas* 10 were emerged as ‘good’, 7 were ‘average’ and also 7 were ‘below average’ in performance.
Conclusions

1. The whole yield of *Tendu* leaves is obtained from the scattered natural growth involving great amount of walking and stupendous efforts on the part of the leaf collecting labourers and high collection cost. Various silvicultural operations such as coppicing, control burning pruning etc., have been proved to be quite effective for not only increasing the quantity of the leaf but also improving its quality and, therefore, could be profitably used.

2. Productivity, Silviculture and Socio-economics of *Diospyros melanoxylon* Roxb. in Jharkhand were studied in three Agro-climatic sub-zones. Among silvicultural treatments; coppicing without splitting injury showed significant effect on quantity, quality and uniformity aspects. As far quality and uniformity are concerned, control burning performed the best but, may not be recommended due to environmental concern until any specific condition and strict supervision. Control performed very poor.

3. Productivity and quality can be enhanced with better management and augmentation through artificial regeneration of the species in all agro-climatic sub-zones. All sub-zones should be viewed equally for this livelihood opportunity. More benefit share to the local community to attract and joint planning with them for management of their natural resource and joint marketing strategy by the Jharkhand State Forest Development Corporation and other organizations will be one step forward towards handholding and ownership right as per the essence of PESA Act, 1996.
4. The socio-economic conditions of Tendu leaf pluckers’ and Phad Munsis were found almost similar in the village situation. However, the socio-economic status of Phad Munsis were found comparatively more better than the Tendu leaf pluckers due to their high awareness and literacy level therefore, they were managing their families as well as resources in a more better way than others.

5. Community organization, capacity building of the Gram Sabha (village community) and other grass root institutions in general and Tendu leaf pluckers’ in particular is the ‘Key’ to exercise the PESA Act, 1996 in the Tendu leaf production areas of Jharkhand with generating alternate source of income outside of agriculture, specially for the poorest of the poor, women and landless.

6. The state has an organized collection among the community and a readymade system of the state government (Jharkhand State Forest Development Corporation) for Tendu leaf trade, which can be viewed with the angle of empowerment/handholding, role transfer and ownership right to local community with respect to the PESA (Panchayati Raj Extension to Schedule Area) Act. In pilot basis practical exercises with selected Gram Sabhas/Panchayats/areas with respect to PESA Act has been recommended.