

Project No: IFP-091/G&TI/28/SFD, WB/2018-19

Evaluation of the existing Seed Stands and Seed Production Areas (SPA) of major forest trees under the Forest Directorate, West Bengal

DRAFT PROJECT COMPLETION REPORT

Submitted to

DIRECTORATE OF FORESTS, GOVERNMENT OF WEST BENGAL



By

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Project Profile

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- 2. Project (Title):** **Evaluation of the existing Seed Stands and Seed Production Areas (SPA) of major forest trees under the Forest Directorate, West Bengal**

- 3. Implementing Team:**
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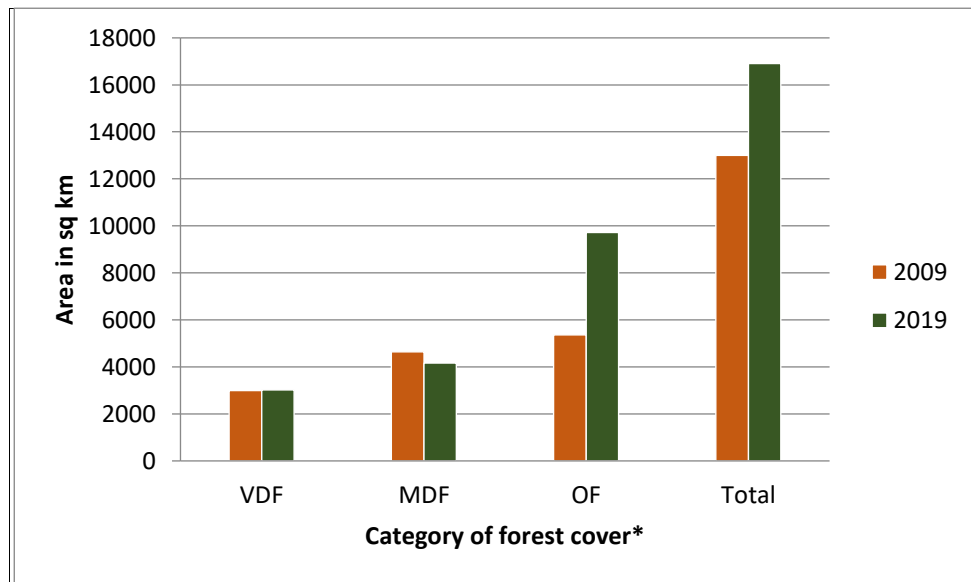
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1. Introduction

West Bengal is the nation's fourth-most populous state, with over 91 million inhabitants (as per Census 2011) with total geographical area of 88,750 km². West Bengal is the only State in India where Himalayas are in the north and Sea at the south, with both plains and plateaus covering the remaining region. Though, it is one of the states that not meeting the criteria of 33% forest cover in India still it is among the few states to achieve the positive trend of forest cover increase. West Bengal contains 19.04% forest cover over the total geographical area of the state (ISFR, 2019). The forest cover in the state has been increased 4.4% in the last ten years, as it was 14.64% in 2009. The comparison in areas under different categories of forests in the state is shown in Fig. 1. The increase in forest cover was observed mainly due to increase in Open Forest category (almost 81% increases over ten years). This is even more creditable for the state that forest cover has increased despite large dependence of tribal people and villagers living in the forest fringe areas for their livelihood.



*VDF = very dense forest; MDF = moderately dense forest; OF = open forest

Figure 1: Areas under different categories of forests in West Bengal

To increase forest cover in the state, the State Forest Departments (SFDs) are continuously following long term afforestation programmes, which require huge quality seeds. Major seed sources are unselected seed sources, seed trees, seed stands, seed production areas and seed orchards. The seed quality and level of management of these seed sources are given in the Table 1.

Table1: Characteristics of various seed sources.

Characters	Seed sources				
	unselected seed sources	seed trees	seed stands	seed production areas	seed orchards
Quality of mother trees	unselected trees from unselected stands	selected trees from unselected stands	selected stands, unthinned / thinned, untested	selected stands, thinned, untested	Selected and tested trees
Seed quality	Poor	Intermediate	Fairly good	Good	Very good
Level of management	None	Some	Intermediate	Intensive	Very intensive

(Source: Mulawarman et al., 2003).

Seed stands (SSs) are groups of trees, in either natural forests or plantations, identified as having superior characteristics - such as straight stem form or rapid growth. Seed stands are managed for seed production, but only seldom benefit from selective thinning or other management intended to improve the quality of seed produced from the stand.

Seed production area (SPA) is a natural stand or plantation of phenotypically superior trees that is thinned by removing the poor phenotypes, while the good trees are left to inter-mate and produce seeds, which are collected for operational forestry programmes. SPAs are important and immediate source of well-adapted and improved seed, which is produced at a moderate cost. The amount of genetic gain (higher productivity) in plantation raised from seed of SPAs is expected to be small, but higher as compared to plantations raised from the seed of an unimproved source and seed stand (Mulawarman et al., 2003). The preconditions of production of genetically improved seed are fulfilled in SPAs by the presence of phenotypically superior trees and mating among these trees with minimal selfing and contamination by inferior pollen from outside sources. The seed from SPAs are widely used in countries where tree improvement programme has just made a beginning. It also provides an inexpensive supplement to more elaborate and highly technical tree breeding activities.

In past, West Bengal had developed 200 seed stands covering an area of 453.68 ha for 63 species. Now, quite some of those have got older or its production capacity has fallen. Hence, it is necessary to evaluate the health of the stands and their seed production capacity. From the available records, it is seen that certain stands consist of only 20-30 trees with no pollen dilution zone. Even seed stand as small as 0.77 ha and density as low as 6 trees/ha has been recorded. On

the other hand, some have density as high as 500+ trees/ha due to the absence of a thinning regime. Some stands have very old trees – as old as 90+ years. Keeping these views in mind, to know the detail status of seed stands present study was carried out with following objectives.

2. Objectives

1. To evaluate status of seed stands on the basis of minimum area, tree density, isolation zone and infestation of pest and diseases
2. To recommend culling of inferior trees
3. To assess the production capacity of seeds of selected seed stands

3. Methodology

3.1 Evaluation of status of seed stands

Evaluation work was carried out on Seed stands established by three Silviculture Divisions viz., Hills, North and South (Table 2) of the Directorate of Forests, West Bengal.

Table 2: Seed Stands created by the Silviculture Divisions, W.B.

Silviculture Division	Number of seed stands targeted
Hills	107
North	70
South	23
Total	200

3.1.1 *Verify the recognition of seed stands/ SPAs on the basis of 'Area'*

If the original seed source forms a large genetic base, better gain can be expected due to cross pollination and mutual transfer of genes. The area and location of SPAs should be decided based on the extent of future plantation programmes. The decrease in area of tree population would influence the gene flow and the genetic structure of seed stands and affect the future viability of the population due to high level of inbreeding and random genetic drift.

- a. Although an area of less than 5 ha is not preferred for the commercial production of seed in a seed stand, (Quijada, 1985), the area will depend on the requirement of the plantation programme, the original area covered by the species and the resources available for effective management of the area.

- b. West Bengal has around 25% of total number of seed stands has area of less than 2 ha and only 25% is above 5ha and if number of stands is considered, SPAs above 5ha comes to about 5% only.
- c. Hence area above 2ha was specially considered for detailed analysis
- d. But those seed stands having less than 2 ha were not neglected since those species are generally unique and their requirement is also less due to the restricted climatic requirements. Moreover, getting large areas in hills is generally difficult.

Following seed stands with species mentioned below were not discarded out right based on area/density alone and were studied even though area was less than 2 ha:

- i. **N.B Hills:** *Abies densa, Betula alnoides, Bucklandiapopulnea, Cupressus lusitanica, Eucalyptussaligna, Micheliacathartii, Prunus napaulensis and Tsuga brunoniana*
- ii. **N.B. Foothills and Plains:** *Dipterocarpus turbinatus, Dalbergia sissoo, Mesua ferrea, Cordia alledora, Lophopetalumfimbriatum, Eleocarpusganitrus,,Amoorawallichii and Emblicaofficinalis*
- iii. **S. Bengal :** *Dalbergia sissoo, Eucalyptus citriodora, Eucalyptus terreticornis, E. camaldulensis and Tectona grandis*

3.1.2 *Verify the seed stands/ SPAs on the basis of 'Tree density'*

- a. Though density of a seed stand depends on its age and/or development, in plantations between 100 and 300 trees per hectarewere generally preferred, depending on the species and on the environmental conditions.
- b. Competition between the crowns was always avoided in order to ensure the maximum number of reproductive buds.
- c. Emphasis was given so that the stand should also contain enough number of individual trees of good phenotype of the desired species to allow for reasonable cross pollination. The SPA having less than 50 good phenotypes per hectare was not preferred except those 'restricted' species since the gain of establishment and management is likely to be too small and there will be a high risk of selfing in a very open stand.

3.1.3 *Verification on isolation zone and tree health:*

The choice of seed source is one of the most important decisions since the potential for either good or poor tree growthlieswithin the genetic constitution of the seed. An error in

judgment can lead to crops with poor stem and branch form or vulnerability to pests and diseases. The status of seed stands was judged on following parameters.

- a) **Isolation zone:** It is virtually impossible to eliminate completely contamination by stray pollen. However, an isolation zone or pollen dilution zone surrounding the seed production area can reduce it. For wind pollinated species, the recommended minimum distance for isolation is 300 m – 500 m (Pedersen, 2011). However, in tropical hardwoods that are mostly pollinated by insects, the dilution zone may be an open area of some 200 m width. If trees are to be grown in the dilution zone they must be of a species that does not hybridize with the species of interest for seed production.
- b) **Details of the seed source used** to establish the stand should be known as the genetic base ideally should be broad.
- c) **The trees should be mature for seed production**, but not too old. Seeds from very young or very old trees often are of inferior quality compared to those from middle age trees.
- d) **Evidence of pests or diseases** may be an indication of inferior adaptability of the seed source. The stand showed widespread symptoms of attack by insects or diseases was not considered for seed production.

3.2 Recommending culling of inferior trees:

It is recommended that there should be 150 individuals per ha to yield large quantity of seeds in SPAs of teak (Rao, 2005). SPAs recorded more tree density were studied thoroughly to recommend the culling of inferior trees. Trees having poor phenotypic characteristics such as slow growth, crooked stem form, attacked by pest or disease was tagged and recommended for cut and remove finally leaving around 120 – 200 trees per hectare. Culling shall be undertaken by the Forest Directorate.

3.3 Assessment of the seed production capacity of selected seed stands:

Estimation of seed production capacity was carried out on selected seed stands of three Silviculture Divisions viz., Hills, North and South of the Directorate of Forests, West Bengal.

3.3.1 Fruit/ Seed collection from sample trees of seed stands:

- a) The fruit production was recorded for randomly selected 2 – 5 trees from each sample plot.

- b) Mature seeds were collected from selected trees.
- c) Seed collection was carried out when the majority of trees (more than 50%) in the seed stand were in fruiting condition.
- d) Seed collection on trees in the seed stand that flower very early or very late was avoided.
- e) Fruits/ seeds were collected by climbing tree in most of the cases. However, as per situation arised, seeds were collected from forest floor or with the help of trap, as an alternative method.

3.3.2 Estimation of Seed yield

- a) At first, the total number of trees bear fruits in the seed stand was counted.
- b) For the estimation of number of fruits, the procedure mentioned by Bilaet *al.* (1999) was followed. For each tree, primary, secondary, tertiary and fourth-order branches were counted. Sample of fourth-order branches were cut, and the number of fruits was counted. However, the order of branches to be cut was decided as per situation for the species. All counts were extrapolated to estimate the total number of fruits per tree.
- c) After the harvest of fruits, seeds were extracted and dried. Then the seed yield was calculated as per the formula given below.

Seed yield (kg ha^{-1}): $S = (F \times S_n) \times S_w \times T_n$ Where, $S \rightarrow$ the total seed yield

$F \rightarrow$ the number of fruits on the tree,

$S_n \rightarrow$ the number of seeds per fruit,

$S_w \rightarrow$ the average seed weight, and

$T_n \rightarrow$ no. of trees bearing fruits/ ha of plantation

3.4 Seed stand mapping

Several GPS points throughout the boundary of seed stands were taken for mapping. The values were changed in Microsoft Excel Comma Separated Value Files (Csv). Next step Open Google Earth Pro and save GPS Point in KML Format. Then Open Q-GIS & add the points & save it in Shp Format. After opening Arc GIS 10.4, prepared shape file, added layers and exported it in JPG Format.

3.5 Statistical Analysis

Mean and standard deviation were estimated for different characters using Microsoft Excel.

4. Results and Discussion

4.1 Evaluation of status of seed stands and Recommendation for culling of inferior trees

Evaluation work was carried out on seed stands established by three Silviculture Divisions viz., Hills, North and South (Table 3) of the Directorate of Forests, West Bengal. All these seed stands were evaluated. However, during evaluation work, we came across additional two seed stands of North division and one seed stand of South division as shown by the SFD staff and evaluation work was carried out for these stands also. After detail study, the status of seed stands has been categorized into two groups:

- i) it may be considered as seed stand/ SPA (C) and
- ii) it may not be considered as seed stand/ SPA (NC).

The status of these seed stands is depicted in Tables 4 to 6, division wise. However the detail report of individual stands is given in pages following the respective Tables. Along with the evaluation report, number of trees recommended for culling is also mentioned. Initially, trees recommended for culling were marked as 'X' with paint, later on aluminum tag was applied. It will help the department to identify those trees. As the seed quality in general is better in SPA than a seed stand, we are trying to convert all seed stand as a SPA. Hence, in the discussion whenever we are depicting the status of a stand, it is with respect to SPA.

Table 3: Evaluation of Seed Stands created by the Silviculture Divisions, W.B.

Silviculture Division	Number of seed stands targeted	Number of seed stands where evaluation work carried out	List of seed stand given in
Hills	107	107	Table 4 (see page no. 8)
North	70	72*	Table 5 (see page no. 109)
South	23	24**	Table 6 (see page no. 175)
Total	200	203	

*Additional two stands were evaluated as per requirement of the department.

**Additional one stand was evaluated as per requirement of the department.

4.1.1 Silviculture Hills Division

The brief information of 107 seed stands of this division along with status after evaluation is given in Table 4. The detail information on any seed stand is described in the corresponding page(s) mentioned in the Table 4.

Table 4: Status of seed stands after evaluation in Silviculture North (Hills) division

Sl No.	Species	Seed Stand No	Local Name	Range	Area (ha)	Status*	Page No.
1.1	<i>Abies densa</i>	1/AD/SRIMB	Gobresallah	RIMBICK	0.25	C	11
1.2	<i>Abies densa</i>	2/AD/PANK	Gobresallah	PANKHASARI	1	C	12
2.1	<i>Ailanthus grandis</i>	1/AG/TASHI	Gokul	KALIMPONG	2.5	C	13
2.2	<i>Ailanthus grandis</i>	2/AG/MAL	Gokul	NEORA	2	NC	14
2.3	<i>Ailanthus grandis</i>	3/AG/MAL	Gokul	NEORA	1	C	15
2.4	<i>Ailanthus grandis</i>	4/AG/CHUR	Gokul	CHEL	1	NC	16
3.1	<i>Alnus nepalensis</i>	1/AN/SIMK	Utis	SENCHAL EAST	1.5	C	17
3.2	<i>Alnus nepalensis</i>	2/AN/LOPC	Utis	TAKDAH	0.2	NC	18
3.3	<i>Alnus nepalensis</i>	3/AN/MAYO	Utis	LOLEYGAON	6	NC	19
3.4	<i>Alnus nepalensis</i>	4/AN/PAKT	Utis	LAVA	3.5	C	19
3.5	<i>Alnus nepalensis</i>	5/AN/RISUM	Utis	PANKHASARI	2	C	20
4	<i>Anthocephalus cadamba</i>	1/AC/MAL	Kadam	NEORA	0.5	NC	21
5.1	<i>Betula alnoides</i>	1/BA/PAREN	Sour	JALDHAKA	1	C	21
5.2	<i>Betula alnoides</i>	2/BA/PEML	Sour	LOLEYGAON	1.5	NC	22
6	<i>Betula cylindrostachya</i>	1/BC/NUMB	Sour	SEVOKE	3.5	C	23
7.1	<i>Bombax ceiba</i>	1/BC/CHAM	Simul	SUKNA	1	NC	24
7.2	<i>Bombax ceiba</i>	2/BC/MAL	Simul	NEORA	0.4	NC	25
7.3	<i>Bombax ceiba</i>	3/BC/KHUM	Simul	JALDHAKA	0.4	NC	25
8	<i>Bucklandia populnea</i>	1/BP/PUBO	Pipli	TAKDAH	1	C	25
9.1	<i>Castanopsis hystrix</i>	1/CH/LOPC	Patleykatush	TAKDAH	4	C	27
9.2	<i>Castanopsis hystrix</i>	2/CH/RAJA	Patleykatush	DILARAM	7	NC	28
9.3	<i>Castanopsis hystrix</i>	3/CH/TIGE	Patleykatush	SENCHAL	5	NC	29
10.1	<i>Chukrasia tabularis</i>	1/CT/MOHO	Chikrassi	SUKNA	1	NC	29
10.2	<i>Chukrasia tabularis</i>	2/CT/CHUR	Chikrassi	CHEL	0.2	NC	30
10.3	<i>Chukrasia tabularis</i>	3/CT/MONG	Chikrassi	CHEL	0.5	NC	31
11.1	<i>Cryptomeria japonica</i>	1/CJ/DUNG	Dhupi	GHOOM-SIMANA	10.8	NC	41
11.2	<i>Cryptomeria japonica</i>	2/CJ/MAHA	Dhupi	BAJORA	1	NC	32
11.3	<i>Cryptomeria japonica</i>	3/CJ/RISUM	Dhupi	PANKHASARI	1.6	NC	34
12	<i>Cupressus cashmeriana</i>	1/CC/CPLOT	K.Dhupi	KALIMPONG	2	C	35
13	<i>Cupressus lusitanica</i>	1/CL/CHUM	Dhupi	LOLEYGAON	1	C	36
14	<i>Dalbergia sissoo</i>	1/DS/CHUR	Sisoo	CHEL	1	NC	41
15.1	<i>Dipterocarpus terbinatus</i>	1/DT/KYAN	Garjan	SUKNA	0.5	NC	37
15.2	<i>Dipterocarpus terbinatus</i>	2/DT/KOKL	Garjan	SUKNA	1	NC	38
15.3	<i>Dipterocarpus terbinatus</i>	3/DT/SUKN	Garjan	WEST RANGE	1.5	C	39
15.4	<i>Dipterocarpus terbinatus</i>	4/DT/SUKN	Garjan	WEST RANGE	1	C	40

*C = may be considered as a seed stand/SPA; NC = may not be considered as a seed stand/SPA

Table 4: Status of seed stands after evaluation in Silviculture North (Hills) division cont...

Sl No.	Species	Seed Stand No	Local Name	Range	Area (ha)	Status*	Page No.
16.1	<i>Duabanga indica</i>	1/DI/SUMB	Lampatey	BADAMTAM	3	NC	41
16.2	<i>Duabanga indica</i>	2/DI/BHAL	Lampatey	KALIMPONG	1	C	42
16.3	<i>Duabanga indica</i>	3/DI/KHUM	Lampatey	JALDHAKA	0.5	NC	43
16.4	<i>Duabanga indica</i>	4/DI/PAREN	Lampatey	JALDHAKA	1	NC	44
17	<i>Dysoxylumprocerum</i>	1/DP/MAL	Lasune	NEORA	0.5	NC	45
18.1	<i>Eucalyptussaligna</i>	1/ES/LOPC	Tarpin	TAKDHA	1	C	46
18.2	<i>Eucalyptussaligna</i>	2/ES/HUM	Tarpin	TAKDHA	0.5	NC	47
19.1	<i>Lagerstroemia flosreginae</i>	1/LF/KYAN	Jarul	SUKNA	1	NC	48
19.2	<i>Lagerstroemia flosreginae</i>	2/LF/KHUM	Jarul	JALDHAKA	1	C	49
19.3	<i>Lagerstroemia flosreginae</i>	2/LF/MAL	Jarul	NEORA	2	C	50
20	<i>Lagerstroemia hypoleuca</i>	1/LH/KYAN	Benteak	SUKNA	1	C	51
21	<i>Mesua ferrea</i>	1/MF/MAL	Nageswar	NEORA	0.5	C	52
22.1	<i>Micheliacathcartii</i>	1/MC/ALGA	T.Champ	PANKHASARI	0.25	NC	53
22.2	<i>Micheliacathcartii</i>	2/MC/PANK	T.Champ	PANKHASARI	0.25	C	54
23.1	<i>Micheliachampaca</i>	1/MC/KUND	Champ	SEVOK	0.2	NC	55
23.2	<i>Micheliachampaca</i>	2/MC/MOHO	Champ	SUKNA	0.7	NC	56
23.3	<i>Micheliachampaca</i>	2/MC/HATI	Champ	SUKNA	5.8	NC	57
23.4	<i>Micheliachampaca</i>	3/MC/HATI	Champ	SUKNA	0.7	NC	58
23.5	<i>Micheliachampaca</i>	5/MC/KHUM	Champ	JALDHAKA	1	NC	59
23.6	<i>Micheliachampaca</i>	6/MC/CHUR	Champ	CHEL	0.5	C	60
23.7	<i>Micheliachampaca</i>	7/MC/MAL	Champ	NEORA	1	NC	68
24.1	<i>Micheliaexcelsa</i>	1/ME/BATA	M.Champ	MANAYBHANJAN	1	C	61
24.2	<i>Micheliaexcelsa</i>	2/ME/LAVA	M.Champ	LAVA	1.77	C	62
24.3	<i>Micheliaexcelsa</i>	3/ME/LAVA	M.Champ	LAVA	1.77	C	63
24.4	<i>Micheliaexcelsa</i>	4/ME/PAKT	M.Champ	LAVA	0.25	NC	68
25	<i>Pinus insularis</i>	1/PI/MAL	Pine	NEORA	0.75	NC	64
26.1	<i>Pinus patula</i>	1/PP/LOPC	Pinus	TAKDHA	0.4	NC	65
26.2	<i>Pinus patula</i>	2/PP/LOPC	Pinus	TAKDHA	2.6	NC	66
26.3	<i>Pinus patula</i>	3/PP/LOPC	Pinus	TAKDHA	1.5	NC	67
26.4	<i>Pinus patula</i>	4/PP/PUBO	Pinus	TAKDHA	2	NC	68
26.5	<i>Pinus patula</i>	5/PP/RANG	Pinus	SENCHEAL EAST	1	C	69
26.6	<i>Pinus patula</i>	6/PP/SONA	Pinus	SENCHEL WEST	1	NC	70
26.7	<i>Pinus patula</i>	7/PP/LAVA	Pinus	LAVA	1.75	C	71
26.8	<i>Pinus patula</i>	8/PP/LAVA	Pinus	LAVA	1.25	NC	72
26.9	<i>Pinus patula</i>	9/PP/BOKH	Pinus	LOLEYGAON	2	C	73
27	<i>Populus gamblei</i>	1/PG/CPLOT	Poplar	KALIMPONG	2	NC	74

*C = may be considered as a seed stand/SPA; NC = may not be considered as a seed stand/SPA

Table 4: Status of seed stands after evaluation in Silviculture North (Hills) division cont...

Sl No.	Species	Seed Stand No	Local Name	Range	Area (ha)	Status*	Page No.
28.1	<i>Prunus napaulensis.</i>	1/PN/DAMS	Arupatey	PANKHASARI	1	C	75
28.2	<i>Prunus napaulensis</i>	2/PN/DAMS	Arupatey	PANKHASARI	1	NC	76
29.1	<i>Quercus lamellosa</i>	1/QL/LAVA	Buk	LAVA	1	NC	77
29.2	<i>Quercus lamellosa</i>	2/QL/PAKT	Buk	LAVA	1	NC	78
29.3	<i>Quercus lamellosa</i>	3/QL/PAKT	Buk	LAVA	1	NC	76
29.4	<i>Quercus lamellosa</i>	4/QL/RISO	Buk	SENCHAL EAST	1	C	79
29.5	<i>Quercus lamellosa</i>	5/QL/RISO	Buk	SENCHAL EAST	2	NC	80
30.1	<i>Quercus lineata</i>	1/QL/RISO	Phalant	SENCHAL EAST	1	C	81
30.2	<i>Quercus lineata</i>	2/QL/RISO	Phalant	SENCHAL WEST	5	NC	82
31	<i>Quercus pachyphylla</i>	1/QP/CHAT	BanteyKatus	SENCHAL WEST	3	C	83
32.1	<i>Schimawallichii</i>	2/SW/MAL	Chillowni	NEORA	0.5	NC	84
32.2	<i>Schimawallichii</i>	1/SW/PAREN	Chillowni	JALDHAKA	0.5	C	85
33.1	<i>Shorearobusta</i>	1/SR/SANG	Sal	KALIMPONG	0.75	NC	86
33.2	<i>Shorearobusta</i>	2/SR/KUND	Sal	SEVOKE	1	C	87
33.3	<i>Shorearobusta</i>	3/SR/MONG	Sal	CHEL	2	C	88
33.4	<i>Shorearobusta</i>	4/SR/MONG	Sal	CHEL	1	NC	89
33.5	<i>Shorearobusta</i>	5/SR/SANG	Sal	KALIMPONG	4.5	C	90
34.1	<i>Tectona grandis</i>	1/TG/SANG	Teak	KALIMPONG	3	NC	91
34.2	<i>Tectona grandis.</i>	2/TG/BAMON	Teak	BAMONPOKHRI	4.6	C	92
34.3	<i>Tectona grandis</i>	3/TG/BAMON	Teak	BAMONPOKHRI	4.6	C	93
34.4	<i>Tectona grandis</i>	4/TG/KHUM	Teak	JALDHAKA	0.4	NC	94
34.5	<i>Tectona grandis</i>	5/TG/KHUM	Teak	JALDHAKA	1	NC	95
34.6	<i>Tectona grandis</i>	6/TG/KHUM	Teak	JALDHAKA	1	NC	96
35.1	<i>Terminalia crenulata</i>	1/TT/CHAM	Pacasaj	SUKNA	1	NC	97
35.2	<i>Terminalia crenulata</i>	2/TT/CHUR	Pacasaj	CHEL	0.2	NC	98
35.3	<i>Terminalia crenulata</i>	3/TT/KHUM	Pacasaj	JALDHAKA	0.5	NC	99
36.1	<i>Terminalia myriocarpa</i>	1/TM/LOPC	Panisaj	TAKDAH	0.5	C	100
36.2	<i>Terminalia myriocarpa</i>	2/TM/DULA	Panisaj	KALIMPONG	0.7	NC	101
36.3	<i>Terminalia myriocarpa</i>	3/TM/KUND	Panisaj	SEVOKE	1	NC	102
36.4	<i>Terminalia myriocarpa</i>	4/TM/MAL	Panisaj	NEORA	1	NC	103
36.5	<i>Terminalia myriocarpa</i>	5/TM/CHUR	Panisaj	CHEL	1	NC	104
37.1	<i>Tsuga brunoniana</i>	1/TD/RAMA	Hemlock	RIMBICK	3.4	C	105
37.2	<i>Tsuga brunoniana</i>	2/TD/BATA	Hemlock	MANAYBHANJAN	0.5	C	106
37.3	<i>Tsuga brunoniana</i>	3/TD/PANK	Hemlock	PANKHASARI	0.22	NC	76
38.1	<i>Xyliadolabriformis</i>	1/XD/PANC	Lohakath	SUKNA	3	C	107
38.2	<i>Xyliadolabriformis</i>	2/XD/KYAN	Lohakath	SUKNA	1	C	108

*C = may be considered as a seed stand/SPA; NC = may not be considered as a seed stand/SPA

Sl.No – 1.1 Seed Stand No. : 1/AD/SRIMBSpecies: *Abies densa*Griff.

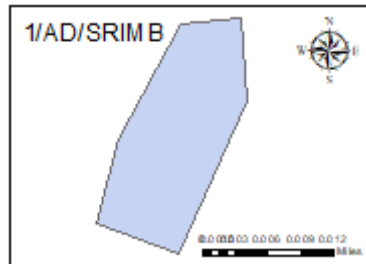
Local name: Gobresallah

Range	Rimbick	Location	South Rimbick-2
Area	0.25 ha	Total Number of trees	35
GBH	1.21m±0.26	Height	22.59m±1.99

Status of Isolation zone: Isolation zone is maintained.

Accessibility of the area for seed collection: It is easy to collect from the seed stands.

No. of trees recommended for culling – 15 (mostly top broken & disease attacked)



Latitudes (N)	Longitudes (E)
27.06.458 N	88.04.294 E
27.06.442 N	88.04.278 E
27.06.431 N	88.04.275 E
27.06.427 N	88.04.286 E
27.06.447 N	88.04.295 E



Remarks:The area of the stand is very small for considering it as Seed Stand or Seed Production Area. However, the species has been considered as priority species by the SFD and the requirement of their seeds are restricted, after culling of poor trees in this stand, it may be considered as Seed Stand. However, the seed quality expected to be intermediate.

SI.No – 1.2

Seed Stand No. : 2/AD/PANK

Species: *Abies densa*Griff.

Local name: Godresallah

Range	Rimbick	Location	Pankhasari-3
Area	1 ha	Total Number of trees	146
GBH	0.91m±0.1	Height	28.9m±1.73

Status of Isolation

zone: Isolation zone was maintained in this seed stand.

Accessibility of the area for seed collection: It is easy to collect from the seed stands. The condition of the seed stand is average. Some trees are being damaged due to storm named 'Aila'.

No. of trees recommended for culling – 20



Remarks: It may be considered as Seed Stand.

SI.No.2.1

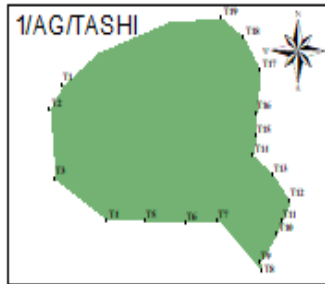
Seed Stand No: - 1/AG/TASHI

Species: - *Ailanthus grandis* Prain Local name: -Gokul

Range	Kalimpong	Location	Tashiding-1
Area	2.5 ha	Total No. of trees	104
GBH	1.8m±0.17	Height	24.4m±0.68

Status of Isolation zone:

Isolation zone is created in the seed stand. Surrounding the seed stand different species are present: at the east side *Tectona grandis*, south side Chilauni, west side *T. grandis*, Seemal, North side *T. grandis*, and *Ailanthus grandis*.



Latitudes (N)	Longitudes (E)
27.03.581N	88.25.997 E
27.03.548N	88.25.994 E
27.03.533 N	88.26.032 E
27.03.515 N	88.26.081 E
27.03.533 N	88.26.089 E
27.03.556 N	88.26.077 E
27.03.571 N	88.26.078 E
27.03.586 N	88.26.080 E
27.03.598 N	88.26.073 E

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

No. of trees recommended for culling-10.

Regeneration status: Nil



Remarks: It may be considered as Seed Stand.

SI.No.2.2

Species: - *Ailanthus grandis* Prain

Seed Stand No: - 2/AG/MAL

Local name: -Gokul

Range	Neora	Location	Mal-8
Area	2.0 ha	Total No. of trees	64 as per record, but at present 35
GBH	1.92m±0.31	Height	21.86m±0.83

Status of Isolation zone: Within this seed stand various types of species are present such as Garjan, Nageshwar, Behra, Toon, Satisal, Kaula, etc. These are all young plantation.

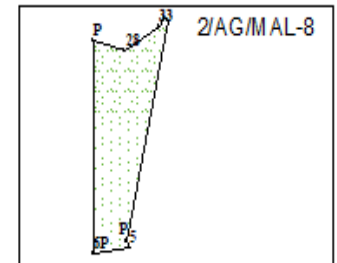
Accessibility of the area for seed collection: Inside the seed stand, electric high voltage pole is erected.

Latitudes

26.93.201 N
26.93.203 N
26.93.194 N
26.93.181 N
26.93.171 N
26.92.981 N
26.92.974 N
26.92.968 N

Longitudes

88.69.873 E
88.69.869 E
88.69.861 E
88.69.776 E
88.69.816 E
88.69.816 E
88.69.819 E
88.69.773 E



Remarks: It may not be considered as seed stand of Gokul, as tree density (18 trees/ha) of the species is very poor and these trees are distributed very sparsely. Area is occupied by young plantation of other species.

Sl.No.2.3**Seed Stand No.3/AG/MAL**Species: *Ailanthus grandis* Prain

Local name: Gokul

Range	Neora	Location	MAL-12
Area	1 hectare	Total No. of trees	120 trees
GBH	1.64m±0.29	Height	23.50m±1.44

Status of Isolation zone: No isolation zone. So many trees of same species and same age group are existed along the two sides of the stand. Therefore, total area may be converted into seed stand instead of only the demarcated 1 ha area. Then culling of inferior trees in additional area should be done.

Accessibility of the area for seed collection: Accessible, near Beat office and road side.

No. of trees recommended for culling- 7 trees were marked as 'X'. Inside the plantation lower girth trees were not numerated. All these trees should be discarded.

Latitudes	Longitudes
26.93594 N	88.69974 E
26.96907 N	88.69935 E
26.93574 N	88.69932 E
26.96909 N	88.69954 E
26.93585 N	88.69952 E
26.93603 N	88.69937 E
26.93613 N	88.69935 E
26.93618 N	88.69935 E
26.93626 N	88.69934 E
26.93641 N	88.69933 E

Remarks: As such 1 ha demarcated area should not be considered as Seed Stand. However, plantation of same species across the road may be included followed by culling of inferior trees to convert the whole area as seed stand.



1 ha seed stand

Plantation of same species

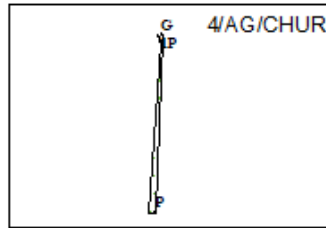
SI.No.2.4

Seed Stand No.4/AG/CHUR

Species: *Ailanthus grandis* Prain Local name:Gokul

Range	Chel	Location	Churanti – 1
Area	1 hectare	Total No. of trees	21
GBH	2.04m±0.13	Height	24.58m±0.58

Age of plantation is 88 years. All trees are in very poor condition. After culling very few trees will remain which will create inbreeding problem in next progeny.



Latitudes	Longitudes
26.89458 N	88.56931 E
26.89526 N	88.56957 E
26.89511 N	88.56921 E
26.87764 N	88.56879 E



Remarks:The stand may not be considered as Seed Stand.

Sl.No – 3.1

Seed Stand No. : 1/AN/SIMK

Species: *Alnus nepalensis*D.Don

Local name: Utis

Range	Senchel East	Location	Simkona
Area	1.50 ha	Total No of trees	62
GBH	1.53m±0.2	Height	22.06m±1.1

Status of Isolation

zone: Isolation zone is maintained in this seed stand.

**Accessibility of the area for seed**

collection: Seed can easily be collected from the seed stand.

Regeneration status:
Zero

Latitudes (N)	Longitudes (E)
26.59.891 N	88.18.266 E
26.59.310 N	88.18.246 E
26.59.921 N	88.18.250 E
26.59.887 N	88.18.215 E



Remarks: It may be considered as Seed Stand.



Sl.No.3.2**Seed Stand No.2/AN/LOPC**Species: *Alnus nepalensis* D. Don

Local name: Utis

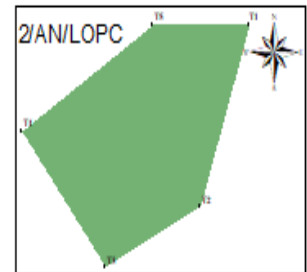
Range	Takdah	Location	Lopchu – 2
Area	0.20 ha	Total No. of trees	11 as per record, but now only 7
GBH	2.3m±0.4	Height	22.8m±1.0

Status of Isolation zone:

Isolation zone is created in the seed stand. Around the seed stand zone different species is present along the four sides of it.

Status of trees: In this seed stand, only seven trees are present, among them only three trees are in good condition.

Latitudes	Longitudes
27.03.714 N	88.21.365 E
27.03.702 N	88.21.361 E
27.03.698 N	88.21.353 E
27.03.707 N	88.21.346 E
27.03.714 N	88.21.357 E



Remarks: It should not be considered as a seed stand.

Sl.No.3.3**Seed Stand No.3/AN/MAYO**Species: *Alnus nepalensis* D. Don

Local name: Utis

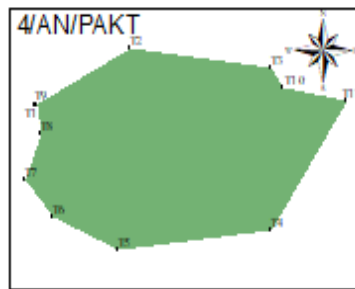
Range	Lolegaon	Location	Mayong
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Already discarded by the Department.**Sl.No. 3.4****Seed Stand No: - 4/AN/PAKT**Species: -*Alnus nepalensis* D. Don

Local name: Utis

Range	Lava	Location	Paktham-1
Area	3.5 ha	Total No. of trees	155
GBH	1.3m±0.2	Height	17.1m±1.1

Status of Isolation zone: No Isolation zone is created in the seed stand. At the east sides of the seed stand trees of same sp. i.e., Utis are present. At south side Dhupi plants & west side Titechamp & Sour plants are present.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

No. of trees recommended for culling- 14 (marked with aluminum tag) Regeneration status: Nil



Remarks: It should be considered as Seed Stand. However, poor trees of same species at outside (east side of stand) should be culled out.

SI.No.3.5

Seed Stand No: - 5/AN/RISUM

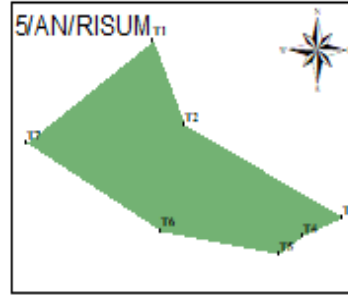
Species: -*Alnus nepalensis*D.Don Local name:Utis

Range	Pankhasari	Location	Risum-4
Area	2 ha	Total No. of trees	400
GBH	2.5m±0.2	Height	25.1m±1.6

Status of Isolation zone: No isolation zone is created in the seed stand. Along the east & west sides of the seed stand trees of same species are present. The seed stand is the pure plot, no other plants can be seen inside the stand.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

No. of trees recommended for culling-68



Latitudes	Longitudes
27.06.332 N	88.35.920 E
27.06.304 N	88.35.932 E
27.06.273 N	88.35.992 E
27.06.267 N	88.35.977 E
27.06.261 N	88.35.968 E
27.06.269 N	88.35.923 E
27.06.298 N	88.35.872 E

Regeneration status: Nil



Remarks: It may be considered as a Seed Stand after creation of buffer zone in outside of the stand. Culling of inferior trees at both inside and outside of stand is very much required.

Sl.No – 4 Seed Stand No. : 1/AC/MALSpecies: *Anthocephalus cadamba* (Roxb.)

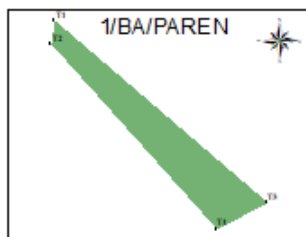
Local name	Kadam
Range	Neora
Area	0.50 ha
Location	Mal-7
Total No of trees	30 in report but only a single tree was found during the visit.

**Remarks:** It should be discarded as a seed stand.**Sl.No –5.1 Seed Stand No. : 1/BA/PAREN**Species: *Betula alnoides* BuchHam. Local name: Sour

Range	Jaldhaka	Location	Paren-2
Area	1 ha	Total No. of trees	31
GBH	1.73m±0.26	Height	23.58m±0.56

Status of Isolation zone: Isolation zone is created in the seed stand.**Accessibility of the area for seed collection:** Accessible..**Tree condition:** The tree condition is good. Next to the seed stand 1/SW/PAREN is present. Along another two sides mixed plantation is there.

Latitudes	Longitudes
27.03.359 N	88.51.894 E
27.03.352 N	88.51.893 E
27.03.304 N	88.51.958 E
27.03.296 N	88.51.943 E

**Remarks:** Low density of species is observed, but if we discard it, no seed stand of this species will be available, hence it may be considered.

Sl.No.5.2

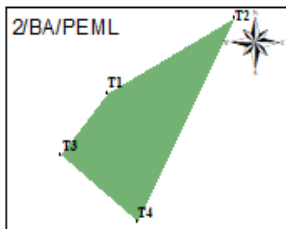
SeedStand No: - 2/BA/PAML

Species: -*Betula alnoides*BuchHam. Local name: Sour

Range	Loleygaon	Location	Pemling-1
Area	1.50ha	Total No. of trees	54
GBH	1.3m±0.1	Height	22.7m±0.5

Status of Isolation zone: No Isolation zone is created in the seed stand. At the North sides of the seed stand *Sour* plants are present, South side & West side mixed plantation is there, & at the east side Dhupi plantation is there.

Accessibility of the area for seed collection: To reach to the stand is difficult. The staff of Forest department could not trace out the boundaries of seed stand. The stand is not maintained at all. The area is highly affected by leeches.



Latitudes	Longitudes
27.00.609 N	88.33.899 E
27.00.626 N	88.33.929 E
27.00.595 N	88.33.888 E
27.00.580 N	88.33.906 E

Remarks: It may not be considered as a seed stand.

Sl.No. 6

Seed Stand No. : 1/BC/NUMB

Species: *Betulacylindrostachya* Wall

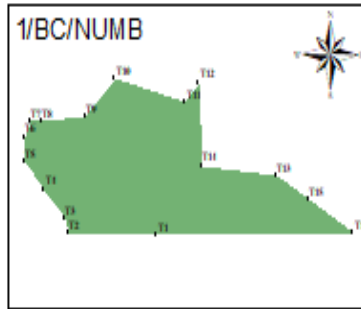
Local name: Sour

Range	Sevoke	Location	Numbung
Area	3.50 ha	Total No. of trees	120
GBH	2.6m±0.43	Height	34.7m±2.38

Status of Isolation zone:

Isolation zone is created in the seed stand. Along the four sides of the seed stand Chilauni plants are there.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes	Longitudes
26.54.798 N	88.24.684 E
26.54.799 N	88.24.623 E
26.54.823 N	88.24.607 E
26.54.852 N	88.24.593 E
26.54.863 N	88.24.635 E
26.54.884 N	88.24.655 E
26.54.830 N	88.24.765 E
26.54.836 N	88.24.714 E
26.54.817 N	88.24.787 E
26.54.799 N	88.24.818 E

No. of trees recommended for culling – 10 (damaged by cyclone) Regeneration Status – Nil.



Remarks: Trees are about 100 years old. Density is low. Still it may be considered as Seed Stand, as *Betula* sp. is priority sp. and it is the single stand of *Betula cylindrostachya*.

SI.No – 7.1

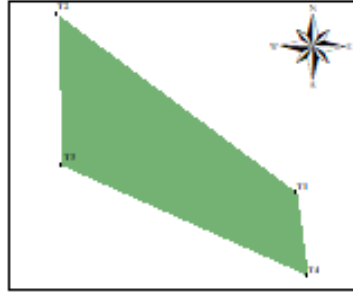
Seed Stand No. : 1/BC/CHAM

Species: *Bombax ceiba* L. Local name: Simul

Range	Sukna	Location	Chamta
Area	1 ha	Total No. of trees	15 but only 2 – 3 trees are in good condition

Status of Isolation zone: No isolation zone is created in the seed stand.

Accessibility of the area for seed collection: Seed can't be collected easily from the seed stand because mostly 80 % trees are diseased and top broken.



Latitudes	Longitudes
26.46.808 N	88.21.928 E
26.46.731 N	88.21.935 E
26.46.699 N	88.21.970 E
26.46.728 N	88.22.020 E



Remarks: The seed stand may be abandoned because 80% trees top broken and diseased attack in it. In this seed stand 15 trees are present among them 2-3 plants are in good condition. **The same area is also demarcated as 1/TT/CHAMP.**

Sl.No – 7.2

Seed Stand No. : 2/BC/MAL

Species: *Bombax ceiba* L. Local name: Simul

Range	NEORA	Location	MAL-9
Area		Total No. of trees	

Remarks: Does not exist.

Sl.No – 7.3

Seed Stand No. : 3/BC/KHUM

Species: *Bombax ceiba* L. Local name: Simul

Range	NEORA	Location	MAL-9
Area		Total No. of trees	

Remarks: Does not exist.

Sl.No.8

SeedStandNo.1/BP/PUBO

Species: *Bucklandiapopulnea* R.Br. Local name: Pipli

Range	Takdah	Location	Pubong – 1
Area	1ha	Total No. of trees	37
GBH	1.8m±0.35	Height	21.4m±1.01

Status of Isolation zone:No Isolation zone is created in the seed stand. Trees of same species are present along the four sides of this seed stand.

Accessibility of the area for seed collection: Seed can't be collected easily from the seed stand because it is at high elevation and highly affected by leaches in the seed stand zone.

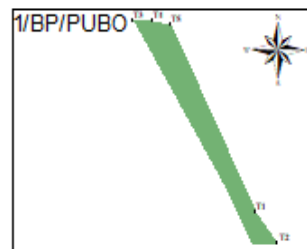




SeedStand No.1/BP/PUBO

Remarks: At present condition it cannot be considered as Seed Stand. However, looking of the fact that the department has no other seed stand and species is important, it can be retained. Surrounding area containing the same species should be included and then core and buffer zone must be created. All inferior trees need removal.

Latitudes	Longitudes
27.01.488 N	88.21.075 E
27.01.317 N	88.21.208 E
27.02.546 N	88.20.349 E
27.02.547 N	88.20.469 E
27.02.522 N	88.20.575 E



SI.No – 9.1

Seed Stand No. : 1/CH/LOPC

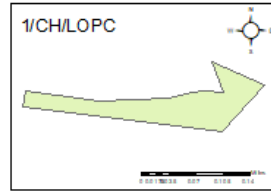
Species: *Castanopsis hystrix* A.DC

Local name: Patley katush

Range	Takdah	Location	Lopchu-3
Area	4 ha	Total Number of trees	126 trees as per visit (in record 267).
GBH	1.18m±0.5	Height	16.3m±1.07

Status of Isolation zone: Isolation zone was maintained in this seed stand. Accessibility of the area for seed collection: It is easy to collect from the seed stands the condition of the seed stand is good.

No. of trees recommended for culling – 35



Regeneration status: Zero

Latitudes	Longitudes
27.03.459 N	88.21.359 E
27.03.474 N	88.21.632 E
27.03.483 N	88.21.664 E
27.03.487 N	88.21.697 E
27.03.484 N	88.21.734 E
27.03.412 N	88.21.733 E
27.03.499 N	88.21.811 E
27.03.542 N	88.21.712 E



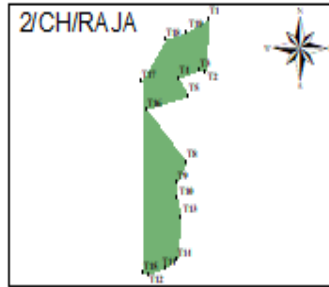
Remarks: It may be considered as a seed stand.

Sl.No.9.2**Seed Stand No.2/CH/RAJA**Species: *Castanopsis hystrix* A.DC Local name: Patley katush

Range	Dilaram	Location	Rajahatta
Area	7 ha	Total No. of trees	200
GBH	2.0m±0.25	Height	19.84m±2.06

Status of Isolation zone: No Isolation zone is created. Same species are present in outside of stand. *Dhupitrees* are present along four sides of the seed stand. Along the south side of the seed stand *Kharne* trees are present but small in number.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes	Longitudes
26.56.890 N	88.17.825 E
26.56.846 N	88.17.815 E
26.56.840 N	88.17.795 E
26.57.780 N	88.17.799 E
26.56.769 N	88.17.802 E
26.56.837 N	88.17.757 E
26.56.879 N	88.17.803 E



Remarks: Trees are very old. Inside unmarked trees also present (may be >50) small tree girth, may be regenerated. Same species present in outside of stand also. Hence, it may not be considered as SS/SPA.

Sl. No. 9.3 SeedSpecies: - *Castanopsis hystrix* A. DC.

Stand Number: - 3/CH/TIGE

Local name: - Patley katush

Range	Senchal	Location	Tiger Hill
Area	5.00 ha	Total Number of trees	

Remarks: Already discarded by the department.**Sl.No – 10.1**Species: *Chukrasia tabularis* A. Juss.**Seed Stand No. : 1/CT/MOHO**

Local name: Chikrassi

Range	Sukna	Location	Mohorgong
Area	1 ha	Total No. of trees	45
GBH	2.27m±0.68	Height	19.16m±1.93

Status of Isolation zone: Isolation zone is created in the seed stand.**Accessibility of the area for seed collection:** Seed can be collected easily from the seed stand.

Regeneration Status – 10

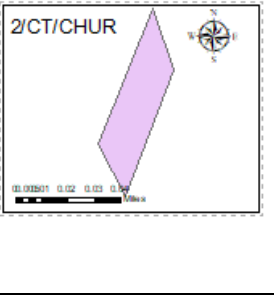
Latitudes (N)	Longitudes (E)
26.47.859 N	88.22.317 E
26.47.824 N	88.22.212 E
26.47.802 N	88.22.197 E
26.47.723 N	88.22.038 E

**Remarks:** All trees are very old (around 100 years). Tree density is very low. Inside the seed stand, pacca road has been constructed. The patch may not be considered as SS/SPA. However, few good trees may be selected as seed trees.

Sl. No – 10.2Species: *Chukrasia tabularis* A. Juss.**Seed Stand No. : 2/CT/CHUR**

Local name: Chikrassi

Range	Senchel West	Location	Chattakpur-2
Area	0.20 ha	Total Number of trees	8
GBH	2.4 m±0.1	Height	16.12m±1.1

<p>Status of Isolation zone: Isolation zone was maintained in this seed stand.</p> <p>Accessibility of the area for seed collection: It is easy to collect from the seed stand.</p>	
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Latitudes (N)	Longitudes (E)
26.53.504 N	88.34.186 E
26.53.532 N	88.34.171 E
26.53.573 N	88.34.213 E
26.53.607 N	88.34.201 E

Remarks: New Road construction (Highway) going on within 50m distance. Very few trees (only 8) are existed, hence it may not be considered as seed stand.



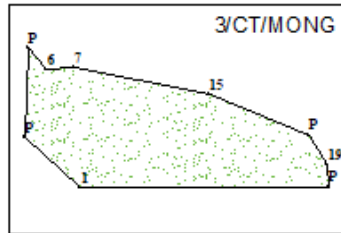
Sl.No.10.3Species: *Chukrasia tabularis* A.Juss.

Seed Stand No. 3/CT/MONG

Local name: Chikrassi

Range	CHEL	Location	Mong-pong-2
Area	0.5 hectare	Total No. of trees	30
GBH	1.42m±0.11	Height	21.13m±0.80

Status of stand: It is not a pure patch. The stand is mixed with Sal, Teak, Chillowni, Champ and other trees.



Accessibility of the area for seed collection: Accessible.

No. of trees recommended for culling- 10

Regeneration status: Zero

Latitudes	Longitudes
26.87273 N	88.51639 E
26.87329 N	88.51636 E
26.87338 N	88.51615 E
26.87316 N	88.51699 E
26.87298 N	88.51746 E
26.87284 N	88.51754 E
26.87274 N	88.51755 E



Remarks: Tree density of Chikrassii is low, after culling of inferior trees it will be very low. That condition may reduce the quality of seeds. Hence, the patch may not be considered as SS/SPA. However, few good trees may be selected as seed trees.

Sl.No.11.2Species: *Cryptomeria japonica* D. Don**Seed Stand No.2/CJ/MAHA**

Local name: Dhupi

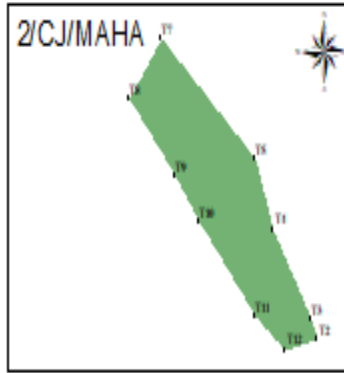
Range	Bagora	Location	Mahaldaram
Area	1ha	Total No. of trees	114 marked trees, several unmarked trees
GBH	1.8m±0.52	Height	31.8m±0.90

Status of Isolation zone:No isolation zone is created. At the two sides of stand, Dhupitrees were present at large number.

Condition:In this seed stand about 200 - 250 trees are present but 114 trees are marked. So many unmarked trees are existed in it, which are in poor condition.

Accessibility: Seed can be collected easily from the seed stand.

No. of trees recommended for culling - In the stand bad condition trees were not marked but it existed in the seed stand zone. These trees (around 100) may be recommended for culling.

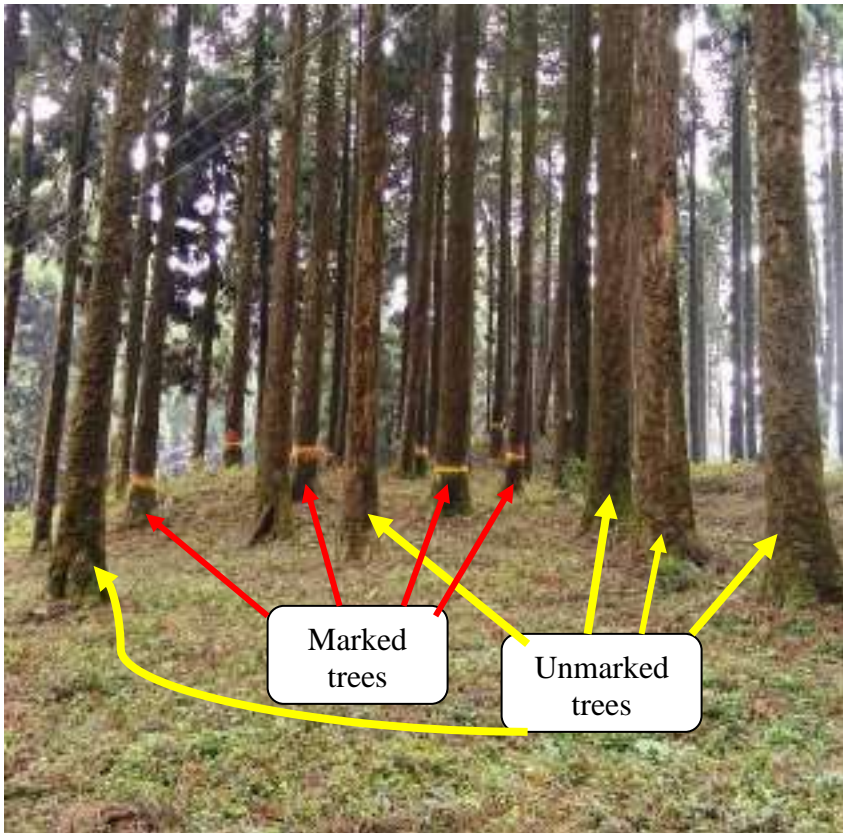


Latitudes	Longitudes
26.54.330 N	88.18.773 E
26.56.341 N	88.18.773 E
26.56.389 N	88.18.749 E
26.58.405 N	88.18.740 E
26.56.407 N	88.18.695 E
26.56.384 N	88.18.715 E
26.56.370 N	88.18.725 E
26.56.342 N	88.18.749 E
26.56.332 N	88.18.762 E



Seed
Stand

Outside
same
species



Remarks: It may not be considered as seed stand.

SI.No.11.3

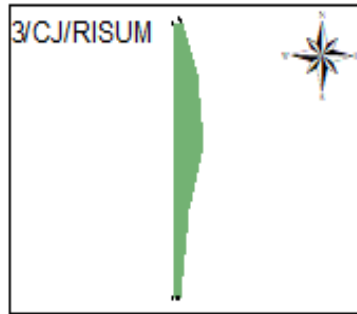
Seed Stand No: -3/CJ/RISHUM

Species: -*Cryptomeria japonica* D.Don Local name: Dhupi

Range	Pankhasari	Location	Risum-1
Area	1.6 ha	Total No. of trees	116
GBH	1.8m±0.3	Height	25.9m±1.4

Status of Isolation zone: No isolation zone is created in the seed stand. At the east sides of the seed stand *Dhupi* plants are present, South, North, West side settlement (village) is there.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes	Longitudes
27.05.879 N	88.36.833 E
27.05.862 N	88.36.837 E
27.05.832 N	88.36.779 E
27.03.812 N	88.36.776 E
27.03.817 N	88.36.810 E
27.03.821 N	88.36.824 E



Remarks: It should be abandoned because:

- i) No isolation zone, within 20m same species plantation is there.
- ii) Some trees of seed stand have been marked by other department for developmental work.

SI.No.12

Species: *Cupressus cashmeriana* Royle

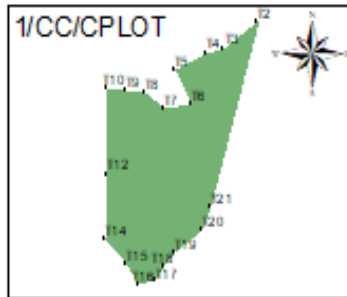
Seed Stand No: -1/CC/CPOT

Local name: K. Dhupi

Range	Kalimpong	Location	C-Plot
Area	2 ha	Total No. of trees	134
GBH	1.6m±0.2	Height	22.9m±1.1

Status of Isolation zone: No isolation zone is created in the seed stand. At the three sides of the seed stand K. Dhupitrees are present.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. But most of the plants are not in good condition.



Latitudes	Longitudes
27.03.156N	88.27.388 E
27.03.048 N	88.27.452 E
27.03.029 N	88.27.405 E
27.02.992 N	88.27.396 E
27.02.963 N	88.27.395 E
27.02.943 N	88.27.411 E
27.02.951 N	88.27.423 E
27.02.017 N	88.27.458 E

No. of trees recommended for culling- 23 (inside the stand)



Remarks: At present condition it may not be considered as seed stand. However, considering that it is the single stand for the species following steps may be taken up to convert into seed stand. i) Inside this seed stand, poor trees need to be culled out. ii) In addition, buffer zone may be created surrounding the areas by culling poor trees outside the stand.

Sl.No.13**Seed Stand No:** -1/CL/CHUM**Species:** -*Cupressus lusitanica* Mill. **Local name:** Dhupi

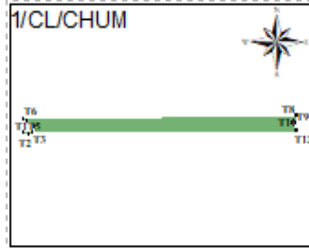
Range	Loleygaon	Location	Chumong
Area	1ha	Total No. of trees	464 as per record, but 174 are marked and rest trees are also existed there.
GBH	1.7m±0.5	Height	23.1m±0.8

Status of Isolation zone:

No Isolation zone is created in the seed stand. Along the seed stand Dhupi is present in all direction of the seed stand.

Accessibility of the area for seed collection:

Seed can be collected easily from the seed stand.



Latitudes	Longitudes
27.04.191 N	88.37.006 E
27.04.193 N	88.37.039 E
27.04.210 N	88.37.046 E
27.04.228 N	88.37.022 E
27.04.250 N	88.37.991 E
27.04.246 N	88.37.985 E
27.04.223 N	88.37.985 E
27.04.220 N	88.37.972 E
27.04.200 N	88.37.988 E
27.04.194 N	88.37.996 E



Remarks: At present condition it may not be considered as seed stand. However, as it is one of the priority species by the State Department (mentioned in MOU) and it is the single stand for the species, following steps may be taken up to convert it as Seed Stand
 i) Inside this seed stand, only good trees are marked. But there are several poor trees are also existed inside the stand. All these poor trees need to be culled out. ii) In addition, buffer zone may be created surrounding the areas.

SI.No.15.1

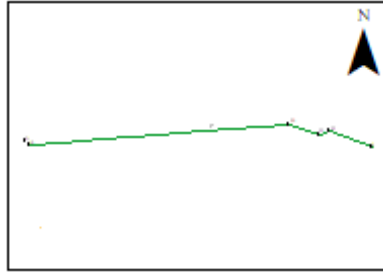
Seed Stand No.1/DT/KYAN

Species:*Dipterocarpus terbinatuas*Localname:Garjan

Range	Sukna	Location	Kyananuka
Area	0.50 hectare	Total No. of trees	32
GBH	2.12m±0.18	Height	24.83m±0.25

Status of Isolation zone:It is not like a stand. Trees are existed on road side.

Condition: Trees are less in number. Trees are existed in a single row.



Latitudes	Longitudes
26.79538 N	88.35784 E
26.79524 N	88.35831 E
26.79528 N	88.35848 E
26.79519 N	88.35371 E
26.79512 N	88.35376 E
26.79504 N	88.35914 E



Remarks: It may be abandoned as a seed stand.

Sl.No – 15.2

Seed Stand No. : 2/DT/KOKL

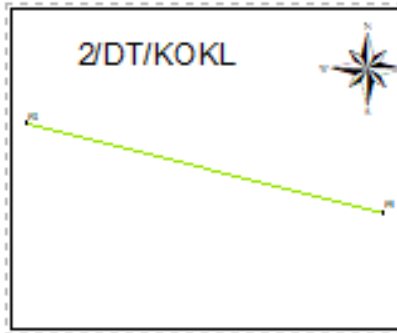
Species: *Dipterocarpus terbinatus*

Local name: Garjan

Range	Sukna	Location	Koklong
Area	1 ha	Total No. of trees	52
GBH	2.16m±0.30	Height	25.77m±2.21

Status of Isolation zone: Isolation zone is created in the seed stand

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes (N)	Longitudes (E)
26.47.702 N	88.21.596 E
26.47.752 N	88.21.395 E

Regeneration Status – 10



Remarks: It may not be considered as a seed stand. The trees are present in the seed stand is in a row.

Sl. No. 15.3

Seed Stand No.3/DT/SUKN

Species: *Dipterocarpus terbinatus*

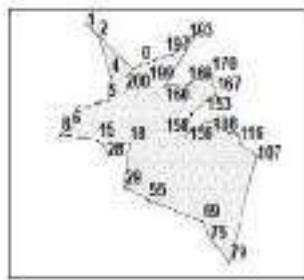
Local name: Garjan

Range	West Range	Location	Sukna-II
Area	1.50 hectare	Total No. of trees	202 trees
GBH	1.64m±0.29	Height	23.50m±1.44

Status of Isolation zone: Isolation zone is maintained in this seed stand.

Accessibility of the area for seed collection: It can easily be collected from the seed stand zone.

No. of trees recommended for culling-11



Latitudes (N)	Longitude(E)
26.47.43.11 N	88.21.28.24 E
26.47.42.86 N	88.21.29.93 E
26.47.43.00 N	88.21.30.27 E
26.47.42.67 N	88.21.30.35 E
26.47.42.43 N	88.21.31.55 E
26.47.42.11 N	88.21.32.91 E

Regeneration status: 15 (approx. 10 year old) and so many 1 yr old seedlings.



Remarks: It may be considered as a seed stand.

Sl.No.15.4

Species: *Dipterocarpus terbinatus*

Seed Stand No.4/DT/SUKN

Local name: Garjan

Range	West Range	Location	Sukna
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Area	1 hectare	Total No. of trees	164
GBH	1.26m±0.22	Height	23.73m±3.74

Status of Isolation zone:

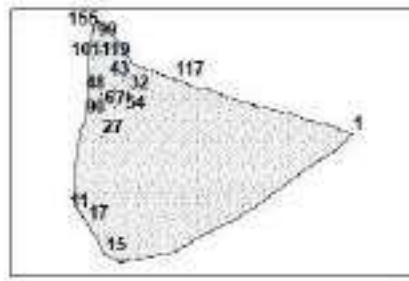
No isolation zone is maintained in the seed stand.

Accessibility: It can easily be collected from the seed stand but widely affected by elephants.

No. of trees recommended for culling-52

Regeneration status: 147 (GBH (0.53 m ±0.09); height (15.50 m ±2.45), n= 5)

Regeneration of seedlings (48.5 seedlings/ sq. m)



Latitudes	Longitudes
26.47.57.43 N	88.21.34.62 E
26.47.57.98 N	88.21.34.26 E
26.47.58.06 N	88.21.34.72 E
26.47.58.12 N	88.21.34.08 E
26.47.59.14 N	88.21.34.82 E
26.47.56.91 N	88.21.36.23 E
26.47.56.32 N	88.21.36.38 E
26.47.59.62 N	88.21.34.12 E
26.47.59.06 N	88.21.36.44 E



Remarks: It may be considered as a seed stand. However, seeds are to be collected from core zone.

Sl. No – 11.1

Seed Stand No. : 1/CJ/DUNG

Species: *Cryptomeria japonica* D. Don

Local name: Dhupi

Range	GhoomSimana	Location	Dundugia
Area	10.8 ha	Total Number of trees	780

Already discarded by the Department.

Sl.No – 14

Seed Stand No. : 1/DS/CHUR

Species:*Dalbergiasissoo*Roxb.

Local name: Sisoo

Range	Chel	Location	Churanti - 5
Area	1 ha	Total Number of trees	30

Seed stand does not exist.

Sl.No – 16.1

Seed Stand No. : 1/DI/SUMB

Species:*Duabanga indica*

Local name:Lampatey

Range	Badamtam	Location	Sumbong
Area	3 ha	Total Number of trees	presently seed stand is not existed.

Seed stand does not exist.

Sl.No.16.2

Species: - *Duabanga indica*

Seed Stand No: - 2/DI/BHAL

Local name: Lampatey

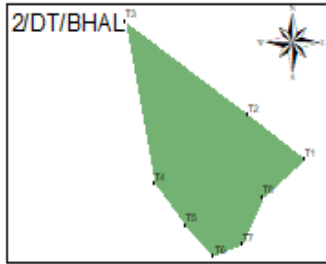
Range	Kalimpong	Location	Bhalukhop-3
Area	1ha	Total No. of trees	66
GBH	1.7m±0.2	Height	19.0m±1.9

Status of Isolation zone:

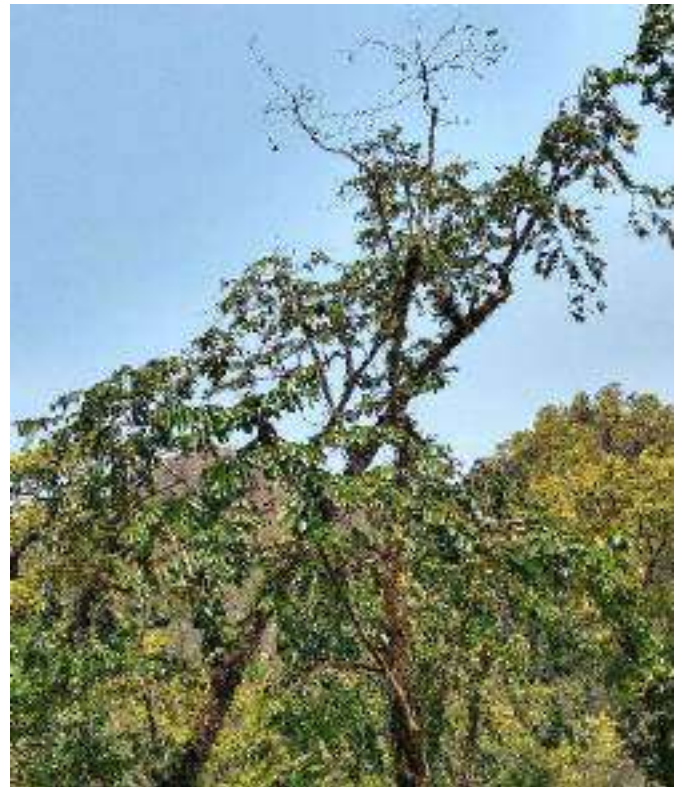
Isolation zone is created in the seed stand. Around the seed stand zone different species is present along the four sides of it. In the west side Kadam plants are present, south side teak pure plot is present, east side Maina, Chilauni, & Lali plants are present.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. Some trees are top-broken.

No. of trees recommended for culling- 8 (Tree No. 5, 6, 17, 38, 42, 48, 54 & 68)



Latitudes	Longitudes
27.07.311 N	88.29.612 E
27.07.325 N	88.29.592 E
27.07.355 N	88.29.549 E
27.07.303 N	88.29.559 E
27.07.290 N	88.29.570 E
27.07.280 N	88.29.580 E
27.07.284 N	88.29.590 E
27.07.299 N	88.29.597 E



Remarks: It may be considered as a Seed Stand/SPA.

Sl. No 16.3

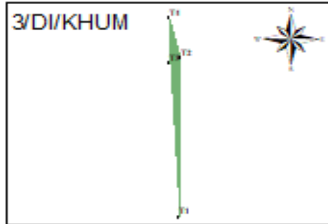
Species: *Duabanga indica*

Seed Stand No. : 3/DI/KHUM

Local name: Lampatey

Range	Jaldhaka	Location	Khumani – 6
Area	0.50 ha	Total No. of trees	15
GBH	2.40m±0.63	Height	22.70m±0.50

Status: Very few trees are existed. Empty spaces are being utilized for log storing.



Latitudes	Longitudes
26.58.12 N	88.51.400 E
26.58.48 N	88.51.406 E
26.58.47 N	88.51.382 E
26.58.57 N	88.51.382 E



Remarks:
It may be abandoned as a seed stand.

Species: - *Duabanga indica*

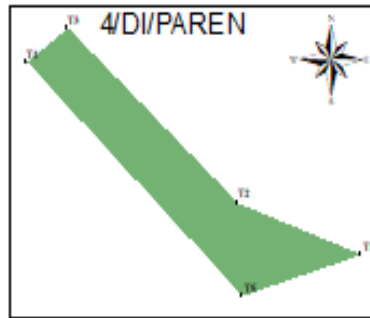
Local name: Lampatey

Range	Jaldhaka	Location	Paren – 8
Area	1ha	Total No. of trees	38
GBH	1.43m±0.23	Height	24.94m±0.73

Status of Isolation zone:

Isolation zone is created in the seed stand. The seed stand is surrounded by the mixed trees such as Panisaj, Chilauni. Along east side of the seed stand river is there.

Condition: The tree condition is not good, mostly trees are top broken or crooked.



Latitudes (N)	Longitudes (E)
27.03609N	88.51684E
27.03618N	88.5166E
27.03648N	88.51627E
27.03642N	88.51619E
27.03602N	88.51661E



Remarks: It may not be considered as a seed stand.

Sl. No. 17

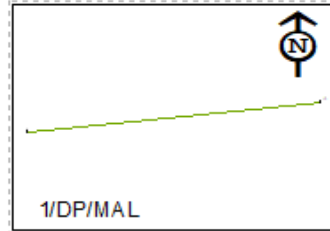
Seed Stand No.1/DP/MAL

Species: *Dysoxylum procerum* Hiern. Local name: Lasune

Range	Neora	Location	MAL-12
Area	0.5 hectare	Total No. of trees	24
GBH	1.46m±0.12	Height	24.12m±0.51

Status: Trees are sparsely spread throughout the seed stand.

Accessibility: Highly bushy area. Prone to wildlife attack.



Latitudes (N)	Longitudes (E)
26.93534 N	88.70987 E
26.93525 N	88.70876 E



Remarks: It may not be considered as a seed stand.

Sl. No – 18.1

Seed Stand No. : 1/ES/LOPC

Species: *Eucalyptus saligna*

Local name: Tarpin

Range	Takdah	Location	Lopchu-2
Area	1ha	Total Number of trees	76 trees as per visit (in record 91).
GBH	1.13m±0.19	Height	25.53m±1.37

Status of Isolation zone: Isolation zone was maintained in this seed stand. Around the seed stand four sides Dhupi is present.



Latitudes (N)	Longitudes (E)
27.03.233	88.22.464
27.03.233	88.22.464
27.03.198	88.22.443
27.03.183	88.22.456
27.03.201	88.22.484

Accessibility of the area for seed collection: It is easy to collect from the seed stand the condition of the seed stand is good but all thin trees are to be removed.

Regeneration status: Zero

No. of trees recommended for culling – 20



Remarks: It may be considered as a seed stand.

Sl. No. 18.2

Seed Stand No.2/ES/HUM

Species: *Eucalyptus saligna*

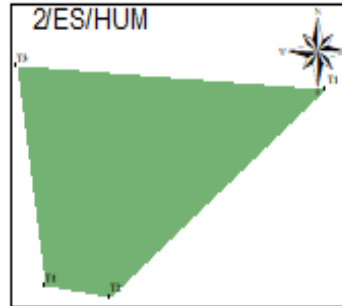
Local name: Tarpin

Range	Takdha	Location	Hum-2
Area	0.5 hectare	Total No. of trees	97 trees
GBH	1.5m±0.3	Height	24.4m±0.6

Status of Isolation zone:

Isolation zone is created in the seed stand. At the four sides of the seed stand mixed spps are present such as Gokul, Sal, Toon, Ladul, and Chilauni.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. Trees are not in proper condition. Mostly plants are top broken and disease attacked.



Latitudes (N)	Longitudes (E)
27.02.358	88.20.760
27.02.339	88.20.737
27.02.360	88.20.727
27.02.340	88.20.730



Remarks: It may not be considered as seed stand.

Sl.No.19.1

Seed Stand No.1/LF/KYAN

Species: *Lagerstroemia flosreginae* Retz. Local name: Jarul

Range	Sukna	Location	Kyananuka
Area	1 hectare	Total No. of trees	97 trees
GBH	1.73m±0.36	Height	19.97m±1.50

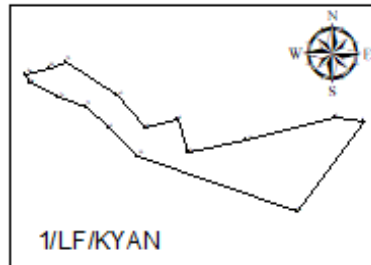
Status of Isolation zone:

Isolation zone is maintained in this seed stand.

Accessibility of the area for seed collection:

accessible.

Condition: Trees are >80 years old. Most of the trees are in poor condition.



Latitudes (N)	Longitudes (E)
26.78873 N	88.35912 E
26.78875 N	88.35894 E
26.78862 N	88.35833 E
26.78875 N	88.35786 E
26.78884 N	88.35724 E
26.78889 N	88.35706 E
26.78898 N	88.35686 E



Remarks: It may not be considered as seed stand.

Sl. No 19.2

Seed Stand No. : 2/LF/KHUM

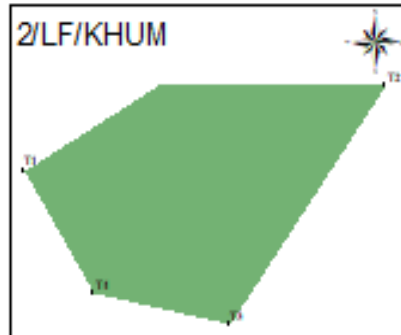
Species: *Lagerstroemia flosreginae* Retz. Local name: Jarul

Range	Jaldhaka	Location	Khumani – 6
Area	1ha	Total No. of trees	30
GBH	1.90m±0.34	Height	19.81m±1.21

Status of Isolation zone:

Isolation zone is created in the seed stand. The seed stand 3/DI/KHUM is just adjacent to it.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. The tree condition is good.



Latitudes (N)	Longitudes (E)
26.58.128	88.51.389
26.58.139	88.51.440
26.58.108	88.51.418
26.58.112	88.51.399



Sl. No. 19.3
Species: *Lagerstroemia flosreginae*



Seed Stand No. 2/LF/MAL
Local name: Jarul

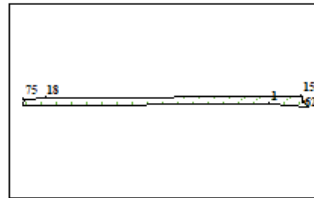
Remarks: It may be considered as seed stand. However, the seed quality expected to be intermediate.

Range	Neora	Location	MAL-13
Area	2hectare	Total No. of trees	173
GBH	1.64m±0.19	Height	20.93m±0.57

Status of Isolation zone:

No isolation zone is maintained in the seed stand.

Accessibility of the area for seed collection: Prone to elephant attack.



Latitudes	Longitudes
26.93514 N	88.71622 E
26.93502 N	88.71844 E
26.93528 N	88.71825 E
26.93549 N	88.70142 E
26.93565 N	88.71816 E
26.93554 N	88.70275 E



Remarks: At present condition it is not suitable for seed stand. As other two stands of this species have not been consider, it may be considered with following condition: All poor trees of this species in outside of the stand may be removed. Cleaning of bushes is required.

The seed stand code may be changed from 2/LH/MAL to 2/LF/MAL, as during physical verification we found Jarul instead of Benteak.

Sl.No.20
Species: *Lagerstroemia hypoleuca*

Seed Stand No.1/LH/KYAN
Local name: Benteak

Range	Sukna	Location	Kyananuka
Area	1 hectare	Total No. of trees	131
GBH	1.88m±0.39	Height	25.84m±2.33

Status of Isolation zone: Same species is planted at the east zone of the seed stand.(No isolation zone is created)



Accessibility of the area for seed collection: It can easily be collected from the seed stand

No. of trees recommended for culling- 5

Regeneration status:
20

Latitudes (N)	Longitudes (E)
26.79703	88.35419
26.79675	88.35397
26.79629	88.35365
26.79632	88.35338
26.79658	88.35318
26.79689	88.35313
26.79697	88.35325



Remarks: It maybe considered after removing inferior trees from the seed stand as well as from the outside adjacent plantation of same species.

Sl.No.21

Species: *Mesua ferrea* L.

Seed Stand No.1/MF/MAL

Local name: Nageshwar

Range	Neora	Location	MAL-13
Area	0.50 hectare	Total No. of trees	60
GBH	1.83m±0.37	Height	26.46m±1.31

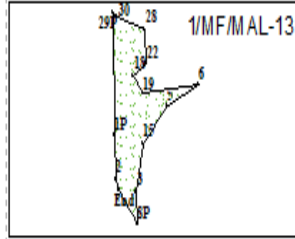
Status of Isolation zone:

Isolation zone is maintained in the seed stand.

Accessibility of the area for seed collection:

Seed cannot be collected from the seed stand because it is highly affected by elephants.

No. of trees recommended for culling-8



Regeneration status: Nil.

Latitudes	Longitudes
26.93589 N	88.71984 E
26.93624 N	88.71981 E
26.93597 N	88.71981 E
26.93642 N	88.72029 E
26.93656 N	88.72059 E
26.93619 N	88.72007 E
26.93661 N	88.71999 E
26.93691 N	88.72009 E



Remarks: It may be considered as seed stand.

Sl. No. 22.1

Species: -*Michelia cathcartii* Hk.f. &T

Seed Stand No: -1/MC/ALGA

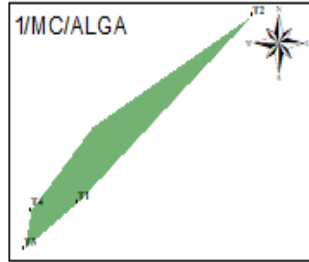
Local name: T. Champ

Range	Pankhasari	Location	Risum-4
Area	0.25 ha	Total No. of trees	20
GBH	2.7m±0.6	Height	15.8m±0.8

Status of Isolation zone:

Isolation zone is created in the seed stand. At the four sides of the seed stand *Machilus edulis*, Batrase, Chinde, Kharne, Tarsingspps are present. Inside the seed stand maximum trees of *Machilusedulis*(Lacpcheka wala) are found.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes	Longitudes
27.06.106 N	88.38.055 E
27.06.130 N	88.38.081 E
27.06.100 N	88.38.047 E
27.06.105 N	88.38.048 E



Remarks: It may not be considered as seed stand.

Sl. No. 22.2

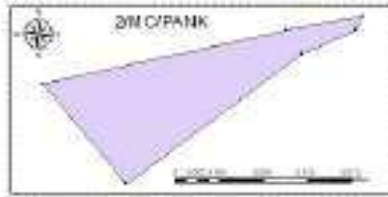
Species: *Michelia cathcartii* Hk.f. &T

Seed Stand No: -2/MC/PANK

Local name: T. Champ

Range	Pankhasari	Location	Pankhasari - 3
Area	0.25 ha	Total No. of trees	44 as per report, but at present 22.
GBH	2.25 m \pm 0.5	Height	17.75 m \pm 1.7

Status: Isolation maintained. Inside this stand, *Machilusedulis* (Lacpchek awala), Chinde, Kharne, malataspps are present.



Latitudes	Longitudes
27.0611 N	88.38042 E
27.0611 N	88.38042 E
27.0611 N	88.38042 E
27.06097 N	88.38053 E
27.06117 N	88.38074 E
27.06114N	88.38076 E
27.06119N	88.38084 E
27.06117N	88.38083 E

Accessibility of the area for seed collection:
Accessible.



Remarks: The area of the stand is very small for considering it as Seed Stand or SPA. However, the species has been considered as priority species by the SFD and the requirement of their seeds are restricted, after culling of poor trees in this stand, it may be considered as Seed Stand. However, the seed quality expected to be intermediate.

Sl. No. 23.1

Species: *Michelia champaca* L.

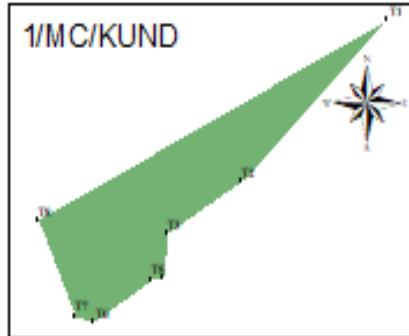
Seed Stand No. : 1/MC/KUND

Local name: Champ

Range	Sevoke	Location	Kundong
Area	0.20 ha	Total No. of trees	Probably 14
GBH	2.05m±0.21	Height	23.9m±1.19

Status of Isolation zone:

Isolation zone is created in the seed stand. Along the four sides of the seed stand *Shorearobusta* trees are there. The seed stand consists of Champ trees but it was seen that the maximum trees was of *Shorearobusta*.



Latitudes	Longitudes
26.57.511 N	88.25.990 E
26.57.458 N	88.25.936 E
26.57.441 N	88.25.909 E
26.57.426 N	88.25.903 E
26.57.412 N	88.25.882 E
26.57.414 N	88.25.875 E
26.57.445 N	88.25.861 E

Accessibility of the area for seed collection:

Seed can be collected easily from the seed stand.



Remarks: The stand has very less area and it contains more Sal trees than Champ. It may not be considered as seed stand.

Species: *Michelia champaca* L.

Local name: Champ

Range	Sukna	Location	Mohorgong
Area	0.70 ha	Total No. of trees	72
GBH	2.31m±0.34	Height	21.21m±0.90

Status of Isolation zone: In one side of this seed stand, 2/MC/HATI is situated which is in bad condition and may not be considered as seed stand. Therefore, it may also not be considered.



Latitudes	Longitudes
26.48.13 N	88.22.592 E
26.48.04 N	88.22.556 E
26.47.948 N	88.22.579 E
26.47.953 N	88.22.611 E

Accessibility of the area for seed collection: Area is highly affected by elephant.



Remarks: It may not be considered as a seed stand.

Sl. No – 23.3

Seed Stand No. : 2/MC/HATI

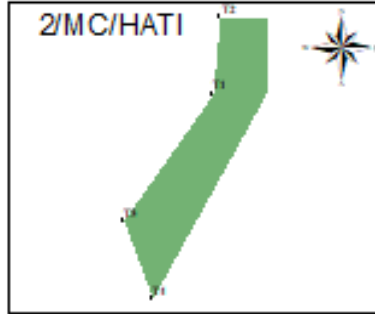
Species: *Michelia champaca* L.

Local name: Champ

Range	Sukna	Location	Mohorgong
Area	5.8 ha	Total No. of trees	103
GBH	2.14m±0.50	Height	21.28m±1.48

Status of Isolation zone:
Isolation zone is created in the seed stand

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand but highly affected by elephant.



Latitudes (N)	Longitudes (E)
26.48.32 N	88.22.598 E
26.48.39 N	88.22.605 E
26.48.20 N	88.22.516 E
26.48.13 N	88.22.543 E



Remarks: It may not be considered as a seed stand as trees are in sparse, existed with very less density of trees and most of trees are damaged.

Sl. No – 23.4

Species: *Michelia champaca* L.

Seed Stand No. : 3/MC/HATI

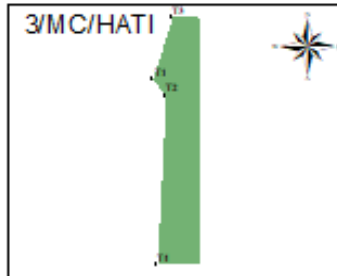
Local name: Champ

Range	Sukna	Location	Hatisur
Area	0.70 ha	Total No. of trees	around 74
GBH	2.11m±0.28	Height	21.49m±1.65

Status of Isolation zone:

Isolation zone is created in the seed stand.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes (N)	Longitudes (E)
26.48.74 N	88.22.360 E
26.48.69 N	88.22.396 E
26.48.94 N	88.22.417 E
26.48.154 N	88.22.373 E



Remarks: Tree condition is bad, damaged and forked. No maintenance was observed. It may not be considered as a seed stand.

Sl. No 23.5

Seed Stand No. : 5/MC/KHUM

Species: *Michelia champaca* L.

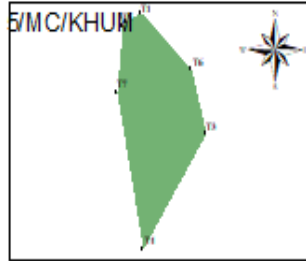
Local name: Champ

Range	Jaldhaka	Location	Khumani -6
Area	1 ha	Total No. of trees	30
GBH	2.01 m±0.56	Height	22.7m±2.50

Status of Isolation zone:

Isolation zone is created in the seed stand. In this seed stand *Tectona grandis* is more in number as compared to the existing seed stand of *Michelia champ.*

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes (N)	Longitudes (E)
26.58.134 N	88.51.540 E
26.58.131 N	88.51.534 E
26.58.091 N	88.51.567 E
26.58.050 N	88.51.541 E
26.58.130 N	88.51.532 E
26.58.114 N	88.51.561 E
26.58.106 N	88.51.530 E



Remarks: It may not be considered as a seed stand.

Sl. No 23.6

Species: *Michelia champaca* L.

Seed Stand No.: 6/MC/CHUR

Local name: Champ

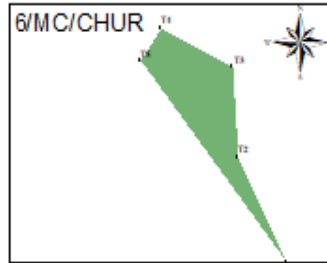
Range	Chel	Location	Churanti - 1
Area	0.50 ha	Total No. of trees	30
GBH	1.20 m \pm 0.51	Height	20.98m \pm 1.0

Status of Isolation zone:

Isolation zone is created in the seed stand.

Accessibility of the area

for seed collection: Seed can be collected easily from the seed stand. The tree condition is good. Along the seed stand Gokul, Maiyna & Lampate trees are also present.



Latitudes (N)	Longitudes (E)
26.53.446 N	88.34.498 E
26.53.484 N	88.34.479 E
26.53.516 N	88.34.477 E
26.53.530 N	88.34.449 E
26.53.518 N	88.34.441 E

Regeneration Status– Nil

No. of trees

recommended for culling

-5



Remarks: It may be considered as a seed stand.

Species: *Michelia excelsa* Blume.

Local name: M.Champ

Range	Manaybhanjan	Location	Batasi-3
Area	1ha	Total Number of trees	33
GBH	1.15m±0.1	Height	15.63m±0.8

Status of Isolation zone:
Isolation zone is maintained in this seed stand.



Latitudes (N)	Longitudes (E)
27.01.323	88.07.140
27.01.341	88.07.132
27.01.336	88.07.118
27.01.308	88.07.164
27.01.299	88.07.144

Accessibility of the area for seed collection: Seed can easily be collected from the seed stand. Regeneration to be removed.

No. of trees recommended for culling – 3 **Regeneration status: Zero**



Remarks: It may be considered as a seed stand.
Sl.No. 24.2
Species: -*Michelia excelsa* Blume.

Seed Stand No: -2/ME/LAVA
Local name: M.Champ

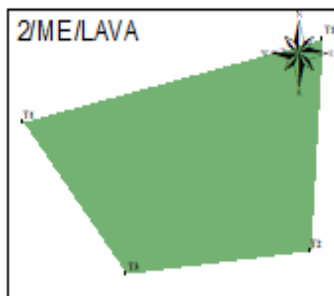
Range	Lava	Location	Lava-2
Area	1.77 ha	Total No. of trees	223 as per record, but at present 103
GBH	1.2m±0.2	Height	22.7m±1.0

Status of Isolation

zone: No Isolation zone is created in the seed stand. At the west sides of the seed stand M.Champplants are present. At south side Dhupi plantation and at east side mixed plantation is existed.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

No. of trees recommended for culling- 16



Latitudes (N)	Longitudes (E)
27.05.275 N	88.38.947 E
27.05.247 N	88.38.945 E
27.05.244 N	88.38.917 E
27.05.264 N	88.38.901 E



Remarks: It may be considered as seed stand after creating isolation zone.

Sl. No. 24.3

Species: - *Michelia excelsa* Blume.

Seed Stand No: - 3/ME/LAVA

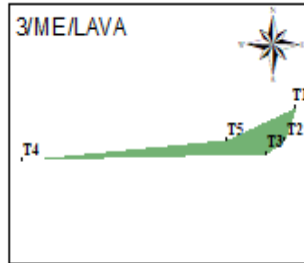
Local name: M.Champ

Range	Lava	Location	Lava-2
Area	1.77 ha	Total No. of trees	139 as per record but at present 113
GBH	1.0m±0.2	Height	22.8m±0.8

Status of Isolation zone: No Isolation zone is created in the seed stand. At the east side, trees of same species are present. At south *Dhupi* & at west *Utis* plantation is there.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

No. of trees recommended for culling – 22



Latitudes (N)	Longitudes (E)
27.05.257 N	88.38.877 E
27.05.230 N	88.38.867 E
27.05.219 N	88.38.849 E
27.05.213 N	88.38.623 E
27.05.230 N	88.38.812 E



Remarks: It may be considered as seed stand after creating isolation zone.

Sl. No - 25.

Seed Stand Number: - 1/PI/MAL

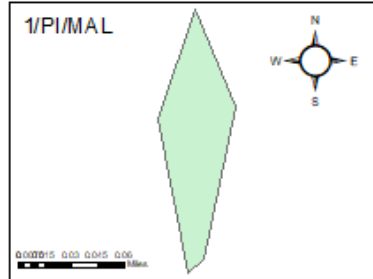
Species: - *Pinus insularis*

Local name: - Pine

Range	Neora	Location	Mal-11
Area	0.75 ha	Total Number of trees	As per the record 27 trees but presently 16 trees are there.
GBH	1.46 ± 0.15	Height	25.50±1.87

Status of Isolation zone: Isolation zone maintained in this seed stand zone.

Accessibility of the area for seed collection: Cannot be accessed because maximum trees are not in proper condition.



Latitudes (N)	Longitudes (E)
26°56.650 N	88°41.938 E
26°56.773 N	88°41.963 E
26°56.853 N	88°41.931 E
26°56.763 N	88°41.901 E
26°56.638 N	88°41.925 E

Number. of trees recommended for culling- 10 Regeneration status: Nil



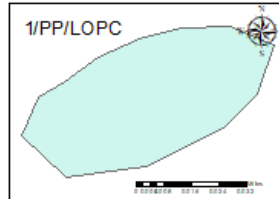
Remarks: After culling, only six trees will be there. Hence, it may be abandoned as a seed stand.
Sl. No – 26.1 Seed Stand No. : 1/PP/LOPC

Species: *Pinus patula*

Local name: Pine

Range	Takdah	Location	Lopchu-2
Area	0.40 hac	Total Number of trees	Around 25 at present (82 as per record)
GBH	1.14m±0.3	Height	17.06m±1.94

Stand condition: The condition of the seed stand is bad. Dhupi trees are present inside the seed stand.



Latitudes (N)	Longitudes (E)
27.03.247 N	88.22.192 E
27.03.252 N	88.22.225 E
27.03.268 N	88.22.258 E
27.03.282 N	88.22.272 E



Remarks: It may not be considered as a seed stand.

Sl. No – 26.2

Seed Stand No. : 2/PP/LOPC

Species: *Pinus patula*

Local name: Pine

Range	Takdah	Location	Lopchu-2
Area	2.60 hac	Total Number of trees	161
GBH	0.97m±0.1	Height	17.25m±1

Status of Isolation zone:
No isolation zone.
Condition: The seed stand is not in good condition.

Latitudes (N)	Longitudes (E)
27.03.277 N	88.22.440 E
27.03.273 N	88.22.424 E
27.03.301 N	88.22.468 E
27.03.309 N	88.22.486 E



No. of trees recommended for culling – 40

Regeneration status: Zero



Remarks: It may not be considered as a seed stand.

Sl. No – 26.3
Species: *Pinus patula*

Seed Stand No. : 3/PP/LOPC
Local name: Pine

Range	Takdah	Location	Lopchu-2
Area	1.50 hac	Total Number of trees	70(As per visit); 130 (as per record)
GBH	1.56m±0.4	Height	16.38m±0.9

Status of Isolation

zone: No Isolation zone was maintained in this seed stand.

Accessibility of the area for seed collection: The seed stand **2/PP/LOPC** and **3/PP/LOPC** was just adjacent to each other

Latitudes	Longitudes
27.03.270 N	88.22.487 E
27.03.273 N	88.22.440 E
27.1691264 N	88.3568378 E
27.03.309 N	88.22.487 E



No. of trees recommended for culling – 20

Regeneration status: Zero



Remarks: It may not be considered as a seed stand.

Sl. No – 23.7

Species: *Michelia champaca* L.

Seed Stand No. :7/MC/MAL

Local name: Champ

Range	Neora	Location	Mal - 8
Area	1 ha	Total Number of trees	30

It is already discarded by the Department.

Sl. No – 24.4

Seed Stand No. : 4/ME/PAKT

Species: *Michelia excelsa* Blume.

Local name: M.Champ

Range	Lava	Location	Paktham
Area	0.25 ha	Total Number of trees	38

It is already discarded by the Department.

Sl. No – 26.4

Seed Stand No. : 4/PP/PUBO

Species: *Pinus patula*

Local name: Pinus

Range	Takdha	Location	Pobong-1
Area	2 ha	Total Number of trees	235 trees in report

It is damaged by cyclone reported by staff of Sonada Range.

Sl. No – 26.5

Seed Stand No. : 5/PP/RANG

Species: *Pinus patula*

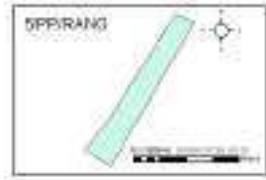
Local name: Pinus

Range	Senchel East	Location	Rangiroom-2
Area	1 ha	Total Number of trees	243 (only 62 trees are in good condition).
GBH	1.56m±0.30	Height	15.58m±0.75

Status of Isolation zone:

Isolation zone was maintained in this seed stand.

Accessibility of the area for seed collection: It is easy to collect from the seed stands. Trees are affected by cyclone (mostly damaged).



Latitudes (N)	Longitudes (E)
27.00.602 N	88.17.043E
27.00.566 N	88.17.022 E
27.00.570 N	88.17.015 E
27.00.577 N	88.17.021 E
27.00.604 N	88.17.038 E

No. of trees recommended for culling – 181

Regeneration

status: Zero



Remarks: It may be considered only if all inferior trees (181) are culled out.

Sl.No.26.6

Seed Stand No.6/PP/SONA

Species: *Pinus patula*

Local name: Pinus

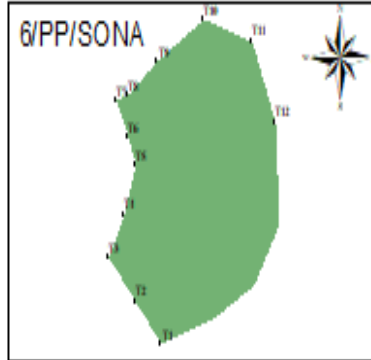
Range	Senchel West	Location	Sonada-4
Area	1ha	Total No. of trees	148
GBH	1.5m±0.3	Height	26.3m±1.2

Status of Isolation zone:

No isolation zone is created in the seed stand.

Accessibility of the area for seed collection:

Seed can't be collected easily from the seed stand because the condition of the tree is very bad.



Latitudes	Longitudes
26.57.984 N	88.16.842 E
26.58.000 N	88.16.828 E
26.58.017 N	88.16.835 E
26.58.030 N	88.16.833 E
26.58.036 N	88.16.841 E
26.58.044 N	88.16.853 E
26.58.040 N	88.16.866 E
26.58.025 N	88.16.872 E



Remarks: It may not be considered as seed stand.

Sl.No.26.7

Species: -*Pinus patula*

Seed Stand No: - 7/PP/LAVA

Local name: Pinus

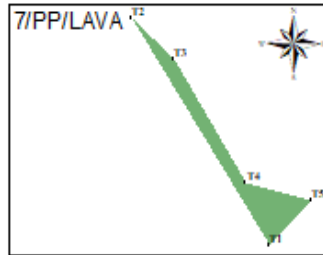
Range	Lava	Location	Lava-7
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Area	1.75 ha	Total No. of trees	105 as per record, but at present 58
GBH	1.2m±0.2	Height	16.6m±0.6

Status of Isolation zone:

Isolation zone is created in the seed stand. At the four sides of the seed stand *Dhupiplants* are present. It is pure plot of *Pinus patula*.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes (N)	Longitudes (E)
27.04.437 N	88.39.877 E
27.04.502 N	88.39.835 E
27.04.490 N	88.39.848 E
27.04.455 N	88.39.870 E
27.04.450 N	88.39.890 E



No. of trees recommended for culling – 5 (marked with aluminum tag)

Remarks: It may be considered as seed stand.

Sl. No. 26.8

Seed Stand No: - 8/PP/LAVA

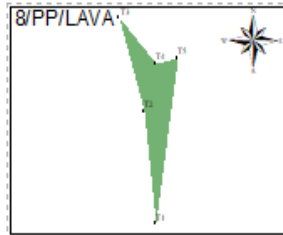
Species: -*Pinus patula*

Local name: Pinus

Range	Lava	Location	Lava-7
Area	1.25 ha	Total No. of trees	125 as per the record but at present 62
GBH	1.2m±0.2	Height	16.5m±1.8

Status of Isolation zone:
Isolation zone is created in the seed stand.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. However, the seed stand highly affected by leeches.



Latitudes (N)	Longitudes (E)
27.04.446 N	88.39.933 E
27.04.507 N	88.39.926 E
27.04.558 N	88.39.912 E
27.04.533 N	88.39.933 E
27.04.536 N	88.39.945 E



No. of trees recommended for culling – 14

Remarks: The plants present in the seed stand are very old and mostly are damaged. So, it may be abandoned as a seed stand.

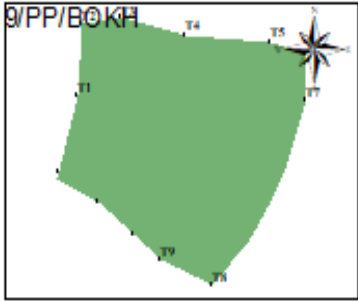


Sl.No. 26.9

Seed Stand No: - 9/PP/BOKH

Species: *-Pinus patula*

Local name: Pinus

Range	Kalimpong	Location	Bakhim-1
Area	2 ha	Total No. of trees	172 as per record, but at present 93
GBH	1.3m±0.1	Height	22.7m±0.5

<p>Status of Isolation zone: Isolation zone is created in the seed stand. Along the four sides of the seed stand <i>Dhupitrees</i> are present.</p> <p>Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.</p>																		
	<table border="1"> <thead> <tr> <th>Latitudes</th> <th>Longitudes</th> </tr> </thead> <tbody> <tr> <td>27.02.064 N</td> <td>88.34.617 E</td> </tr> <tr> <td>27.02.084 N</td> <td>88.34.618 E</td> </tr> <tr> <td>27.02.081 N</td> <td>88.34.650 E</td> </tr> <tr> <td>27.02.079 N</td> <td>88.34.676 E</td> </tr> <tr> <td>27.02.063 N</td> <td>88.34.687 E</td> </tr> <tr> <td>27.02.019 N</td> <td>88.34.642 E</td> </tr> <tr> <td>27.02.035 N</td> <td>88.34.623 E</td> </tr> <tr> <td>27.02.043 N</td> <td>88.34.611 E</td> </tr> </tbody> </table>		Latitudes	Longitudes	27.02.064 N	88.34.617 E	27.02.084 N	88.34.618 E	27.02.081 N	88.34.650 E	27.02.079 N	88.34.676 E	27.02.063 N	88.34.687 E	27.02.019 N	88.34.642 E	27.02.035 N	88.34.623 E
Latitudes	Longitudes																	
27.02.064 N	88.34.617 E																	
27.02.084 N	88.34.618 E																	
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27.02.079 N	88.34.676 E																	
27.02.063 N	88.34.687 E																	
27.02.019 N	88.34.642 E																	
27.02.035 N	88.34.623 E																	
27.02.043 N	88.34.611 E																	
<p>No. of trees recommended for culling - 7</p> <p>Remarks: It may be considered as a seed stand.</p>																		

Sl. No. 27

Seed Stand No: - 1/PG/CPOT

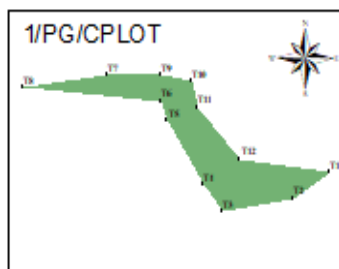
Species: *-Populus gamblei*

Local name: Poplar

In Kalimpong hills, West Bengal it is locally called '*Sungrikong*' (Lepcha) and '*Pipalpati*' or '*Pipile*' (Nepalese).

Range	Kalimpong	Location	C-Plot
Area	2 ha	Total No. of trees	60 as per record but during visit only 25 Poplar trees were found.
GBH	2.1m±0.8	Height	23.5m±0.5

Status of Isolation zone: At the three sides of the seed stand *Chilaunispps* are present. Inside the seed stand *Chilauni* plantation was carried out.



Accessibility of the area for seed collection: Accessible.

Latitudes	Longitudes
27.03.163 N	88.27.323 E
27.03.157 N	88.27.305 E
27.03.171 N	88.27.296 E
27.03.174 N	88.27.295 E
27.03.178 N	88.27.286 E
27.03.176 N	88.27.272 E
27.03.178 N	88.27.295 E
27.03.177 N	88.27.300 E
27.03.173 N	88.27.301 E
27.03.165 N	88.27.308 E
27.03.161 N	88.27.302 E
27.03.159 N	88.27.317 E



No. of trees recommended for culling- 9.

Remarks: Very low density (7 tree/ ha after culling) of Poplar, whereas more Chilauni young trees are there. It may not be considered as Seed Stand/SPA of Poplar.

Sl. No – 28.1

Species: - *Prunus napaulensis*

Seed Stand Number: - 1/PN/DAMS

Local name: - Arupatey

Range	Pankhasari	Location	Damsang -4
Area	1 ha	Total Number of trees	32
GBH	1.58 m ± 0.19	Height	23.17 m ± 1.85

Status of Isolation zone:

Isolation zone maintained in this seed stand zone.

**Accessibility of the area for seed collection:** Accessible.

Trees of species like Sour, Utis&Chillowni are present in the seed stand. Area is bushy, needs cleaning.

Number of trees recommended for culling- 3

Latitudes (N)	Longitudes (E)
27.08507	88.3549
27.08517	88.35477
27.08517	88.35466
27.08509	88.35451
27.08514	88.35464
27.08534	88.35469
27.08521	88.35471
27.08524	88.35466
27.08515	88.35473
27.08511	88.35473
27.08493	88.35469



Remarks: Though the density of the species is low, as it is one of the priority species as per MOU and it is the single stand which is existed, it may be considered as a seed stand. However, the seed quality expected to be intermediate.

Sl. No – 28.2

Species: - *Prunus napaulensis*

Seed Stand Number: - 1/PN/DAMS

Local name: - Arupatey

Range	Pankhasari	Location	Damsang -4
Area	1 ha	Total Number of trees	-

Already discarded by the Department.

Sl. No. 29.3

Seed Stand No: - 3/QL/PAKT

Species: - *Quercus lamellosa* Smith Local name: Buk

Range	Lava	Location	Paktham
Area	1 ha	Total No. of trees	24

It does not exist.

Sl.No – 37.3

Seed Stand No. : 3/TD/PANK

Species: *Tsuga brunoniana* Carr

Local name: Hemlock

Range	Pankhesari	Location	Pankhesari-3
Area	0.22 ha	Total Number of trees	44

Already discarded by the Department.

Sl. No. 29.1

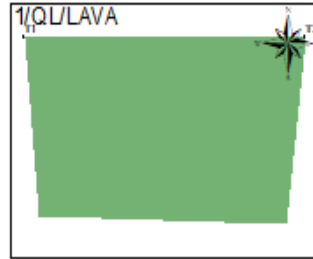
Seed Stand No: - 1/QL/LAVA

Species: - *Quercus lamellose* Smith

Local name: Buk

Range	Lava	Location	Lava-1
Area	1 ha	Total No. of trees	10
GBH	3.3m±0.3	Height	23.8m±0.5

Status of Isolation zone: Isolation zone is created in the seed stand. At the two sides of the seed stand road is present i.e. North & south side, west side *Dhupi* plants are present. The trees present in the seed stand are very old and in very bad condition.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

Latitudes (N)	Longitudes (E)
27.05.330 N	88.39.095 E
27.05.330 N	88.39.109 E
27.05.330 N	88.39.100 E
27.05.330 N	88.39.119 E



Remarks: It may be abandoned as a seed stand.

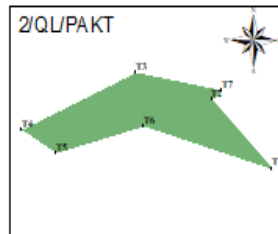
Sl.No.29.2

Seed Stand No: - 2/QL/PAKT

Species: - *Quercus lamellose* Smith **Local name:** Buk

Range	Lava	Location	Paktham
Area	1 ha	Total No. of trees	24
GBH	2.4m±1.0	Height	17.8m±0.6

Status of Isolation zone: At the four sides of the seed stand Kaula, Kharani plants are present. The seed stand is not maintained.



Accessibility of the area for seed collection: The area is difficult to access at it is situated in very high altitude.

Latitudes	Longitudes
26.58.319 N	88.19.217 E
26.58.321 N	88.19.217 E
26.58.368 N	88.19.192 E
26.58.400 N	88.19.201 E
26.56.396 N	88.19.219 E
26.58.395 N	88.19.309 E
26.58.388 N	88.19.352 E
26.58.357 N	88.19.401 E



Remarks: Tree density of this species is very low and the existing trees are very old and not in good condition. Hence it may be abandoned as a seed stand.

Sl. No – 29.4

Species: *Quercus lamellosa* S mith

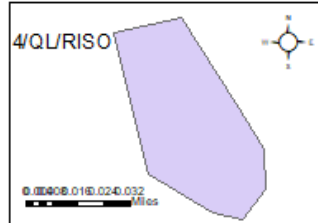
Seed Stand No. : 4/QL/RISO

Local name: Buk

Range	Senchel East	Location	Rishop-3
Area	1 ha	Total Number of trees	46
GBH	1.05m±0.3	Height	16.64m±0.54

Status of Isolation zone: No Isolation zone was maintained in this seed stand.

Accessibility of the area for seed collection: Prone to wild bear attack.



Condition: Different species such as Utis, Phalanat, Pipli&PatleyKatush are present inside the seed stand.

Latitudes (N)	Longitudes (E)
26.58.184 N	88.18.339 E
26.58.187 N	88.18.326 E
26.58.266 N	88.18.281 E
26.58.204 N	88.18.297 E

No. of trees recommended for culling – 3

Regeneration status: Zero



Remarks: Out of five stands of this species four have not been considered. It may be considered. However, all poor trees of Buk at outside of the stand should be culled out.

Sl.No.29.5

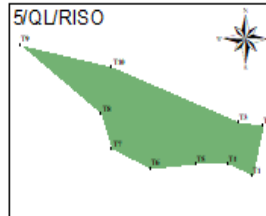
Seed Stand No: - 5/QL/RISO

Species: *Quercus lamellose* Smith

Local name: Buk

Range	Senchel East	Location	Rishop-3
Area	2 ha	Total No. of trees	180 as per record, but at present 160.

Status of Isolation zone:No
Isolation zone is created in the seed stand. Several unmarked poor trees of same species are existed in the seed stand zone.



Accessibility of the area for seed collection: Seed can't be collected easily from the seed stand because it is highly affected by leaches.

No. of trees recommended for culling:Several unmarked poor trees of same species

Latitudes (N)	Longitudes (E)
26.58.333	88.19.061
26.58.346	88.19.064
26.58.347	88.19.057
26.58.336	88.19.054
26.58.336	88.19.045
26.58.335	88.19.032
26.58.340	88.19.021
26.58.349	88.19.018
26.58.367	88.18.995
26.58.361	88.19.021



Remarks: It may not be considered as a seed stand/ SPA.

Sl.No – 30.1

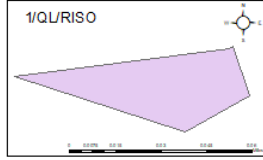
Species: *Quercus lineata* Blume

Seed Stand No. : 1/QL/RISO

Local name: Phalant

Range	Senchel East	Location	Rishop-3
Area	1 ha	Total Number of trees	50
GBH	1.05m±0.3	Height	16.64m±0.54

Status of Isolation zone: Isolation zone was maintained in this seed stand.



Accessibility of the area for seed collection: It is easy to collect from the seed stand as it is the pure patch of this species.

Latitudes	Longitudes
26.58.217 N	88.18.337 E
26.58.234 N	88.18.368 E
26.58.243 N	88.18.256 E
26.58.256 N	88.18.358 E
26.58.257 N	88.18.360 E



Regeneration status: Zero

No. of trees recommended for culling – 5



Remarks: It may be considered as a seed stand.

Sl.No.30.2

Seed Stand No: - 2/QL/RISO

Species: *Quercus lineata* Blume

Local name: Phalant

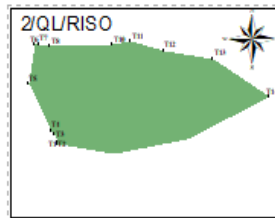
Range	Senchel West	Location	Rishop-5
Area	5 ha	Total No. of trees	270
GBH	0.9m±0.13	Height	20.4m±1.78

Status of Isolation zone: No Isolation zone is created in the seed stand. In this seed maximum trees are discarded but it is not marked. In the seed stand trees which are in good condition were marked whereas bad condition trees were not marked but it existed (around 300) in the seed stand zones. Inside other species viz., *kharni*, *sour*, *cowla*, *kapasi* were also present.

Accessibility of the area for seed collection: Stand is highly affected by leaches.

No. of trees recommended for culling-around 300.

Latitudes	Longitudes
26.58.319 N	88.19.217 E
26.58.321 N	88.19.217 E
26.58.368 N	88.19.192 E
26.58.400 N	88.19.201 E
26.56.396 N	88.19.219 E
26.58.395 N	88.19.309 E
26.58.388 N	88.19.352 E
26.58.357 N	88.19.401 E



Remarks: It may not be considered as a seed stand.

Sl.No – 31

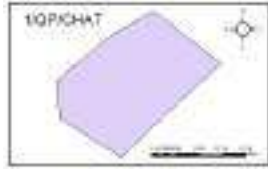
Species: *Quercus pachyphylla*

Seed Stand No. : 1/QP/CHAT

Local name: BanteyKatus

Range	Senchel West	Location	Chattakpur-2
Area	3 ha	Total Number of trees	122
GBH	1.40 m±0.3	Height	15.03m±0.5

Status of Isolation zone: Isolation zone was maintained in this seed stand.



Accessibility of the area for seed collection: It is easy to collect from the seed stand. In this seed stand various tree species are present such as Buk and Kharani. The seed stand is surrounded by bamboo plantation.

Latitudes	Longitudes
26.57.479 N	88.18.412 E
26.57.460 N	88.18.389 E
26.57.444 N	88.18.390 E
26.57.427 N	88.18.417 E
26.57.446 N	88.18.437 E
26.57.467 N	88.18.461 E

No. of trees recommended for culling – 20



Remarks: It may be considered as a seed stand.

Sl. No 32.1

Species: *Schima wallichii* Choisy

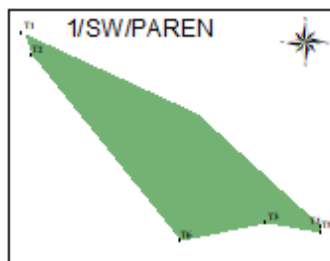
Seed Stand No. : 1/SW/PAREN

Local name: Chillowni

Range	Jaldhaka	Location	Paren-2
Area	0.50 ha	Total No. of trees	40
GBH	1.39m±0.22	Height	20.08m±1.20

Status of Isolation zone:

Isolation zone is created in the seed stand. At the east side of the seed stand *Sourspps* seed stand is present, west side mixed plantation is present.



Latitudes (N)	Longitudes (E)
27.03.370 N	88.51.892 E
27.03.365 N	88.51.894 E
27.03.328 N	88.51.946 E
27.03.327 N	88.51.958 E
27.03.326 N	88.51.958 E
27.03.324 N	88.51.927 E

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. The tree condition is good.



Remarks: It may be considered as a seed stand.

Sl.No.32.2

Species: *Schima wallichii* Choisy

Seed Stand No.2/SW/MAL

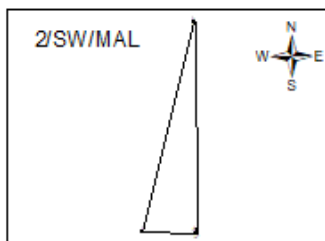
Local name: Chillowni

Range	Neora	Location	Mal – 7
Area	0.5 hectare	Total No. of trees	30
GBH	2.13m±0.44	Height	24.90m±0.97

Accessibility of the area for seed collection:

Highly bushy. Prone to wildlife attack.

No. of trees recommended for culling- 13



Latitudes	Longitudes
26.93514 N	88.70178 E
26.96844 N	88.71188 E
26.93521 N	88.71185 E
26.96845 N	88.71192 E
26.96832 N	88.71191 E
26.93453 N	88.71182 E
26.93457 N	88.71158 E



Remarks: After culling tree density will be less. Tree condition is poor. Hence, it may not be considered as seed stand.

Sl.No.33.1

Species: *Shorea robusta* Gaertn.

Seed Stand No: - 1/SR/SANG

Local name: Sal

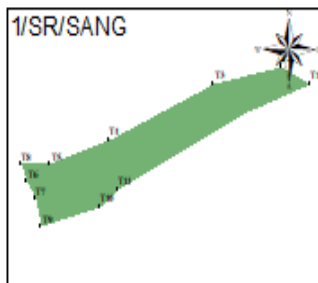
Range	Kalimpong	Location	Sangser
Area	0.75 ha	Total No. of trees	36
GBH	2.4m±0.6	Height	26.1m±0.7

Status of Isolation zone: No isolation zone is created in the seed stand. Around the seed stand zone same species is present along the four sides of the seed stand.

Condition: Seed stand is under the house constructed by the village people. Along with the seed stand maximum plants was of Chilauni.

No. of trees recommended for culling- 6

Latitudes	Longitudes
27.08.804 N	88.31.533 E
27.08.804 N	88.31.500 E
27.08.781 N	88.31.444 E
27.08.776 N	88.31.436 E
27.08.771 N	88.31.439 E
27.08.781 N	88.31.434 E
27.08.763 N	88.31.441 E
27.08.769 N	88.31.461 E
27.08.774 N	88.31.467 E



Remarks: It may not be considered as a seed stand.

Sl.No.33.2

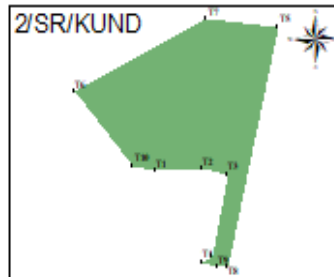
Seed Stand No. : 2/SR/KUND

Species: *Shorea robusta* Gaertn. Local name: Sal

Range	Sevoke	Location	Kundong
Area	1 ha	Total No. of trees	100
GBH	2.13m±0.36	Height	30.1m±1.38

Status of Isolation zone: No Isolation zone is created in the seed stand. Along the east side *Shorea robusta* and Chilauni trees, at the North side Champ trees, at the west side less no of *Shorea robusta* trees are present.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes	Longitudes
26.57.556 N	88.25.934 E
26.57.555 N	88.25.962 E
26.57.524 N	88.25.952 E
26.57.607 N	88.25.982 E
26.57.584 N	88.25.902 E
26.57.610 N	88.25.954 E
26.57.522 N	88.25.962 E
26.57.558 N	88.25.925 E
26.57.526 N	88.25.956 E



Remarks: Buffer zone should be created. Then it may be considered as a seed stand.

Sl.No.33.3

Seed Stand No.3/SR/MONG

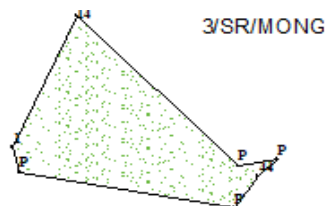
Species: *Shorea robusta* Gaertn. Local name: Sal

Range	CHEL	Location	Mong-pong-2
Area	2 hectare	Total No. of trees	56 trees are marked; but there are so many unmarked trees.
GBH	1.40m±0.20	Height	27.65m±1.45

Status of Isolation zone:

Maintained.

Accessibility of the area for seed collection: Seed can be easily collected from the seed stand.



Latitudes (N)	Longitudes (E)
26.88135 N	88.49668 E
26.88124 N	88.49671 E
26.88193 N	88.4969 E
26.8813 N	88.4977 E
26.88127 N	88.49761 E
26.88122 N	88.49769 E

No. of trees recommended for culling-3 damaged or infected; but all retarded growth trees should be culled.

Regeneration status:
Zero



Remarks: It may be considered as Seed Stand/SPA after culling of all poor trees.

Sl.No.33.4

Seed Stand No.4/SR/MONG

Species: *Shorea robusta* Gaertn.

Local name: Sal

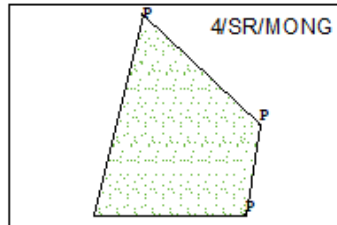
Range	CHEL	Location	Mong-pong-2
Area	1 hectare	Total No. of trees	21 trees are marked, but there are so many unmarked trees.
GBH	1.70m±0.22	Height	26.77m±0.75

Status of Isolation zone:

Surrounding the seed stand, small girth unmarked sal trees are present.

Accessibility of the area for seed collection: Seed can be easily collected from the seed stand.

No. of trees recommended for culling- 8 damaged or infected out of 21 marked trees. Regeneration status: Zero



Latitudes (N)	Longitudes (E)
26.87984 N	88.02369 E
26.87948 N	88.02411 E
26.87918 N	88.02406 E
25.87938 N	88.02396 E



Remarks: After culling of all damaged & retarded growth trees, hardly 13 trees will remain in seed stand. Hence it may be abandoned. It would be better to maintain 3/SR/MONG & collect seed from there.

Sl.No.33.5

Seed Stand No: -5/SR/SANG

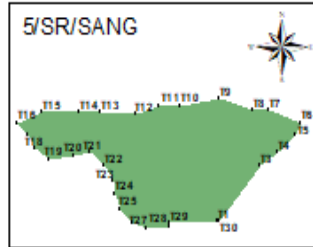
Species: - *Shorea robusta* Gaertn. Local name: Sal

Range	Kalimpong	Location	Sangser
Area	4.5 ha	Total No. of trees	410
GBH	1.4m±8.9	Height	22.2m±1.58

Status of Isolation zone: No isolation zone is created in the seed stand. At the east sides of the seed stand *Shorearobustat* trees are present and at the south side of the seed stand mixed species are present.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. Maximum plant is in good condition.

No. of trees recommended for culling-21 Regeneration status: Nil



Latitudes (N)	Longitudes (E)
27.08.830 N	88.31.795 E
27.08.862 N	88.31.826 E
27.08.870 N	88.31.835 E
27.08.876 N	88.31.837 E
27.08.882 N	88.31.813 E
27.08.887 N	88.31.796 E
27.08.884 N	88.31.777 E
27.08.880 N	88.31.754 E
27.08.876 N	88.31.695 E
27.08.864 N	88.31.704 E
27.08.859 N	88.31.711 E
27.08.856 N	88.31.738 E
27.08.843 N	88.31.744 E
27.08.829 N	88.31.753 E

No. of trees recommended for culling- 21 (Tree No. 8, 25, 38, 43, 53, 75, 78, 108, 297, 298, 388, 399, 403, 459, 482, 510, 521 and other four trees marked with aluminum tag)



Remarks: Most of trees inside the stand are in good condition. It may be considered as SS/SPA. However, as there is no isolation zone, outside plantation of same species (at east side) may be converted as buffer zone by culling of inferior trees from that area.

Sl.No.34.1

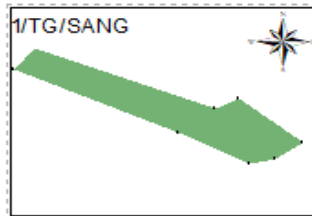
Species: - *Tectona grandis* L.

Seed Stand No: - 1/TG/SANG

Local name: Saigun

Range	Kalimpong	Location	Sangser-5
Area	3 ha	Total No. of trees	60
GBH	2.02m±0.3	Height	22.65m±1.9

Status of Isolation zone: No isolation zone is created in the seed stand. In this seed stand, teak trees are present in three directions (East, West, & South).



Latitudes	Longitudes
27.08.018 N	88.30.355 E
27.08.010 N	88.30.521 E
27.07.989 N	88.30.489 E
27.07.970 N	88.30.464 E
27.08.964 N	88.30.470 E
27.07.948 N	88.30.512 E
27.07.951 N	88.30.529 E
27.07.963 N	88.30.547 E

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

Tree Condition: Eleven mature trees (Tree No. 26, 34, 38, 39, 48, 43 and other five trees tagged with aluminum tag) are in poor condition.

Regeneration status: The huge amount of regeneration of teak plants can be seen in the seed stand area. In 15 x 15 m plot, around 28 regeneration (0.2 - 0.5 m girth and 5 - 7 m height) was observed.



Remarks: It may not be considered as SS/SPA as outside so many teak trees are present and inside mature tree density very low (16 trees/ha after culling).

Sl. No – 34.2

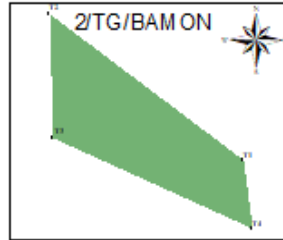
Species: *Tectona grandis* L.

Seed Stand No. : 2/TG/BAMON

Local name: Saigun

Range	Bamonpokhri	Location	Bamonpokhri
Area	4.60 ha	Total No. of trees	403
GBH	2.02m±0.54	Height	24.4m±1.18

Status of Isolation zone: No Isolation zone is created in the seed stand, outside the seed stand same species is planted.



Latitudes (N)	Longitudes (E)
26.49.650 N	88.16.779 E
26.49.754 N	88.16.639 E
26.49.666 N	88.16.642 E
26.49.601 N	88.16.786 E

Accessibility of the area for seed collection: Seed can't be collected easily from the seed stand because it is highly affected by bison and elephant.



Remarks: There are total 5 stands of teak under Hills division were evaluated. Among them two stands of Bamonpokhri were found comparatively well. But there is problem of isolation. Both are adjacent, may be merged into one seed stand. Still there are so many teak trees outside the seed stand. That area may be converted as buffer zone. Inferior trees from that area also need to be culled out.

Sl. No – 34.3

Seed Stand No. : 3/TG/BAMON

Species: *Tectona grandis* L. Local name: Saigun

Range	Bamonpokhri	Location	Bamonpokhri
Area	4.60 ha	Total No. of trees	426
GBH	1.82m±0.36	Height	21.62m±1.58

Status of Isolation zone:No isolation zone is created in the seed stand. Another seed stand 2/TG/BAMON is adjacent to the seed stand.

Accessibility of the area for seed collection:Seed can't be collected easily from the seed stand because it is highly affected by bison and elephant.

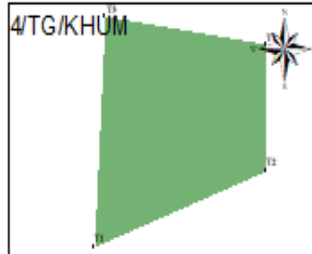


Remarks: There are total 5 stands of teak under Hills division were evaluated. Among them two stands of Bamonpokhri were found comparatively well. But there is problem of isolation. Both are adjacent, may be merged into one seed stand. Still there are so many teak trees outside the seed stand. That area may be converted as buffer zone. Inferior trees from that area also need to be culled out.

Species: *Tectona grandis* L. Local name: Teak

Range	Jaldhaka	Location	Khumani -5
Area	0.40ha	Total No. of trees	38
GBH	1.29 m±0.21	Height	19.1m±0.93

Status of Isolation zone: No Isolation zone is created in the seed stand. In this seed stand *Tectona grandis* is present along four sides of the seed stand zone. Several trees present in the seed stand are not numbered.



Latitudes (N)	Longitudes (E)
26.58.401 N	88.51.855 E
26.58.412 N	88.51.885 E
26.58.434 N	88.51.857 E
26.58.430 N	88.51.885 E



Remarks: Overall good tree density in 0.4 ha area is less. It may not be considered as SS/SPA.

Species: *Tectona grandis* L.

Local name: Saigun

Range	Jaldhaka	Location	Khumani- 6
Area	1ha	Total Number of trees	35 in report but as per visit to the seed stand it consists of no trees of Saigun

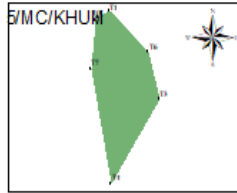


Remarks: The seed stand consists of no trees of Saigun, the seed stand is handed over to the Forest Territorial in which different species had been planted such as Champ, Chikrasi, Panisaj, Pakasaj & Lampatey. So it may be abandoned as a seed stand of teak.

Species: *Tectona grandis* L. Local name: Teak

Range	Jaldhaka	Location	Khumani -5
Area	1 ha	Total No. of trees	32
GBH	1.52 m±0.52	Height	23.98m±1.03

Status of Isolation zone:No Isolation zone is created in the seed stand. In this seed stand *Tectona grandis* is present along east and west sides of the seed stand zone.



Latitudes (N)	Longitudes (E)
26.59.564 N	88.51.938 E
26.59.604 N	88.51.941 E
26.59.564 N	88.51.930 E
26.59.608 N	88.51.931 E

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

No. of trees recommended for culling – Several non-numerated trees of teak inside the stands.



Remarks: There is a problem of isolation. It may not be considered as a seed stand.

Sl. No – 35.1

Seed Stand No. :1/TT/CHAM

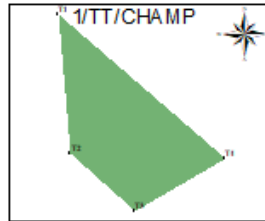
Species: *Terminalia crenulate* Roth.

Local name: Pacasaj

Range	Sukna	Location	Chamta
Area	1 ha	Total No. of trees	27
GBH	1.53m±0.14	Height	20.09m±1.18

Status of Isolation zone:No isolation zone is maintained.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. Inside seed stand *Bombax ceiba* trees are present. New plantation of bamboo inside it has been carried out. Few trees are top broken.



Latitudes (N)	Longitudes (E)
26.46.808 N	88.21.928 E
26.46.731 N	88.21.935 E
26.46.699 N	88.21.970 E
26.46.728 N	88.22.020 E



Remarks: May not be considered as a seed stand.

Sl. No – 35.2

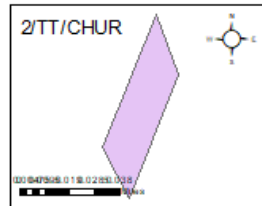
Seed Stand No. : 2/TT/CHUR

Species: *Terminalia crenulate* Roth.

Local name: Pacasaj

Range	Chel	Location	Churanti-1
Area	0.20 ha	Total Number of trees	13
GBH	1.59 m±0.5	Height	18.14m±1.5

Status: Same species was not present outside of stand. Area and number of trees are very few, which will affect the quality of seeds. Further, trees are on the boundary of nursery and houses. work on widening of road going on within 50m of it.



Latitudes (N)	Longitudes (E)
26.53.603 N	88.34.202 E
26.53.576 N	88.34.184 E
26.53.552 N	88.34.238 E
26.53.550 N	88.34.328 E



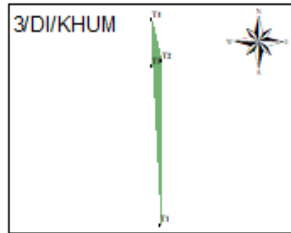
Remarks: May not be considered as seed stand.

Species: *Terminalia crenulate* Roth.

Local name: Pacasaj

Range	Jaldhaka	Location	Khumani – 5
Area	0.50 ha	Total No. of trees	30
GBH	1.56 m±0.37	Height	18.90m±0.71

Status of Isolation zone: In this seed stand *Tectona grandis* is present along one sides of the seed stand zone. Pacasaj trees are existed in one line zig-zag.



Latitudes (N)	Longitudes (E)
26.58.434 N	88.51.829 E
26.58.451 N	88.51.831 E
26.58.529 N	88.51.865 E
26.58.500 N	88.51.878 E

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Remarks: May not be considered as seed stand.

Sl.No.36.1

Species: *Terminalia myriocarpa* Heurch

Seed Stand No.1/TM/LOPC

Local name: Panisaj

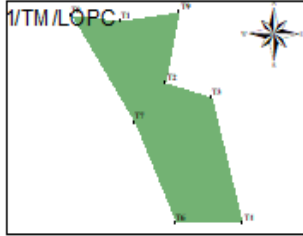
Range	Takdah	Location	Lopchu – 2
Area	0.5 ha	Total No. of trees	26
GBH	2.3m±0.4	Height	25m±3

Status of Isolation zone:

Isolation zone is created in the seed stand. In this seed stand

Utis, Dhupi & *Cupressus* are present in it and along four sides of the seed stand Dhupi plants are present.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand because the condition of the plant is good & clean at the ground floor.



Latitudes (N)	Longitudes (E)
27.03.776 N	88.21.361 E
27.03.763 N	88.21.371 E
27.03.760 N	88.21.381 E
27.03.734 N	88.21.388 E
27.03.732 N	88.21.376 E
27.03.734 N	88.21.373 E
27.03.755 N	88.21.364 E
27.03.777 N	88.21.350 E
27.03.778 N	88.21.374 E



Remarks: May be considered as seed stand.

Sl.No.36.2

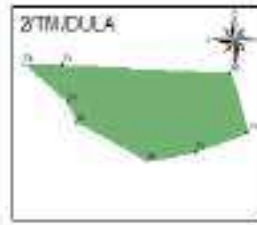
Seed Stand No: - 2/TM/DULA

Species: *-Terminalia myriocarpa*Heurch Local name: Panisaj

Range	Kalimpong	Location	Dulapchand
Area	0.7 ha	Total No. of trees	26
GBH	2.0m±0.5	Height	22.6m±1.3

Status of Isolation zone:At the four sides of the seed stand ChilauniandSour are present. Inside the seed stand so many different species viz., Malata, Siris, *Alnus*, Sour are present.

Accessibility of the area for seed collection:Accessible.



Latitudes (N)	Longitudes (E)
27.05.450 N	88.32.040 E
27.05.448 N	88.32.078 E
27.05.436 N	88.32.082 E
27.05.432 N	88.32.070 E
27.05.430 N	88.32.059 E
27.05.438 N	88.32.043 E
27.05.442 N	88.32.041 E
27.05.450 N	88.32.031 E

Tree condition – 5 trees are in poor condition.



Remarks: It is not pure patch and the density of other species is comparatively more than Panisaj. Tree density of Panisaj is low, after culling of inferior trees it will be very low. That condition may reduce the quality of seeds. Hence, the patch may not be considered as SS/SPA. However, few good trees may be selected as seed trees.

Sl. No. 36.3Species: *Terminalia myriocarpa* Heurch

Seed Stand No. :3/TM/KUND

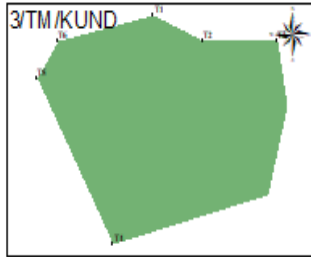
Local name: Panisaj

Range	Sevoke	Location	Kundong
Area	1 ha	Total No. of trees	44
GBH	2.01m±0.19	Height	29.98m±0.28

Status of Isolation zone:

Isolation zone is created in the seed stand. At the west side bamboo plantation is done and at the North side *Shorearobusta* trees are present.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.



Latitudes (N)	Longitudes (E)
26.57.263 N	88.25.995 E
26.57.256 N	88.26.011 E
26.57.256 N	88.26.035 E
26.57.202 N	88.25.982 E
26.57.246 N	88.25.957 E
26.57.256 N	88.25.964 E



Remarks: Trees are mostly damaged in lower portion. It may not be considered as SS/SPA.

Sl. No. 36.4

Seed Stand No.4/TM/MAL

Species: *Terminalia myriocarpa* Heurch

Local name: Panisaj

Range	Neora	Location	MAL-7
Area	1 hectare	Total No. of trees	34 as per record but 27 trees were found during visit
GBH	2.40m±0.63	Height	25.50m±0.76

Status of Isolation zone:

Same species was not present nearer the stand.

Accessibility of the area for seed collection: Accessible.



Latitudes (N)	Longitudes (E)
26.9334 N	88.70365 E
26.93329 N	88.70363 E
26.93303 N	88.70361 E
26.93291 N	88.7039 E

No. of trees recommended for culling- 5 (top broken) + 2 dead

Regeneration status: Zero



Remarks: It may be abandon as a seed stand.

Sl. No – 36.5

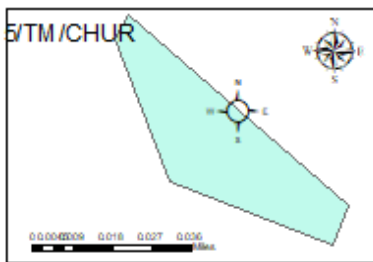
Seed Stand No. : 5/TM/CHUR

Species: *Terminalia myriocarpa* Heurch

Local name: Panisaj

Range	Chel	Location	Churanti-1
Area	1 ha	Total Number of trees	15
GBH	2.02m±0.2	Height	15.65m±0.5

Remarks: Due to widening of road, five trees of this stand were cut. One tree is top broken and dried. So hardly nine trees are there and are situated in the boundary of nursery and hoses. **Hence, it may be abandoned.**



Latitudes (N)	Longitudes (E)
26.53.539 N	88.34.254 E
26.53.570 N	88.34.172 E
26.53.641 N	88.34.144 E
26.53.653 N	88.34.151 E



Sl. No – 37.1

Seed Stand No. : 1/TD/RAMA

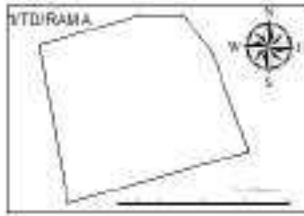
Species: *Tsuga brunoniana* Carr.

Local name: Hemlock

Range	Rimbick	Location	Ramam-4
Area	3.40 ha	Total Number of trees	98
GBH	1.49m±0.29	Height	24.31m±1.33

Status of Isolation zone:
Isolation zone was maintained in this seed stand.

Accessibility of the area for seed collection: It is easy to collect from the seed stands the condition of the seed stand is good but all small girth class of trees & diseased / insect attacked should be removed.



Latitudes (N)	Longitudes (E)
27.06.970 N	88.05.433E
27.06.977 N	88.05.458 E
27.06.991 N	88.05.453 E
27.06.996 N	88.05.449 E
27.06.996 N	88.05.443 E

No. of trees recommended for culling – 23

Regeneration status: Zero



Remarks: It may be considered as a seed stand.

Sl. No – 37.2

Seed Stand No. : 2/TD/BATA

Species: *Tsuga brunoniana* Carr.

Local name: Hemlock

Range	Manaybhanjan	Location	Batasi-3
Area	0.50 ha	Total Number of trees	As per record 60 trees but presently 45 trees.
GBH	1.15m±0.1	Height	15.63m±0.8

Status of Isolation zone:
Isolation zone is maintained in this seed stand.

Accessibility of the area for seed collection: Seed can easily be collected from the seed stand. Trees which are disease infested & forked should be removed from the seed stand.



Latitudes	Longitudes
27.01.252 N	88.07.500 E
27.01.231 N	88.07.522 E
27.01.214 N	88.07.509 E
27.01.224 N	88.07.500 E
27.01.239 N	88.07.488 E
27.01.244 N	88.07.492 E



No. of trees recommended for culling – 10

Regeneration status: Zero

Remarks: It may be considered as a seed stand.

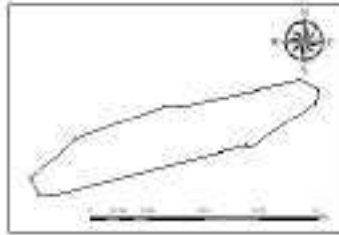


Sl. No. 38.1
Species: *Xylia dolabriformis*

Seed Stand No.1/XD/PANC
Local name: Lohakath

Range	Sukna	Location	Panchnai
Area	3 ha	Total No. of trees	146
GBH	2.12m±0.37	Height	24.4m±0.6

Status of Isolation zone: No isolation zone is created. Outside same species are existed. In this seed stand Jarul and Sal trees are present.



Accessibility of the area for seed collection: Collecting seeds from tall trees without branches is very difficult.

Latitudes	Longitudes
27.02244 N	88.20675 E
27.02244 N	88.20685 E
27.02244 N	88.20675 E
27.02245 N	88.20678 E
26.4825 N	88.21951 E
26.4825 N	88.21959 E
26.48261 N	88.21945 E
26.48286 N	88.21974 E

No. of trees recommended for culling- 6



Layout for Regeneration study

Regeneration status: In 5m X 5m plots, average 14.7 seedlings were observed. Height ranged from 70 cm to 150 cm and collar diameter ranged from 3 to 5 cm.

Remarks: It may be considered as a seed stand. However, sufficient seeds may not be available from this stand for long duration as trees are very old (around 80 years).

Sl. No – 38.2

Species: *Xylia dolabriformis*

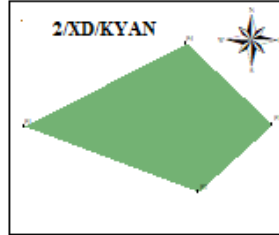
Seed Stand No. :2/XD/KYAN

Local name: Lohakath

Range	Sukna	Location	Kyananuka
Area	1 ha	Total No. of trees	78
GBH	2.02m±0.54	Height	24.4m±1.18

Status of Isolation zone: Isolation zone is created in the seed stand.

Accessibility of the area for seed collection: Seed can be collected from the seed stand. But it would be very difficult due to high tree height. The seed stand is in the average condition.



Latitudes (N)	Longitudes (E)
26.47763 N	88.21565 E
26.47734 N	88.21643 E
26.47764 N	88.21676 E
26.478 N	88.21637 E

No. of trees recommended for culling -4

Regeneration status: 15 trees (GBH (0.21 m ±0.35); height (11.2 m ±7.01), n= 5)



Remarks: It may be considered as a seed stand.

Table 4: Status of seed stands after evaluation in Silviculture North (Plain) division

Sl No.	Species	Seed Stand Number	Local Name	Range	Area (ha)	Status*	Page No.
1.1	<i>Acacia catechu</i> (L.f.)	1/AC/PANJ-1	Khair	Chalsa	4	NC	111
1.2	<i>Acacia catechu</i> (L.f.)	4/AC/Hilajhora		Diana	3	NC	112
2.1	<i>Ailanthus grandis</i>	1/AG/SRAJ-15	Gokul	WRVK	1	C	113
2.2	<i>Ailanthus grandis</i>	2/AG/DIMA		WRVK	0.39	C	114
3.	<i>Amoorawallichii</i>	1/AW/SRVK-15	D. Lali	WRVK	1	C	115
4.1	<i>Anthocephalus chinensis</i>	1/AC/CELKA-2	Kadam	NWL	2.5	NC	116
4.2	<i>Anthocephalus chinensis</i>	3/AC/ATIA		COB (T)	3	NC	117
4.3	<i>Anthocephalus chinensis</i>	4/AC/SRAJ-9		WRVK	5	NC	118
5.1	<i>Bischofia javanica</i>	1/BJ/KARTIK	Kainjal	N.RYDAK	2.27	NC	119
5.2	<i>Bischofia javanica</i>	2/BJ/KARTIK		N.RYDAK	1.77	NC	119
6.	<i>Bombax ceiba</i>	2/BC/DIANA	Simul	Diana	4	NC	120
7.1	<i>Chukrasia tabularis</i>	2/CT/SURS-2	Chikrasi	Lataguri	3	NC	121
7.2	<i>Chukrasia tabularis</i>	4/CT/N.KHAIR		Madarihat	8	C	122
7.3	<i>Chukrasia tabularis</i>	5/CT/KHAIR		Panighata	5	NC	123
8.1	<i>Cordia alleodora</i>	1/CA/SRAJ-1	Spanish elm,Cypre	WRVK	1.3	NC	124
8.2	<i>Cordia alleodora</i>	2/CA/SRAJ-9		WRVK	0.8	NC	124
8.3	<i>Cordia alleodora</i>	3/CA/SRAJ-9		WRVK	1.55	NC	125
9.	<i>Dalbergia Sissoo</i>	1/DS/PANJ	Sissoo	Chalsa	2.5	NC	126
10.1	<i>Dipterocarpus macrocarpus</i>	1/DM/DPO-3	Hollong	Damanpur (E)	0.4	C	127
10.2	<i>Dipterocarpus macrocarpus</i>	2/DM/NIM-3 BTR		Nimati	0.55	NC	127
10.3	<i>Dipterocarpus macrocarpus</i>	3/DM/GADA-1		Damanpur (E)	1.5	NC	127
11.1	<i>Dipterocarpus turbinatus</i>	1/DT/SRAJ	Garjan	WRVK	0.42	C	128
11.2	<i>Dipterocarpus turbinatus</i>	2/DT/SRAJ		WRVK	0.4	C	129
11.3	<i>Dipterocarpus turbinatus</i>	3/DT/SRAJ		WRVK	0.7	C	130
11.4	<i>Dipterocarpus turbinatus</i>	4/DT/CMOR		Moraghat	1	C	131
11.5	<i>Dipterocarpus turbinatus</i>	5/DT/CMOR		Moraghat	0.5	C	132
12.	<i>Duabangasonneratioidis</i>	1/DS/REHTI	Lampate	Banarhat	5	C	133
13.	<i>Eleocarpus ganitrus</i>	1/EG/S.KHAIR	Rudrakha	Madarihat	0.5	C	134
14.	<i>Emblica officinalis</i>	1/EO/S.KHAIR	Amloki	Madarihat	0.5	NC	135
15.1	<i>Gmelina arborea</i>	2/GA/ATIA	Gamar	COB (T)	3.44	NC	136
15.2	<i>Gmelina arborea</i>	3/GA/ATIA		COB (T)	2.5	C	137
15.3	<i>Gmelina arborea</i>	4/GA/REHTI		Banarhat	3	NC	138
15.4	<i>Gmelina arborea</i>	5/GA/SRAJ		WRVK	2	C	139
15.5	<i>Gmelina arborea</i>	6/GA/SRAJ		WRVK	1	C	140

*C = may be considered as seed stand/SPA; NC = may not be considered as a seed stand/SPA

Table 4: Status of seed stands after evaluation in Silviculture North (Plain) division cont...

Sl No.	Species	Seed Stand Number	Local Name	Range	Area (ha)	Status*	Page No.
16.1	<i>Lagerstroemia flosreginae</i>	2/LF/ATIA	Jarul	COB (T)	1	C	141
16.2	<i>Lagerstroemia flosreginae</i>	3/LF/ATIA		COB (T)	1	NC	142
16.3	<i>Lagerstroemia flosreginae</i>	4/LF/LT-2		Lataguri	1	C	142
17.1	<i>Lagerstroemia hypoleuca</i>	2/LH/GODAM-2	Benteak	Hamiltonganj	4	NC	143
17.2	<i>Lagerstroemia hypoleuca</i>	4/LH/KHAIR		Panighata	3	C	143
18.1	<i>Lagerstroemia parviflora</i>	1/LP/C.DIANA	Sidha	Diana	1.5	NC	144
18.2	<i>Lagerstroemia parviflora</i>	2/LP/C.RYDAK		N.RYDAK	7.54	NC	145
18.3	<i>Lagerstroemia parviflora</i>	3/LP/DIANA		Diana	2.5	NC	146
18.4	<i>Lagerstroemia parviflora</i>	4/LP/NATHUA		Ramsai(Nathua)	2.5	C	147
19.	<i>Lophopetalum fimbriatum</i>	1/LF/MEND-6	Narkeli	Kodalbasti	0.6	NC	148
20.1	<i>Micheliachampaca</i>	5/MC/BANIA	Champ	Chilpata	1.8	NC	148
20.2	<i>Micheliachampaca</i>	5/MC/BUXA(MODEL)		DPO (E)	10	NC	149
20.3	<i>Micheliachampaca</i>	6/MC/BUXA (MODEL)		DPO (E)	10	C	150
20.4	<i>Micheliachampaca</i>	7/MC/APAL		Apalchand	2	NC	151
20.5	<i>Micheliachampaca</i>	8/MC/DPO		DPO (E)	5	C	152
21.1	<i>Schimawallichii</i>	1/SW/SMOR	Chilauni	Moraghat	3	NC	153
21.2	<i>Schimawallichii</i>	2/SW/CELK		NWL	1.5	NC	154
21.3	<i>Schimawallichii</i>	4/SW/SURS		Lataguri	2	C	155
21.4	<i>Schimawallichii</i>	5/SW/HUR		Bagdogra	3	C	156
22.1	<i>Shorearobusta</i>	12/SR/SRAJ	Sal	WRVK	20	NC	157
22.2	<i>Shorearobusta</i>	13/SR/SRAJ		WRVK	10	NC	157
22.3	<i>Shorearobusta</i>	14/SR/LTG		Ramsai	5	C	158
22.4	<i>Shorearobusta</i>	15/SR/LTG		Ramsai	1	C	159
23.1	<i>Tectona grandis</i>	3/TG/TUKR	Teak	Tukriajhar	5	C	160
23.2	<i>Tectona grandis</i>	6/TG/TUKR		Tukriajhar	10	NC	161
23.3	<i>Tectona grandis</i>	7/TG/N.KHAIR		Madarihat	10	NC	162
23.4	<i>Tectona grandis</i>	8/TG/RETI		Banarhat	5	C	163
23.5	<i>Tectona grandis</i>	9/TG/ATIA		COB Territorial	5	C	164
24.1	<i>Terminalia myriocarpa</i>	3/TM/SRAJ	Panisaj	WRVK	5	C	165
24.2	<i>Terminalia myriocarpa</i>	4/TM/NATHUA		Ramsai(Nathua)	1	C	165
25.1	<i>Terminalia tomentosa</i>	1/TT/BHOGAL	Pakasaj	NWL	6	NC	167
25.2	<i>Terminalia tomentosa</i>	3/TT/SURS-2		Lataguri	1.25	NC	168
25.3	<i>Terminalia tomentosa</i>	4/TT/NATHUA		Ramsai(Nathua)	3	C	169
25.4	<i>Terminalia tomentosa</i>	5/TT/SRAJ		WRVK	3.5	C	170
26.1	<i>Xyliadolabriformis</i>	2/XD/SRAJ-10	Lohakat	WRVK	2.5	C	171
26.2	<i>Xyliadolabriformis</i>	3/XD/SRAJ-7		WRVK	0.8	NC	172
26.3	<i>Xyliadolabriformis</i>	4/XD/SRAJ-9		WRVK	0.42	C	173
26.4	<i>Xyliadolabriformis</i>	5/XD/CMOR		Moraghat	0.5	NC	174

*C = may be considered as seed stand/SPA; NC = may not be considered as a seed stand/SPA

Sl. No. 1.1Species: *Acacia catechu* (L.f.)

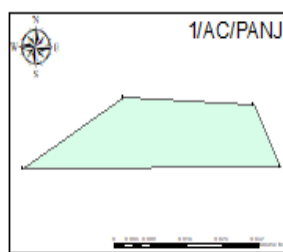
Seed Stand No. : 1/AC/PANJ-1

Local name: Khair

Range	Chalsa	Location	Panjhora -1
Area	4 ha	Total Number of trees	113 as per record but at present it is less than 50
GBH	1.14m±0.2	Height	17.6m±2.2

Status of Isolation zone:
Different species are present near by the seed stand zones.

Condition: The seed stand consists of less number of trees & maximum trees are attacked with the disease. Out of around 50 trees, 20 trees are recommended for culling. It will again reduce the tree density to very low, hence it should not be considered as a seed stand.



Latitudes (N)	Longitudes (E)
26.529 N	88.49434 E
26.52874 N	88.49886 E
26.52713 N	88.49981 E
26.52717 N	88.49075E



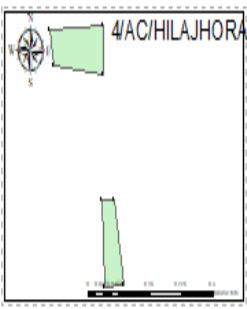
Remarks :It may be abandoned as a seed stand.

Sl. Number. 1.2

Seed Stand No. : 4/AC/Hilajhora

Species: *Acacia catechu* (L.f.) Local name: Khair

Range	Diana	Location	Central Diana
Area	3 hectare	Total Number of trees	330 (as per record but hardly 150 trees present)
GBH	0.97m±0.2	Height	24.12m±4

<p>Status of Isolation zone: Near to the seed stand only teak species are present</p> <p>Accessibility of the area for seed collection: Seed can be collected from the seed stand but maximum trees condition are in poor state.</p>	
No. of trees recommended for culling – 50	Regeneration status: Zero

Latitudes (N)	Longitudes (E)
26.52124 N	88.53754 E
26.5212 N	88.53625 E
26.52071 N	88.53634 E
26.52057 N	88.53752 E
26.51891 N	88.53778 E
26.51892 N	88.53749 E
26.51776 N	88.53754 E
26.51779 N	88.53799 E



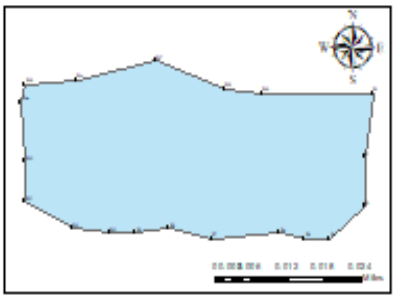
Remarks : The patches are discontinued and tree density and tree health are very poor. It should be abandoned as a seed stand.

Sl. Number.2.1

Stand No. : 1/AG/SRAJ- 15

Species: *Ailanthus grandis* Local name: Gokul

Range	Diana	Location	Central Diana
Area	1 ha	Total Number of trees	198
GBH	1.59m±0.35	Height	26.55m±1.22

<p>Status of Isolation zone: Isolation zone is created in the seed stand but in the seed stand there are several unmarked trees which are inferior in growth & not in proper condition.</p> <p>Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.</p>		<table border="1"> <thead> <tr> <th>Latitudes</th> <th>Longitudes</th> </tr> </thead> <tbody> <tr> <td>26.37159 N</td> <td>89.32076 E</td> </tr> <tr> <td>26.37127 N</td> <td>89.32066 E</td> </tr> <tr> <td>26.37127 N</td> <td>89.3206 E</td> </tr> <tr> <td>26.37129 N</td> <td>89.32028 E</td> </tr> <tr> <td>26.37128 N</td> <td>89.32014 E</td> </tr> <tr> <td>26.37129 N</td> <td>89.32005 E</td> </tr> <tr> <td>26.37157 N</td> <td>89.31993 E</td> </tr> <tr> <td>26.37162 N</td> <td>89.32006 E</td> </tr> <tr> <td>26.37159 N</td> <td>89.3205 E</td> </tr> </tbody> </table>	Latitudes	Longitudes	26.37159 N	89.32076 E	26.37127 N	89.32066 E	26.37127 N	89.3206 E	26.37129 N	89.32028 E	26.37128 N	89.32014 E	26.37129 N	89.32005 E	26.37157 N	89.31993 E	26.37162 N	89.32006 E	26.37159 N	89.3205 E
		Latitudes	Longitudes																			
26.37159 N	89.32076 E																					
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26.37129 N	89.32005 E																					
26.37157 N	89.31993 E																					
26.37162 N	89.32006 E																					
26.37159 N	89.3205 E																					
No. of trees recommended for culling - 79	Regeneration status – Zero																					



Remarks: It can be considered as a seed stand after culling of inferior trees.


Sl. No.2.2

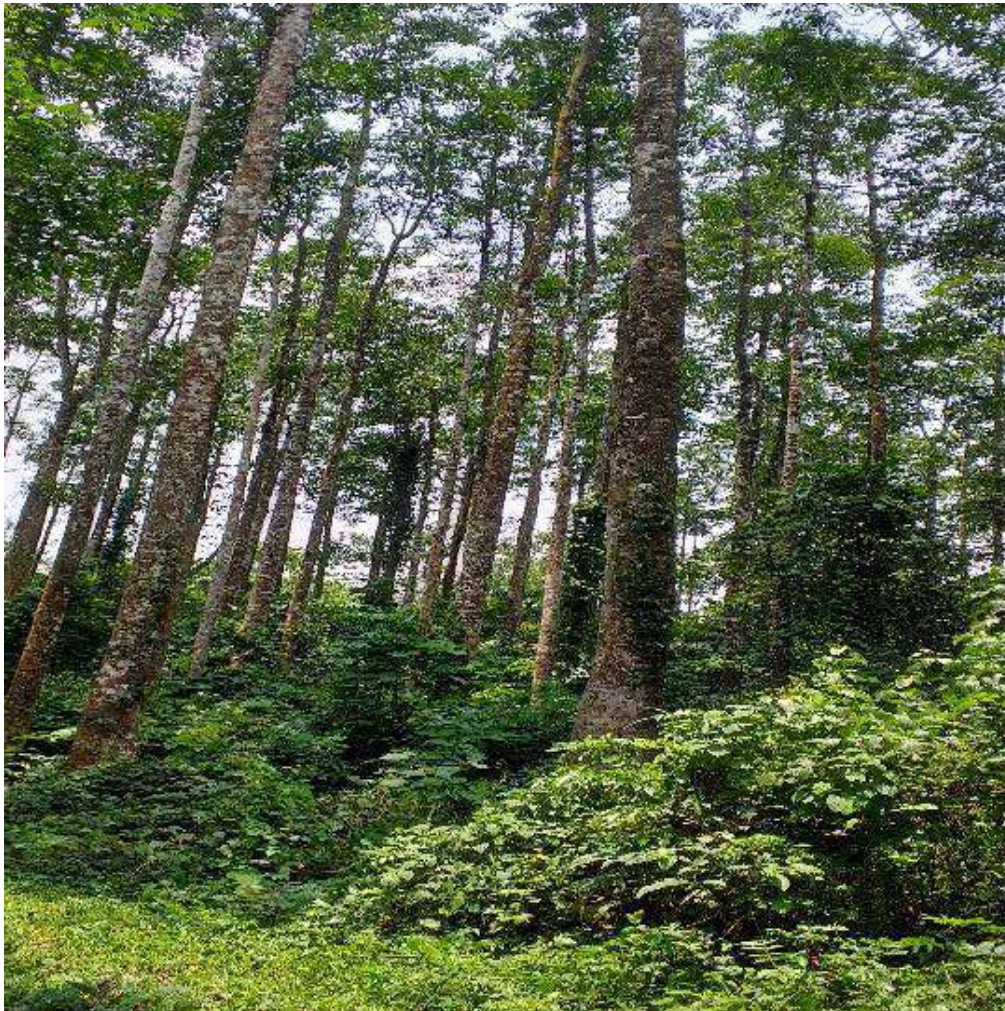
Seed Stand No. :2/AG/DIMA

Species: *Ailanthus grandis*

Local name: Gokul

Range	WRVK	Location	DIMA – 4
Area	0.39 ha	Total Number of trees	182
GBH	1.35m±0.33	Height	25.58m±1.08

<p>Status of Isolation zone: Isolation zone is created in the seed stand.</p> <p>Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. The seed stand is in the good condition. It is pure plot and well maintained.</p>	Latitudes (N)	Longitudes (E)	
	26.38221 N	89.31407 E	
	26.38228 N	89.31376 E	
	26.38253 N	89.31374 E	
	26.38251 N	89.31395 E	
	26.38257 N	89.31403 E	
No. of trees recommended for culling – 27			



Remarks: It can be considered as a seed stand after culling of inferior trees.

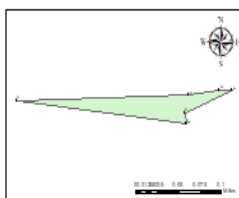
Sl. No. 3

Seed Stand No. : 1/AW/SRVK-15

Species: *Amoorawallichii* Local name:D.Lali

Range	WRVK	Location	WRVK
Area	1ha	Total Number of trees	99
GBH	1.17m±0.15	Height	12.90m±0.59

Status of Isolation zone:
Isolation zone is maintained as along all sides of seed stand different species are present there.



Latitudes (N)	Longitudes (E)
26.37131 N	89.32396 E
26.37106 N	89.32388 E
26.3709 N	89.32392 E
26.37138 N	89.32447 E
26.37137 N	89.32469 E

Accessibility of the area for seed collection: It is not easy to accessible due to very dense weed is present.

No. of trees recommended for culling

-11



Remarks:It is one of the priority species by the State Department (mentioned in MOU) and it is the single stand for the species, it can be converted as Seed Stand only after the following conditions: i) culling of inferior trees ii) cleaning of dense weeds.

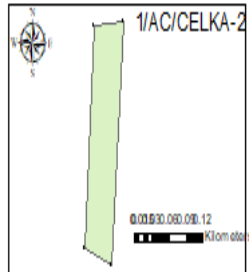
Sl. No. 4.1

Seed Stand No. : 1/AC/CELKA-2

Species: *Anthocephalus chinensis* Local name: Kadam

Range	NWL	Location	CELKA -2
Area	2.50	Total Number of trees	36
GBH	1.71m±0.30	Height	33.76m±1.33

Status of Isolation zone:
Different species present
along the seed stand



Latitudes (N)	Longitudes (E)
26.50541N	88.52635 E
26.50766 N	88.52654 E
26.50769 N	88.52706 E
26.50523 N	88.52682 E

Accessibility of the area
for seed collection:
cleaning required.

No. of trees recommended
for culling – 5 Regeneration
status: Zero



Remarks: Very less density of trees (12 trees / ha) after culling. Hence, it may not be considered as seed stand.

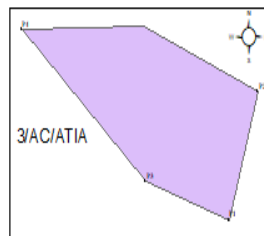
Sl.No. 4.2

Seed Stand No. :3/AC/ATIA

Species: *Anthocephalus chinensis* Local name: Kadam

Range	COB (T)	Location	Atiamochor
Area	3 ha	Total Number of trees	140 as per record but at present very less are alive.

Status of Isolation zone: No isolation zone is created in the seed stand.



Accessibility of the area for seed collection: Mostly trees are dead due to old age and disease attack on the trees. In this seed stand trees of Pakasajis comparatively more than Kadam.

Latitudes	Longitudes
26.26162N	89.44612 E
26.26209 N	89.44626 E
26.26176 N	89.44572 E
26.26232 N	89.44512 E



Remarks: The seed stand condition is very poor; most of the trees had broken top. So, it may be discarded.

Sl.No. 4.3

Seed Stand No. :4/AC/SRAJ-9

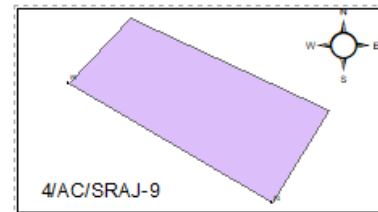
Species: *Anthocephalus chinensis* Local name: Kadam

Range	WRVK	Location	SRVK-9
Area	5 ha	Total Number of trees	322 (C) + 214 (B)
GBH	1.08m±0.13	Height	22.34m±32.97



Status of Isolation zone:
No Isolation zone is created in the seed stand.

Status of stand: Trees are in poor condition, crooked & bend. Other species such as Neem, Pithali & Gokul are dominating in the seed stand of Kadam.



Latitudes	Longitudes
26.37859 N	89.30948 E
26.37870 N	89.30958 E
26.37844 N	89.30973 E
26.37864 N	89.30983 E

No. of trees recommended for culling – 78

Remarks: Most of the trees are in poor condition. Isolation zone is not created. So many other species are existing in the seed stand. Culling of so much trees may not be desirable. So, it may not be considered as a seed stand.

Species: *Bischofia javanica* Local name: Kainjal

Range	N.Rydak	Location	Kartik
Area	2.27 ha	Total Number of trees	No trees

Status: **Discarded** seed stand. No trees are found in the seed stand. Maximum trees are being cut from the lower portion.



Sl.No.5.2

Seed Stand No. :2/BJ/KARTIK

Species: *Bischofia javanica* Local name: Kainjal

Range	N.Rydak	Location	Kartik
Area	1.77 ha	Total Number of trees	No trees

Status : No trees are found in the seed stand.



Remarks: The seed stands **1/BJ/KARTIK** & **2/BJ/KARTIK** are adjacent to each other. Both should be abandoned.

Sl. Number 6

Seed Stand No. : 2/BC/DIANA

Species: *Bombax ceiba*

Local name: Seemal

Range	Diana	Location	C. Diana
Area	4 hectare	Total Number of trees	28+37
GBH	2.82m±0.81	Height	27.81m±0.59

Status of Isolation zone: Same species is present outside the seed stands areas (another 5-6 ha, comparatively young plantation).

Accessibility of the area for seed collection: It is very difficult to collect the seed of the species due to dense bushes.



Latitudes	Longitudes
26.49.151 N	88.54.365 E
26.49.115 N	88.54.412 E
26.49.143 N	88.54.538 E
26.49.310 N	88.54.575 E

No. of trees recommended for culling – 10



Remarks: As there is no isolation zone maintained, quality of seed will be less. Tree density is very low, even after culling it will be 13.8 trees/ha, which is not desirable. Hence it may not be considered as seed stand.

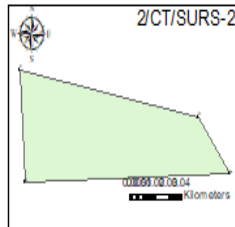
Sl. No. 7.1

Seed Stand No. : 2/CT/SURS-2

Species: *Chukrasia tabularis* Local name: Chikrasi

Range	Lataguri	Location	Sursuti-2
Area	3 hectares	Total Number of trees	54+37
GBH	1.89m±0.54	Height	35.85m±1.43

Status: Different species (Sal, Chilauni, and Jarul) are dominating inside the seed stand.



Accessibility of the area for seed collection: It is difficult to collect seed (elephant affected).

Latitudes	Longitudes
26.47127 N	88.46963 E
26.47184 N	88.4696 E
26.47159 N	88.47094 E
26.4713 N	88.47117 E

No. of trees recommended for culling-6

Regeneration status: approx. 50 (10 cm girth)



Remarks: It may not be considered as Seed Stand of Chikrasi.

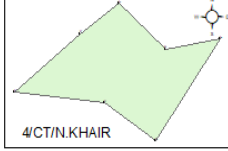

Sl.No.7.2

Seed Stand No. :4/CT/N.KHAIR

Species: *Chukrasia tabularis*

Local name: Chikrasi

Range	Madarihat	Location	N.Khairbari – 1
Area	8 ha	Total Number of trees	(C) 187+186(B)
GBH	1.98m±0.30	Height	26.77m±1.93

<p>Status of Isolation zone: Isolation zone is created in the seed stand.</p> <p>Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. Mostly trees are in good condition. It is pure plot and well maintained.</p>																
	<table border="1"> <thead> <tr> <th>Latitudes</th> <th>Longitudes</th> </tr> </thead> <tbody> <tr> <td>26.40376 N</td> <td>89.14665 E</td> </tr> <tr> <td>26.40362 N</td> <td>89.14794 E</td> </tr> <tr> <td>26.40311 N</td> <td>89.14868 E</td> </tr> <tr> <td>26.40449 N</td> <td>89.14961 E</td> </tr> <tr> <td>26.40435 N</td> <td>89.14882 E</td> </tr> <tr> <td>26.40497 N</td> <td>89.14816 E</td> </tr> <tr> <td>26.40456 N</td> <td>89.14759 E</td> </tr> </tbody> </table> <p>No. of trees recommended for culling – 48</p>		Latitudes	Longitudes	26.40376 N	89.14665 E	26.40362 N	89.14794 E	26.40311 N	89.14868 E	26.40449 N	89.14961 E	26.40435 N	89.14882 E	26.40497 N	89.14816 E
Latitudes	Longitudes															
26.40376 N	89.14665 E															
26.40362 N	89.14794 E															
26.40311 N	89.14868 E															
26.40449 N	89.14961 E															
26.40435 N	89.14882 E															
26.40497 N	89.14816 E															
26.40456 N	89.14759 E															



Remarks: It may be considered as Seed Stand/ SPA after culling of inferior trees.
Sl. No. 7.3 Seed Stand No. : 5/CT/Khair

Species: *Chukrasia tabularis*

Local name: Chikrasi

Range	Panighata	Location	Khairbani
Area	5 hectare	Total Number. of trees	99
GBH	2.15m±0.5	Height	33.3m±0.8

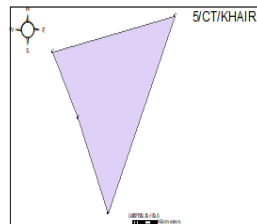
Status of Isolation zone:

Same species present near by the seed stand areas. Boundary/ border line not observed. No numbering. Staff has no idea.

Accessibility of the area for seed collection: It is highly affected by the wild animals. It is at high upland regions

No. of trees recommended for culling - 5

Latitudes (N)	Longitudes (E)
26.47938 N	88.12428 E
26.47911 N	88.12442 E
26.47872 N	88.12458 E
26.47952 N	88.12496 E



Remarks: May not be considered as seed stand.

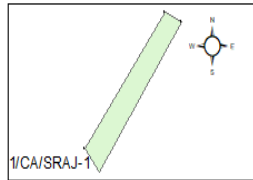
Sl.No. 8.1

Seed Stand No. :1/CA/SRAJ-1

Species: *Cordia alleodora* Local name: Cordia

Range	WRVK	Location	SRVK-1
Area	1.30 ha	Total Number of trees	54
GBH	1.29m±0.29	Height	16.40m±3.12

Status of Isolation zone: Isolation zone is created in the seed stand.



Condition: Mostly trees are crooked & bent, disease attack & not in proper condition. Stand is full of bushes.

No. of trees recommended for culling – 23

Latitudes	Longitudes
26.3742 N	89.21448 E
26.3745 N	89.31497 E
26.37446 N	89.31505 E
26.37395 N	89.31457 E

After culling tree density will be: 24 trees/ha



Sl.No. 8.2

Seed Stand No. :2/CA/SRAJ-9

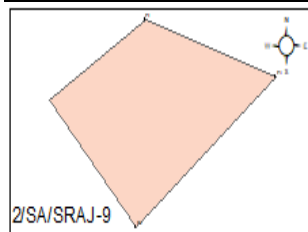
Species: *Cordia alleodora* Local name: Cordia

Range	WRVK	Location	SRVK-10
Area	0.80 ha	Total Number. of trees	69
GBH	1.2m±0.24	Height	22.62m±0.47

Status of Isolation zone: Isolation zone is created in the seed stand.

Latitudes	Longitudes
26.39676 N	89.31281 E
26.3964 N	89.31279 E
26.39650 N	89.31328 E
26.39666 N	89.31311 E

Accessibility of the area for seed collection: Seed can't be collected easily from the seed stand highly affected by the elephant. It is pure plot but mostly trees are crooked & bent, disease attack.



Sl.No. 8.3

Seed Stand No. :3/CA/SRAJ-9

Species: *Cordia alleodora*

Local name: Cordia

Range	WRVK	Location	SRVK – 9
Area	1.55 ha	Total Number of trees	185
GBH	0.94m±0.37	Height	22.15 m±1.07

Accessibility: Highly prone to elephant attack.

Condition: Most of the trees are crooked/ bent / top broken/ disease & insect attacked.



Remarks: *Cordia alleodora* is a priority species as per MOU. But overall performance/ condition of all the three stands of this species was found poor on the basis of morphological characters. The area is also prone to wildlife attack.

Cordia alleodora is native to the American tropics. Outside of its indigenous range, *Cordia alleodora* has been identified as a problematic invasive species.^[1] The species has been described as a severe environmental nuisance and has become susceptible to outbreaks of a form of root rot known as *Phellinus noxius*.^[2]

1. Edward et al. (2009). "Relative Roles of Disturbance and Propagule Pressure on the Invasion of Humid Tropical Forest by *Cordia alleodora* (Boraginaceae) in Tanzania". *Biotropica*. **41** (2): 171–178.
2. Country report on the forestry invasive species situation in Vanuatu. Proceedings of the Asia-Pacific Forest Invasive Species Conference. Kunming, Yunnan Province, China 17–23 August 2003.

Therefore, stands of this species may not be desirable for considering as seed stand.

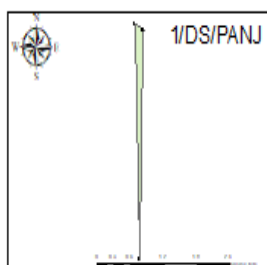
Sl. No. 9

Seed Stand No. : 1/DS/PANJ

Species: *Dalbergia Sissoo*Local name: *Sisoo*

Range	Chalsa	Location	Panjhora -1
Area	2.50 ha	Total Number of trees	20
GBH	1.24m±0.2	Height	15.5m±0.9

Status of Isolation zone: No trees are present near by the seed stand
 Accessibility of the area for seed collection: Just 20 trees are left in the seed stand in which many are affected with the disease attack and top is broken.



Latitudes	Longitudes
26.5278 N	88.50095 E
26.52771 N	88.50061 E
26.49964 N	88.49964 E
26.52858 N	88.49919 E



No. of trees recommended for culling – 10

Regeneration status: Zero



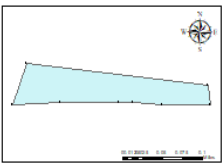
Remarks: It should be abandoned as a seed stand.

Sl. No.10.1

Seed Stand No. : 1/DM/DPO-3

Species: *Dipterocarpus macrocarpus* Local name: Hollong

Range	Damanpur (E)	Location	Damanpur-3
Area	0.40 ha	Total Number. of trees	140
GBH	1.4m±0.30	Height	26.8m±0.50

<p>Status of Isolation zone: Isolation zone is created in the seed stand, along the seed stand different trees are present.</p> <p>Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. The seed stand is in the good condition but it requires huge maintainance.</p>		<p>No. of trees recommended for culling – 31</p> <p>Regeneration status- Nil</p>	Latitudes	Longitudes
			26.35755 N	89.31534 E
			26.35756 N	89.31581 E
			26.35756 N	89.31587 E
			26.35755 N	89.31621 E
			26.35763 N	89.3162 E
			26.35772 N	89.3154 E



Remarks: It may be considered as seed stand.

Sl. No. 10.2 & 10.3 Seed Stand No. : 2/DM/NIM-3 BTR & 3/DM/GADA-1
Species: *Dipterocarpus macrocarpus* Local name: Hollong

Range	Nimati; Damanpur- (E)	Location	Nimati -3; Gadadhar - 1
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Remarks: These stands do not exist as reported by the staff of the SFD.

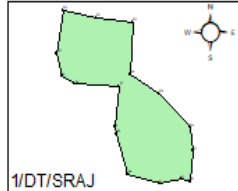
Sl. No.11.1

Seed Stand No. :1/DT/SRAJ

Species: *Dipterocarpus turbinatus* Local name: Garjan

Range	WRVK	Location	SRVK – 9
Area	0.42 ha	Total Number. of trees	228
GBH	0.91m±0.20	Height	26.71m±1.16

Status of Isolation zone: Isolation zone is created in the seed stand.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. The seed stand is in the good condition. It is pure plot and well maintained.

Latitudes	Longitudes
26.37792 N	89.31336 E
26.37795 N	89.31308 E
26.37832 N	89.31304 E
26.37833 N	89.31284 E
26.37846 N	89.31276 E
26.37861 N	89.31294 E
26.37837 N	89.31309 E
26.37829 N	89.31322 E
26.37805 N	89.31337 E

No. of trees recommended for culling – 33



Remarks: The stand is good. Tree age 33 years. But the density of trees is very high. We recommended 33 trees for culling. However, in adjacent to this seed stand another seed stand of same species (stand no. 3/DT/SRAJ of 0.7 ha) may be merged with this stand.

After merging: Area : 1.12 ha
Total trees before culling: 503.
Recommended for culling: 94
Tree density after culling: 365 trees/ ha that means around 5m x 5m spacing.

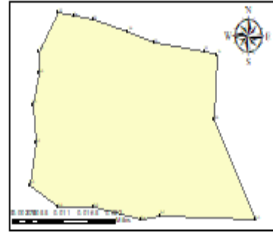
Hence, both stands may be considered as one seed stand.

Species: *Dipterocarpus turbinatus* Local name: *Garjan*

Range	WRVK	Location	WRVK
Area	0.4 ha	Total Number. of trees	198
GBH	1.25m±0.22	Height	25.78m±1.35

Status of Isolation zone:

Isolation zone is created in the seed stand.

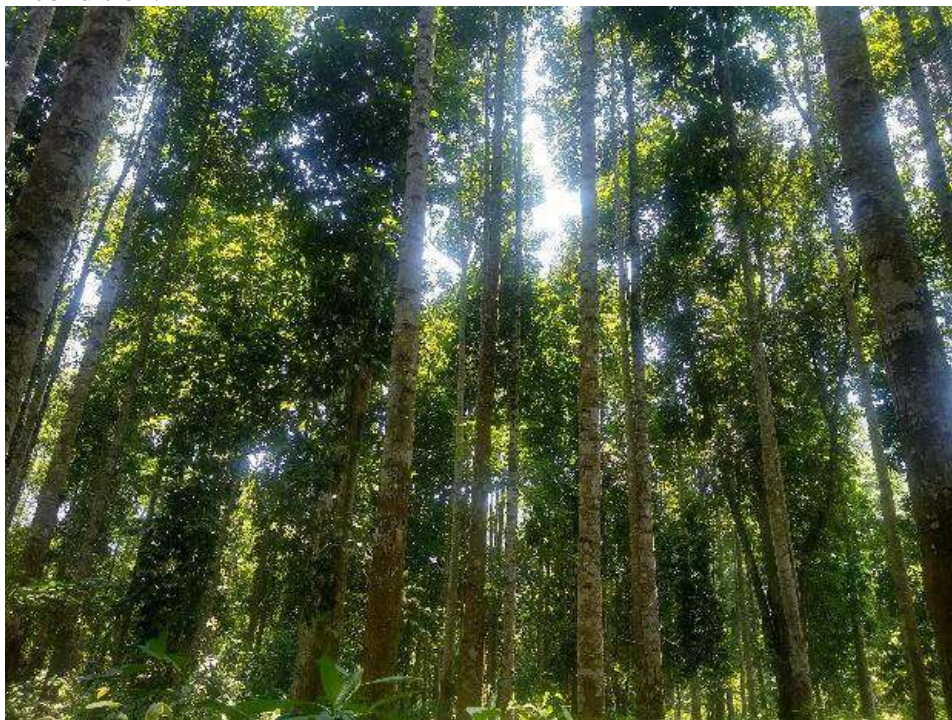


Accessibility of the area for seed collection:

Seed can be collected easily from the seed stand. The seed stand is in the good condition.

Latitudes	Longitudes
26.37452 N	89.32348 E
26.37458 N	89.3232 E
26.37462 N	89.32303 E
26.37453 N	89.32292 E
26.37447 N	89.32292 E
26.37429 N	89.32291 E
26.37412 N	89.32298 E
26.37409 N	89.32324 E

No. of trees recommended for culling – 19



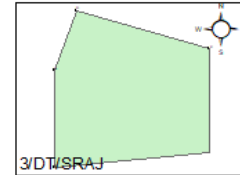
Remarks: It may be considered as seed stand.

Species: *Dipterocarpus turbinatus* Local name: Garjan

Range	WRVK	Location	SRVK-10
Area	0.7 ha	Total Number. of trees	275
GBH	1.09m±0.33	Height	29.82m±0.89



Status of Isolation zone: Isolation zone is created in the seed stand.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. The seed stand is in the good condition and it is pure plot.

Latitudes	Longitudes
26.37.834 N	89.31301 E
26.37859 N	89.31303 E
26.37866 N	89.31279 E
26.37855 N	89.31275 E
26.37837 N	89.31275 E

No. of trees recommended for culling – 61



Remarks:

It can be recommended that both seed stands 1/DT/SRAJ & 3/DT/SRAJ can merged and treat as a single seed stand.

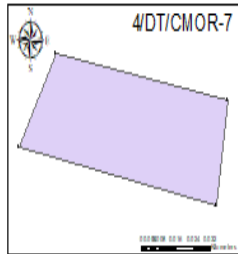
Species: *Dipterocarpus terbinatus*

Local name: Garjan

Range	Moraghat	Location	CMOR-7
Area	1 hectare	Total Number of trees	328
GBH	1.13m±0.25	Height	35.54m±1.0

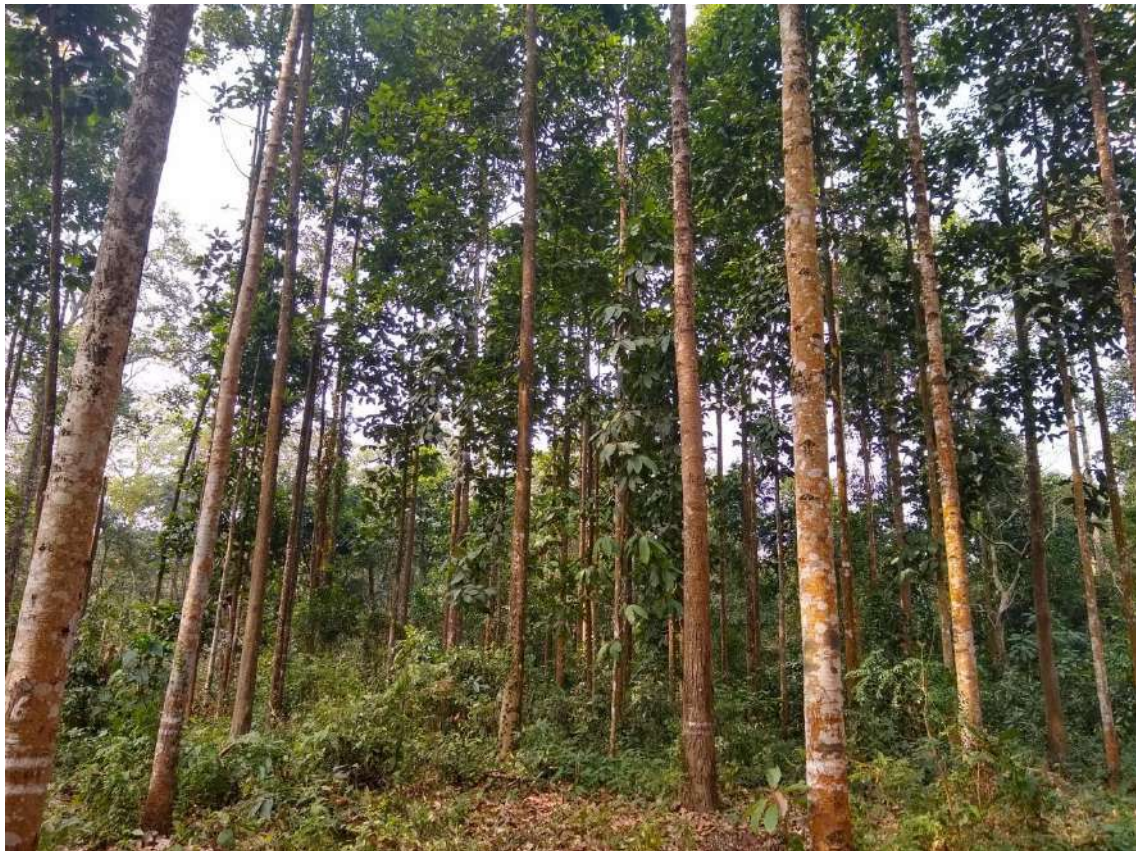
Status of Isolation zone: **No isolation.** Same species is present near by the seed stand zones (one side). **More culling required at outside of the stand.**

Accessibility: It is easy to collect from the seed stands.



Latitudes	Longitudes
26.43168 N	88.59451 E
26.43194 N	88.59469 E
26.4318 N	88.5955 E
26.43151 N	88.59544 E

No. of trees recommended for culling - 56



Remarks: It may be considered as seed stand after culling of trees inside as well as outside of the stand.

Sl. Number. 11.5

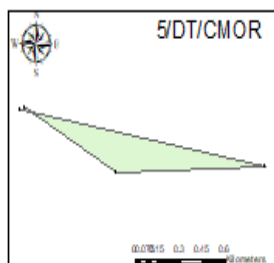
Seed Stand No. : 5/DT/CMOR

Species: *Dipterocarpus terbinatus* Local name: Garjan

Range	Moraghat	Location	S.MOR-5
Area	0.5 hectare	Total Number. of trees	127
GBH	1.21m±0.19	Height	26.7m±2.3

Status of Isolation zone: Same species are present near by the seed stand zones (two sides).

Accessibility of the area for seed collection: It is easy to collect the seed stands.



Latitudes	Longitudes
26.43082 N	88.57081 E
26.43091 N	88.57108 E
26.42779 N	88.57716 E
26.42802 N	88.58716 E

No. of trees recommended for culling – 22



Remarks: The condition of the stand is good. It may be considered as seed stand. But in adjacent there is another 0.5 ha area of same species which may be included. Further culling in this additional area is required.



1 – Existing seed stand (0.5 ha)

2 – Nala between two stand

3 – Stand of same species (around 0.5 ha)

Sl. Number. 12

Seed Stand No. :1/DS/REHTI

Species: *Duabangasonneratioidis*

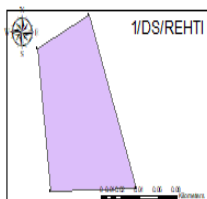
Local name: Lampate

Range	Banarhat	Location	Rehti
Area	5.00 ha	Total Number. of trees	182+127
GBH	2.12m±0.30	Height	25.97m±2.53

Status of Isolation zone: Different species were present along the seed stand zone.

Accessibility of the area for seed collection: Easy to collect the seed from the seed stand.

No. of trees recommended for culling – 22



Latitudes	Longitudes
26.48381 N	89.06536 E
26.48261 N	89.06584 E
26.4826 N	89.06493 E
26.48359 N	89.0648 E

Regeneration status: Zero



Remarks: It may be considered as seed stand/ SPA.

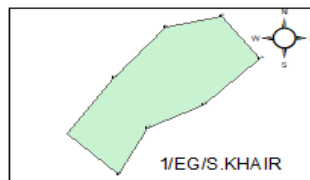
Sl.No. 13

Seed Stand No. : 1/EG/S.KHAIR

Species:*Eleocarpusganitrus* Local name:Rudrakha

Range	Madarihat	Location	S.Khaibari
Area	0.50 ha	Total Number. of trees	76
GBH	0.60m±0.10	Height	15.49m±0.86

Status of Isolation zone: Isolation zone is created in the seed stand.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. It is in good condition and young plantation.

Latitudes	Longitudes
26.37073 N	89.12609 E
26.37091 N	89.12629 E
26.37103 N	89.12642 E
26.37114 N	89.12633 E
26.37111 N	89.1262 E
26.37098 N	89.12608 E

No. of trees recommended for culling – 15



Remarks: It may be considered as seed stand.

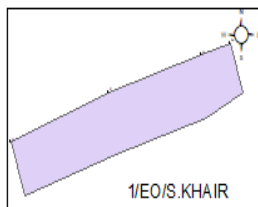
Sl.Number 14.1

Seed Stand No. : 1/EO/S.KHAIR

Species: *Emblica officinalis* Local name: Amloki

Range	Madarihat	Location	S.Khaibari
Area	0.50 ha	Total Number. of trees	63
GBH	0.41m±0.10	Height	7.48m±0.63

Status of Isolation zone: Isolation zone is created in the seed stand.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

Latitudes	Longitudes
26.37052 N	89.12632 E
26.3706 N	89.12652 E
26.37066 N	89.12671 E
26.37068 N	89.12677 E

Remarks: It is young plantation (tree age 14 years). Till now fruiting is not occurred in this plantation. Most of the trees are crooked and bend. Good crowned trees are very rare. Hence it may not be considered as seed stand.

No. of trees recommended for culling – 09



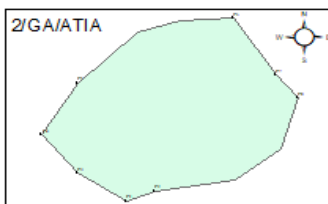
Species: *Gmelina arborea*

Local name: Gamhar

Range	COB(T)	Location	Atiamochor
Area	3.44 ha	Total Number. of trees	92(C) + 60 (B)
GBH	1.68m±0.27	Height	16.12m±0.76

Status of Isolation zone:
Isolation zone is created in the seed stand

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. In this seed mostly trees are in poor condition. It is not maintained.



Latitudes (N)	Longitudes (E)
26.26589 N	89.44214 E
26.26595 N	89.4423 E
26.26606 N	89.44187 E
26.2663 N	89.44167 E
26.26662 N	89.44187 E
26.26702 N	89.44274 E
26.26667 N	89.44298 E
26.26653 N	89.4431 E



Remarks: Stand is in poor condition, most of the trees are top broken or disease affected. Hence, it may not be considered as seed stand.

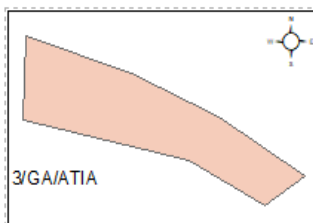
Sl.No. 15.2

Seed Stand No. :3/GA/ATIA

Species: *Gmelina arborea* Local name: Gamhar

Range	COB(T)	Location	Atiamochor
Area	2.50 ha	Total Number. of trees	132
GBH	1.62m±0.23	Height	15.35m±0.76

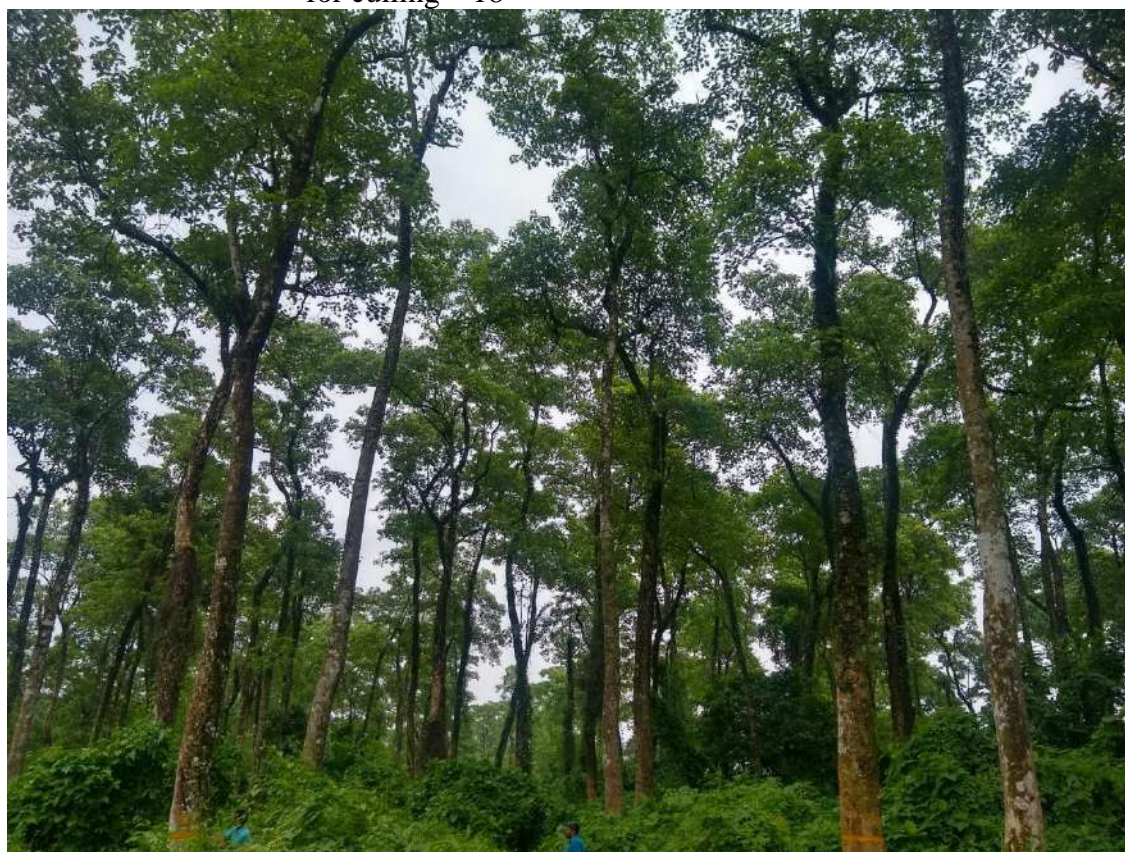
Status of Isolation zone: Isolation zone is created in the seed stand.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. In this seed mostly trees are in good condition. It is pure plot and properly maintained.

Latitudes (N)	Longitudes (E)
26.26136 N	89.44762 E
26.26178 N	89.44764 E
26.26159 N	89.4482 E
26.26137 N	89.44867 E
26.26115 N	89.44851 E
26.26107 N	89.44912 E

No. of trees recommended for culling – 18



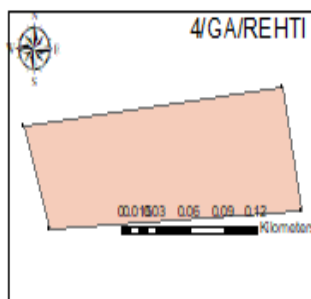
Remarks: It may be considered as seed stand.

Sl. No. 15.3 Seed Stand No. : 4/GA/REHTI

Species: *Gmelina arborea* Local name: Gamhar

Range	Banarhat	Location	Rehti-1
Area	3 hectare	Total Number. of trees	113as per record, but at present only 25.
GBH	1.66m±0.32	Height	24.49m±1.63

Status of Isolation zone:
Adjacent to it another seed stand of *Duabangasonneratioidis* is existed.



Latitudes (N)	Longitudes (E)
26.48322 N	89.0657 E
26.48261 N	89.06592 E
26.48268 N	89.06817 E
26.48342 N	89.06801 E

Condition: In the seed stand there are 25 trees present; among them many trees are diseased attacked. After culling hardly 10 trees will be in 3 ha.

No. of trees recommended for culling – 15

Regeneration status:
Zero



Remarks: It may be abandoned as a seed stand.

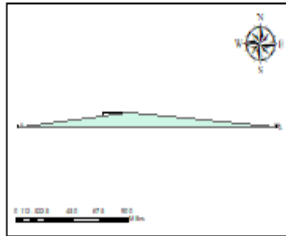
Sl. Number. 15.4

Seed Stand No. : 5/GA/SRAJ

Species: *Gmelina arborea* Local name: *Gamhar*

Range	WRVK	Location	WRVK
Area	2 ha	Total Number. of trees	324 as per record, but currently around 200 trees are present.
GBH	0.90m±0.25	Height	24.31m±0.92

Status of Isolation zone:
Isolation zone is created in the seed stand.

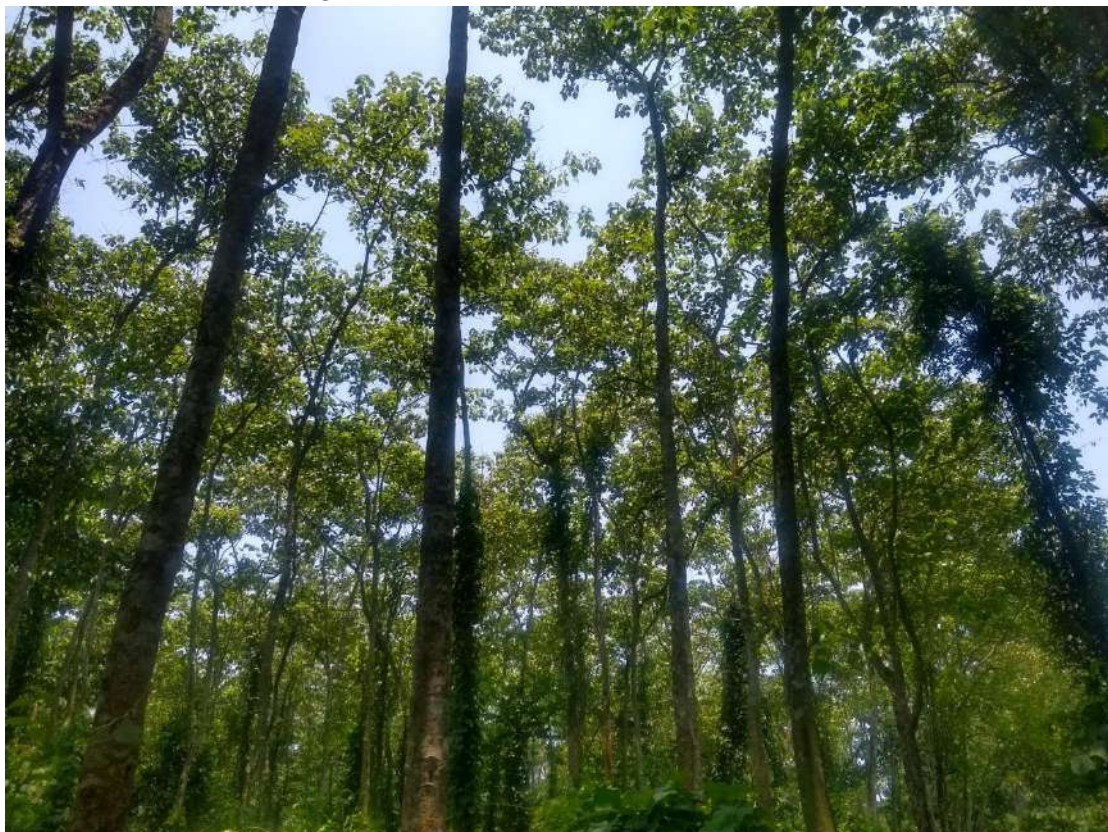


Accessibility of the area for seed collection:
Seed can be collected easily from the seed stand. The seed stand is in the good condition.

Latitudes (N)	Longitudes (E)
26.37534 N	89.32528 E
26.37531 N	89.32563 E
26.37546 N	89.32509 E
26.37564 N	89.32513 E

No. of trees recommended for culling

– 23



Remarks: It may be considered as seed stand.

Sl. No.15.5

Seed Stand No. : 6/GA/SRAJ

Species: *Gmelina arborea* Local name: Gamhar

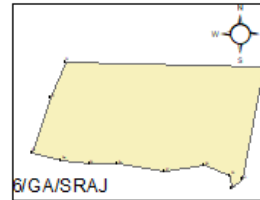
Range	WRVK	Location	SRVK-10
Area	1 ha	Total Number. of trees	359
GBH	0.84m±0.14	Height	13.36m±1.08



Status of Isolation zone: Isolation zone is created in the seed stand.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. However, as per staff the area is prone to wildlife.

Condition: It is young plantation of Gamhar. The seed stand is in the average condition. Stand is not maintained. Several trees are crooked and bend.



Latitudes	Longitudes
26.37781 N	89.30695 E
26.37762 N	89.30687 E
26.37733 N	89.30677 E
26.37729 N	89.30693 E
26.37727 N	89.30723 E
26.37721 N	89.30783 E
26.37714 N	89.30784 E
26.37778 N	89.30801 E

No. of trees recommended for culling – 68



Remarks: It may be considered as seed stand.

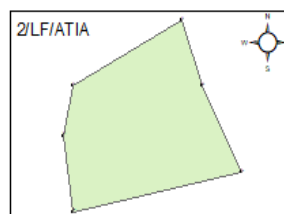
SI.No. 16.1

Seed Stand No. :2/LF/ATIA

Species:*Lagerstroemia flosreginae* Local name:Jarul

Range	COB (T)	Location	Atiamochor
Area	1 ha	Total Number. of trees	123
GBH	1.29m±0.20	Height	15.26m±0.98

Status of Isolation zone: Isolation zone is maintained and teak trees are present along four sides of the seed stand.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. In this seed mostly trees are in good condition. It is pure plot but not maintained.

Latitudes (N)	Longitudes (E)
26.26458 N	89.44416 E
26.2644 N	89.44383 E
26.26426 N	89.4438 E
26.26405 N	89.44383 E
26.2644 N	89.44422 E
26.26416 N	89.44434 E

No. of trees recommended for culling – 18



Remarks: It may be considered as seed stand.

Sl. Number. 16.2

Seed Stand No. :3/LF/ATIA

Species: *Lagerstroemia flosreginae*

Local name: Jarul

Range	COB (T)
Area	1 ha
Location	Atiamochor
Total Number. of trees	90 as per record, but at present no Jarul tree is there.



Remarks: Discarded by the SFD.

Sl. Number. 16.3

Seed Stand No. :4/LF/LT-2

Species: *Lagerstroemia flosreginae*

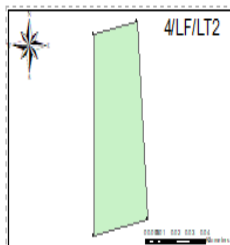
Local name: Jarul

Range	Lataguri	Location	LT-2
Area	1 hectare	Total Number of trees	112+102
GBH	0.88m± 0.14	Height	13.32m±1.95

Status of Isolation zone: Different species is present outside.

Accessibility of the area for seed collection: It can easily be collected because it is the pure plot.

No. of trees recommended for culling – 49



Latitudes (N)	Longitudes (E)
26.42139 N	88.46795 E
26.42145 N	88.46832 E
26.42222 N	88.46826 E
26.42217 N	88.46796 E

Regeneration status: > 40 trees having approx. 40 cm girth.



Remarks: It may be considered as seed stand.

Sl.No.17.1

Seed Stand No. :2/LH/GODAM-2

Species: *Lagerstroemia hypoleuca* Local name: Benteak

Range	Hamtonganj	Location	Godamdabri-2
Area	4 ha	Total Number of trees	Only 7
GBH	2.35m±0.28	Height	23.69 m± 1.20

Remarks: In this seed stand hardly 7 Benteak trees are present. Other species is dominant like Pitali in the seed stand. Hence, it may be abandoned as a seed stand.

**Sl. No. 17.2**

Seed Stand No. :4/LH/Khair

Species: *Lagerstroemia hypoleuca*

Local name: Benteak

Range	Panighata	Location	Khairbani
Area	3 hectare	Total Number of trees	200
GBH	1.44m±0.2	Height	33.91m±1.7

Status of Isolation zone: Same species are present along the seed stand.

Accessibility of the area for seed collection: It is easy to collect the seed from the seed stand.

Latitudes (N)	Longitudes (E)
26.47929 N	88.12624 E
26.4791 N	88.12647 E
26.481 N	88.12591 E
26.47099 N	88.12611 E

No. of trees recommended for culling – 14



Remarks: It is the single existing seed stand of the species in Silviculture North (Plain) division. It may be considered as seed stand after the culling of recommended trees. In addition, poor trees in outside of stand should also be culled out.

Sl. No. 18.1

Seed Stand No. : 1/LP/C.Diana

Species: *Lagerstroemia parviflora* Local name: Sidha

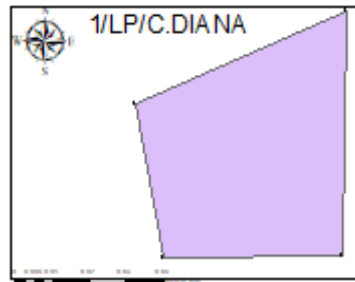
Range	Diana	Location	Central Diana
Area	1.50 hectare	Total Number of trees	38
GBH	2.36m±0.3	Height	23.1m±0.8

Status of Isolation zone:
Different species are present near by the seed stand zones.

Inside this stand, new plantation of sisoo, gamhar, khair, simal, lali&mohagany was carried out.

No. of trees recommended for culling – 18

Latitudes (N)	Longitudes (E)
26.51358 N	89.0008 E
26.51379 N	89.00138 E
26.51322 N	89.00136 E
26.51322 N	89.00087 E



Remarks: After culling very low tree density (13.3 trees/ ha) will be in the stand, so it may be abandoned as seed stand.

Sl.No.18.2

Seed Stand No. :2/LP/C.RYDAK

Species:*Lagerstroemia parviflora*Local name: Sidha

Range	N.Rydak	Location	Central Rydak
Area	7.54 ha	Total Number of trees	Nil

Remarks: No trees of Sidha are found in the seed stand. Near about 8 -10 years it is not maintained as reported by staff of department. It may be abandoned as seed stand.

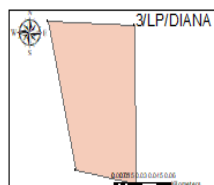
Sl. Number. 18.3

Seed Stand No. : 3/LP/Diana

Species:*Lagerstroemia parviflora*Local name: Sidha

Range	Diana	Location	Diana
Area	2.5 ha	Total Number. of trees	Nil

Status: **No trees are found in the seed stand.**



Latitudes (N)	Longitudes (E)
26.50775 N	88.59692 E
26.50787 N	88.59629 E
26.509 N	88.59693 E
26.50905 N	88.59602 E



Remarks: No trees of Sidha are found in the seed stand. It should be abandoned as seed stand.

Sl. No. 18.4

Seed Stand No. :4/LP/NATHUA

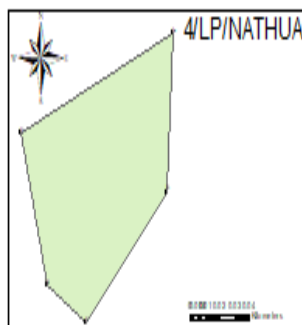
Species: *Lagerstroemia parviflora* Local name: Sidha

Range	Nathua	Location	Ramsai
Area	2.50 hectares	Total Number. of trees	267+177
GBH	0.82m±0.25	Height	24.18m±2.56

Status of Isolation zone:

Different species is present just adjacent *Terminalia myriocarpa* & *Terminalia tomentosa*

Accessibility of the area for seed collection: It can easily be collected, it is the pure plot seed stand zone.



Latitudes (N)	Longitudes (E)
26.43931 N	88.5263 E
26.43917 N	88.52656 E
26.43966 N	88.52711 E
26.44026 N	88.52716 E
26.43989 N	88.52613 E

No. of trees recommended for culling – 9 (damaged) + Several small girth inferior trees should be culled out.



Remarks: It may be considered as seed stand.

Sl. No. 19**Seed Stand No. : 1/LF/MEND-6**Species: *Lophopetalum fimbriatum* Local name: Narkeli

Range	Kodalbasti	Location	Kodalbasti
Area	0.6 ha	Total Number. of trees	Not found

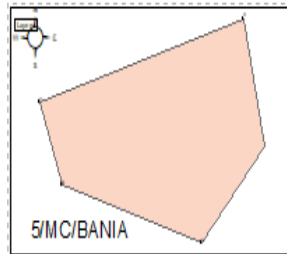
Remarks: Though it is a priority species of the SFD, and it is the single stand for the species, the staff of department could not trace out the seed stand. Hence, it may be abandoned.

Sl. No. 20.1**Seed Stand No. :5/MC/BANIA**Species: *Michelia champaca* Local name: Champ

Range	Chilapata	Location	Bania-2,7
Area	1.80 ha	Total Number. of trees	28
GBH	1.79m±0.22	Height	29.18m±0.74

Status

Most of the trees are affected with disease or insect attack. Mostly lower portion of tree (trunk) is damaged.



Latitudes	Longitudes
26.34297 N	89.22887 E
26.34284 N	89.22843 E
26.34271 N	89.22848 E
26.34262 N	89.22878 E

No. of trees recommended for culling – 11 Regeneration status:



Remarks: After culling very low density of trees (9.4trees/ ha) will be there. Hence, it may not be considered as seed stand.

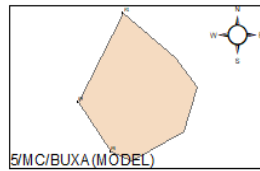
SI.No. 20.2

Seed Stand No. :5/MC/BUXA (MODEL)

Species: *Micheliachampaca* Local name: Champ

Range	DPO(E)	Location	Cheko – 6
Area	10 ha	Total Number of trees	117 (C) + 113 (B)
GBH	2.09m±0.19	Height	26.13m±0.80

Status of Isolation zone:
Isolation zone is created
in the seed stand.



Accessibility of the area
for seed collection: Area
is prone to wild elephant.

No. of trees recommended
for culling – 08

Regeneration
status: No.

Latitudes	Longitudes
26.34131 N	89.34251 E
26.34486 N	89.34284 E
26.34258 N	89.34163 E
26.34250 N	89.34160 E



Remarks: Area is highly prone to wild elephant. The maintenance of stand and seed collection is very difficult. Hence, it may not be considered as seed stand.

Sl.No. 20.3

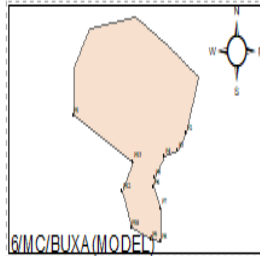
Seed Stand No. :6/MC/BUXA (MODEL)

Species: *Micheliachampaca*

Local name: Champ

Range	DPO (E)	Location	Gadadhar-3
Area	10 ha	Total Number of trees	327 (C) + 217 (B)
GBH	1.52m±0.31	Height	27.03m±1.08
Regeneration	0.79m±0.10		10.55m±1.05

Status of Isolation zone:
No isolation zone is created in the seed stand. At the north sides same species are present.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand.

Latitudes	Longitudes
26.35202 N	89.36355 E
26.35151 N	89.36596 E
26.35098 N	89.3654 E
26.35021 N	89.36556 E
26.35024 N	89.36534 E
26.35041 N	89.36488 E
26.35596 N	89.36451 E
26.35093 N	89.36467 E
26.35136 N	89.36493 E
26.35113 N	89.36543 E



No. of trees recommended for culling – 66



Remarks:Outside of seed stand, so many trees of same species are there. In addition to culling of 66 trees inside seed stand, poor trees in outside areas should also be culled out. Thereafter, it may be considered as seed stand.

Sl.No.20.4

Seed Stand No. : 7/MC/APAL

Species: *Michelia champaca*

Local name: Champ

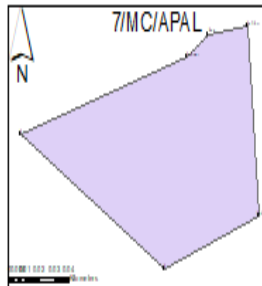
Range	Apalchand	Location	Apalchand-4
Area	2 hectare	Total Number. of trees	72
GBH	1.30m±0.24	Height	22.92m±1.85

Status of Isolation zone: **No isolation zone.** Same sp. along two sides of the seed stand. Inside the stand, other species like Jarul, Chilauni & Teak was observed. No border area was found.

Accessibility of the area for seed collection: Seed can easily be collected from the seed stand.

No. of trees recommended for culling – 12

Latitudes	Longitudes
26.45.509 N	88.38.103 E
26.45.489 N	88.38.038 E
26.45.543 N	88.37.940 E
26.45.572 N	88.38.054 E
26.45.581 N	88.38.069 E
26.45.584 N	88.38096 E



Remarks: No isolation zone is maintained. Inside stand, so many other species are present. After culling tree density will be 30 trees/ha, which is low. Hence, it may not be considered as seed stand.

Sl. No. 20.5

Seed Stand No. : 8/MC/DPO (E)

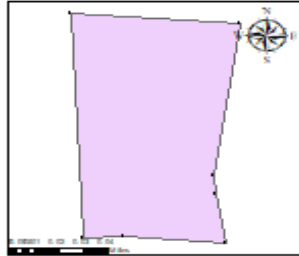
Species: *Micheliachampaca* Local name: Champ

Range	DPO (E)	Location	DPO (E)
Area	5 ha	Total Number of trees	200
GBH	1.65m±0.38	Height	27.26m±0.74

Status of Isolation zone: Isolation zone is created in the seed stand.

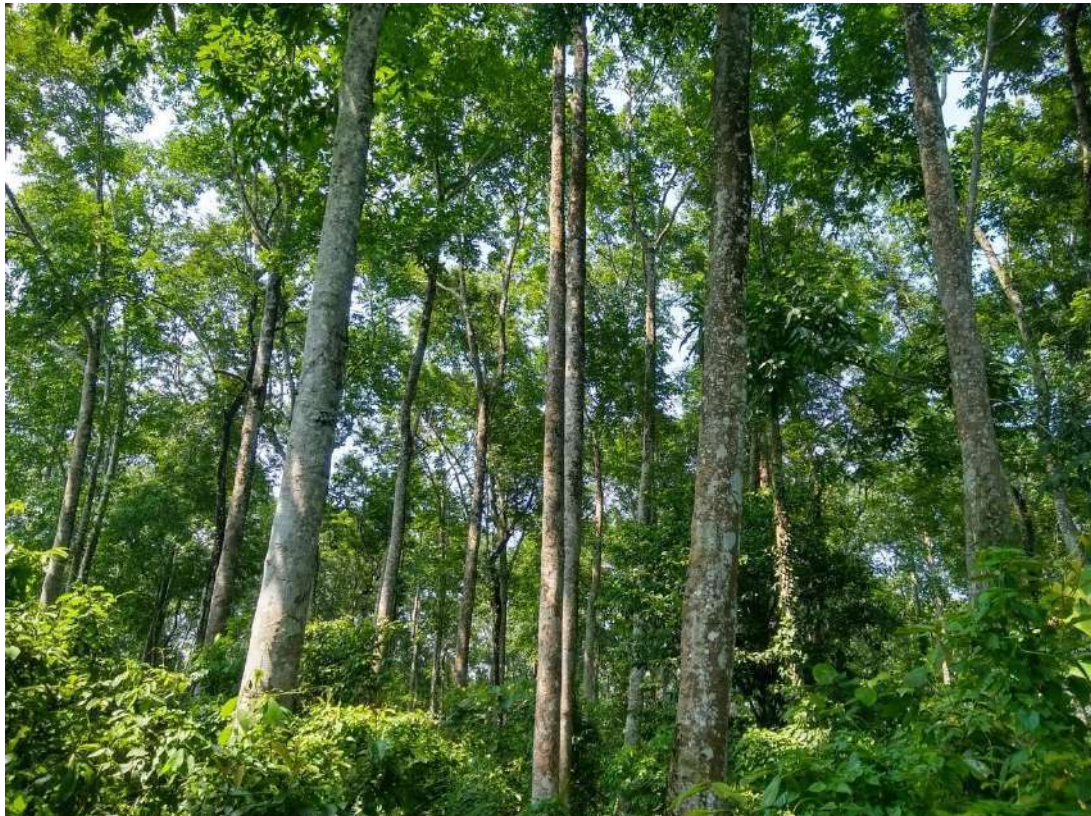
Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. The seed stand is in the good condition.

No. of trees recommended for culling -07



Latitudes (N)	Longitudes (E)
26.35.747 N	89.31.634 E
26.35.755 N	89.31.534 E
26.35.639 N	89.31.618 E
26.35.626 N	89.31.620 E
26.35.591 N	89.31.625 E
26.35.596 N	89.31.565 E
26.35.595 N	89.31.541 E

Regeneration status:-
Zero



Remarks: It can be considered as a seed stand.

Sl. No. 21.1Species: *Schimawallichii*

Seed Stand No. : 1/SW/SMOR

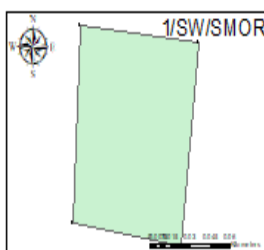
Local name: Chilauni

Range	Moraghat	Location	SMOR-3
Area	3 hectare	Total Number of trees	52
GBH	2.09m±0.3	Height	36.3m±2.7

Status of Isolation zone: Different species are present near by the seed stand zones.

Accessibility of the area for seed collection: It is easy to collect from the seed stands.

No. of trees recommended for culling – 4



Latitudes	Longitudes
26.42587 N	89.00636 E
26.42577 N	89.00725 E
26.42469 N	89.0071 E
26.42482 N	89.00628 E



Remarks: After culling very low tree density (16 trees/ ha) will be there, hence it may not be considered as seed stand.

Sl. No. 21.2

Seed Stand No. : 2/SW/CELK

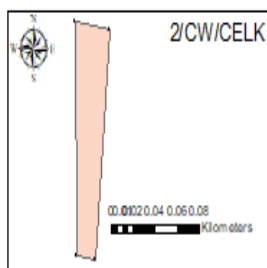
Species: *Schimawallichii* Local name: Chilauni

Range	NWL	Location	CELKA-2
Area	1.50 hectare	Total Number. of trees	62 as per record, but at present 44
GBH	1.50m±0.25	Height	37.71m±1.42

Status of Isolation zone: Different species are present along the seed stand.

Accessibility of the area for seed collection: **It is very difficult to collect seed from the seed stand (elephant prone).**

No. of trees recommended for culling – 8



Latitudes	Longitudes
26.50.724N	88.52.650 E
26.50.719N	88.52.682 E
26.50.585N	88.52.667 E
26.50.587N	88.52.650 E



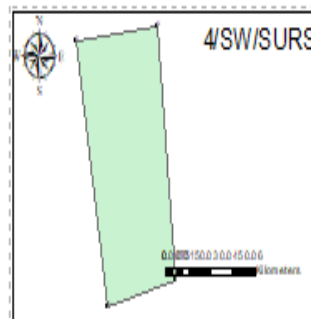
Remarks: Inside stand, several trees of other species viz., Champ, Kadam, Lampate, Chikrasi & Jarul are present. Area is prone to wildlife attack. After culling, very less tree density (24 trees/ha) will be retained. Hence, it may not be considered as seed stand.

Sl. No. 21.3

Seed Stand No. : 4/SW/SURS

Species: *Schimawallichii* Local name: Chilauni

Range	Lataguri	Location	Sursuti-2
Area	2 hectare	Total Number. of trees	77+38
GBH	1.29m±.17	Height	23.87m±0.66



Latitudes	Longitudes
26.46884 N	88.46697 E
26.46878 N	88.46642 E
26.46766 N	88.46662 E
26.46777 N	88.46708 E

Status of Isolation zone:
No isolation. Same species is present along the seed stand zone.

Accessibility: It is highly affected by wild animals (Bison).

Regeneration status: 50 (less girth, young, seed bearing not started)

No. of trees recommended for culling – 15



Remarks: It may be considered as seed stand.

Sl. No. 21.4

Seed Stand No. :5/SW/HUR

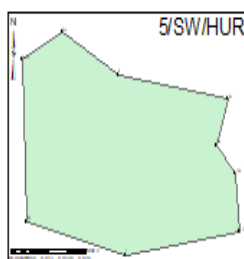
Species: *Schimawallichii* Local name: Chilauni

Range	Bagdogra	Location	Hurulia
Area	3 ha	Total Number of trees	214 +385
GBH	0.82m±0.08	Height	21m±1.53

Status of Isolation zone: **No isolation zone.** Same species are present two sides of the seed stand.

Accessibility of the area for seed collection: It may be collected easily.

Latitudes	Longitudes
26.42.716 N	88.17.992 E
26.42.703 N	88.18.048 E
26.42.744 N	88.18.100 E
26.42.771 N	88.18.045 E
26.42.787 N	88.18.013 E
26.42.777 N	88.17.990 E



No. of trees recommended for culling - 51

Regeneration status: Zero



Remarks: It may be considered as seed stand but culling of 51 trees inside the stand as well as all poor trees of same species at outside of the stand is required.

SI.No.22.1&22.2

Seed Stand No. :12/SR/SRAJ & 13/SR/SRAJ

Species:*Shorea robusta*

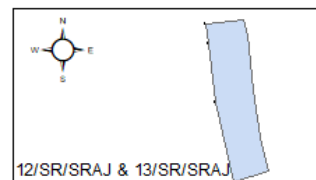
Local name:Sal

Range	WRVK	Location	S.Rajabhatkhawa-7
Area	20+10 ha	Total Number of trees	1625 (C) + 165 (B) 1015 (C) + 365 (B)
GBH	1.54m±0.36	Height	25.31m±1.49



Status of Isolation zone:
Isolation zone is created in the seed stand.

Condition: It is pure plot but not properly maintained, unable to identify the two seeds stand which are adjacent to each other. Highly bush area, very difficult to carry out the work.



Latitudes	Longitudes
26.38505 N	89.32051 E
26.38565 N	89.32037 E
26.3861 N	89.32032 E
26.38625 N	89.3203 E



Remarks: Two seed stands could not be identified separately by the staff of the department. Due to heavy bush survey to whole area was not possible. At present condition, it may not be considered as a seed stand.

Sl. No. 22.3

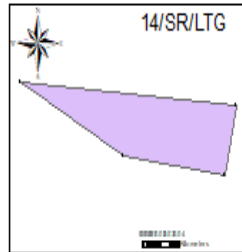
Species: *Shorearobusta*

Seed Stand No. :14/SR/LTG

Local name: Sal

Range	Ramsai	location	Lataguri-3
Area	5 hectares	Total Number. of trees	321+214
GBH	1.27m±0.22	Height	24.11m±1.26

Status of Isolation zone: Same species is present along the seed stand zone.



Accessibility of the area for seed collection: **It is highly affected by wild animals.**

Latitudes	Longitudes
26.42487 N	88.47464 E
26.42397 N	88.47647 E
26.42373 N	88.47828 E
26.42455 N	88.4785 E

No. of trees recommended for culling – 24

Regeneration status:
Seedlings were observed.



Remarks: It may be considered as seed stand after culling. However, both 14/SR/LTG and 15/SR/LTG are adjacent & same year of plantation, can be considered as one seed stand.

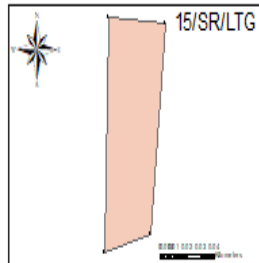
Sl. No. 22.4

Seed Stand No. :15/SR/LTG

Species: *Shorea robusta* Local name: Sal

Range	Ramsai	Location	Lataguri-3
Area	1hectare	Total Number of trees	86+70
GBH	1.04m±0.27	Height	22.51m±0.71

Status of Isolation zone: Same species are present along the seed stand zones.



Accessibility of the area for seed collection: It can easily be collected.
No. of trees recommended for culling – 43

Latitudes	Longitudes
26.42491 N	88.47656 E
26.42494 N	88.47613 E
26.42388 N	88.47609 E
26.42396 N	88.47644 E

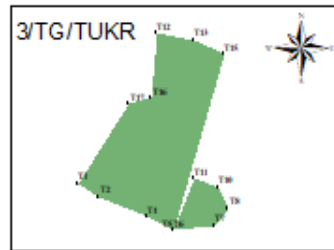


Remarks: It may be considered as seed stand after culling. However, both 14/SR/LTG and 15/SR/LTG are adjacent & same year of plantation, can be considered as one seed stand.

Sl.No 23.1 Seed Stand No. :3/TG/TUKR
Species:*Tectona grandis*Local name:Teak

Range	Tukriajhar	Location	Tukriajhar
Area	5 ha	Total Number of trees	429+244 as per the record but during visit 337 (C)+48(B)
GBH	1.4m±0.17	Height	19.7m±1.68

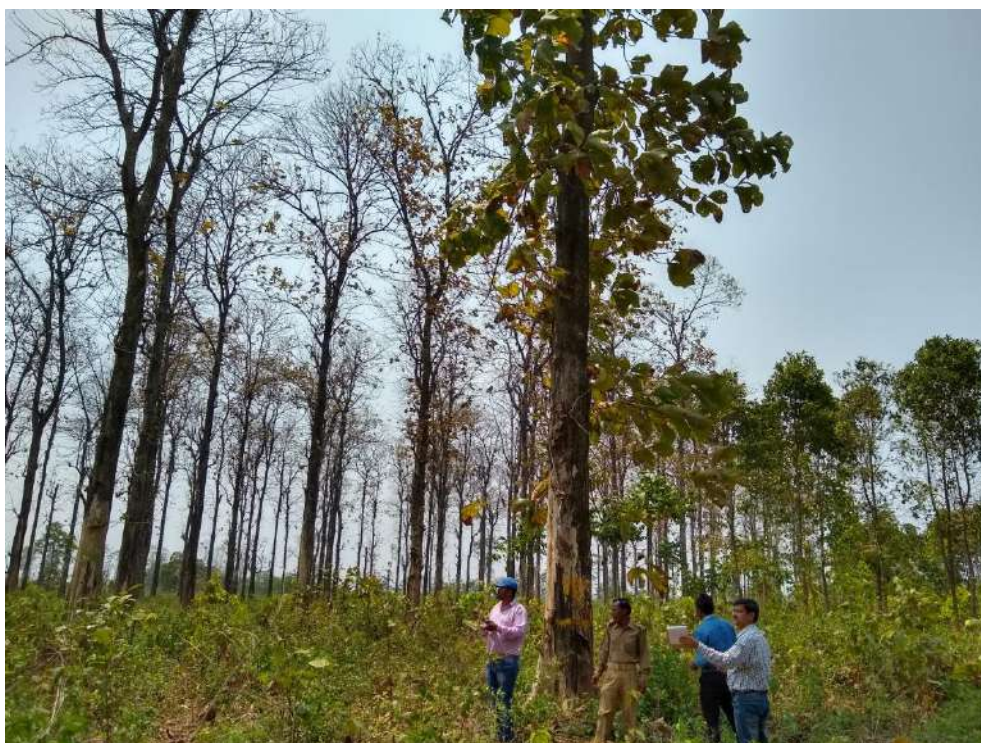
Status of Isolation zone: No Isolation zone is created in the seed stand. At the east side of the seed stand teak plants is more in numbered after the buffer zone rest three sides mixed species are present such Gokul,Sal,Toon, ,Ladul,Chilauni.



Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. The growth if the plant is good.

Latitudes	Longitudes
26.39.093N	88.11.228 E
26.39.079N	88.11.250E
26.39.076N	88.11.266E
26.39.059N	88.11.299E

Recommended for culling:
20 trees.



Remarks: It may be considered as seed stand after culling of same species.

Sl.No.23.2 Seed Stand No. :6/TG/TUKR
 Species:*Tectona grandis*Local name:Teak

Range	Tukriajhar	Location	Tukriajhar
Area	10 ha	Total Number of trees	1946 (C)+699(B)
GBH	0.9m±0.2	Height	11.1m±1.3

Status of Isolation zone: No
 Isolation zone is created in the
 seed stand. The growth of
 teak is very poor as compared
 to **3/TG/TUKRR**.Whereas
 the age of both the seed stand
 are same. Seed production is
 very low as reported by the
 forest department staff.



Remarks:-So, the seed stand may be abandoned.

Sl.No.23.3 Seed Stand No. :7/TG/N.KHAIRSpecies:*Tectona grandis*Local name:Teak

Range	Madarihat	Location	N.Khairbari-1
Area	10 ha	Total Number of trees
GBHm±...	Heightm±.....

Status: The teak trees has been cut & young plantation of miscellaneous species such as Chilauni, Jarul, Chikrasi, and Sidha&Gamhar was observed.



Remarks:- So, the seed stand may be abandoned.

Sl. No.23.4 Seed Stand No. :**8/TG/REHTI**Species: *Tectona grandis*

Local name: Teak

Range	Banarhat	Location	Reti-1
Area	5 hectare	Total Number of trees	542
GBH	1.9m±0.50	Height	33.19m±2.65

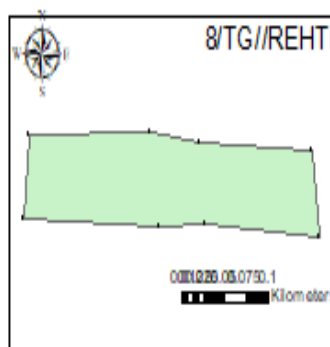
Status of Isolation zone:
No isolation zone was maintained.

Same species present outside the seed stand. That area may be included after culling of poor trees.

Accessibility of the area for seed collection: It is easy to have collection of seeds.

No. of trees recommended for culling – 87

Latitudes	Longitudes
26.47516 N	89.0646 E
26.47454 N	89.06465 E
26.47508 N	89.06592 E
26.47444 N	89.06598 E
26.47454 N	89.06412 E
26.47523 N	89.06402 E
26.47461 N	89.06252 E
26.47523 N	89.06259 E



Remarks:-It may be considered as a seed stand after culling out poor trees inside and outside of the seed stand.

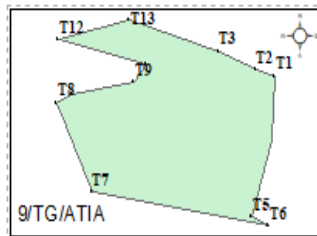
Sl.No.23.5 Seed Stand No. :9/TG/ATIA

Species:*Tectona grandis*

Local name:Teak

Range	COB Territorial	Location	Atiamochor
Area	5 ha	Total Number of trees	410 (C) +375 (B)
GBH	1.19m±0.23	Height	14.84m±0.75

Status of Isolation zone: No isolation zone is created in the seed stand. In this seed stand teak trees are present along four sides of the seed stand.



Latitudes	Longitudes
26.26531 N	89.44236 E
26.26542 N	89.44207 E
26.26468 N	89.44224 E
26.26479 N	89.44142 E
26.26519 N	89.44124 E
26.26536 N	89.4417 E
26.26523 N	89.44132 E
26.26556 N	89.44161 E

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand .In this seed mostly trees are in good condition. It is pure plot but not maintained.

No. of trees recommended for culling – 73



Remarks:-It may considered as an seed stand but in addition of culling out 73 trees inside the stand, poor trees from outside areas should also be culled out.

Sl. Number 24.1

Seed Stand No. :3/TM/SRAJ

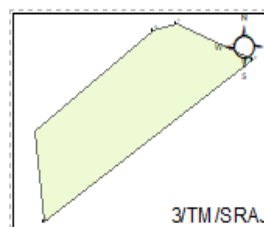
Species: *Terminalia myriocarpa* Local name: Panisaj

Range	WRVK	Location	SRVK-8
Area	5 ha	Total Number of trees	(C)174+274(B)
GBH	1.18m±0.14	Height	16.83m±1.05



Status of Isolation zone: Isolation zone is created in the seed stand.

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. The seed stand is in the good condition. No. of trees recommended for culling – 23



Latitudes	Longitudes
26.38758 N	89.31805 E
26.38741 N	89.31844 E
26.38755 N	89.31793 E
26.38665 N	89.31737 E

Remarks:- It may be considered as a seed stand.

Sl. Number. 24.2 Seed Stand No. :4/TM/NATHUA

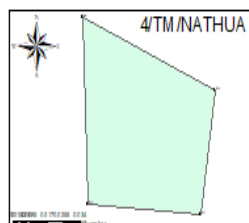
Species: *Terminalia myriocarpa*

Local name: Panisaj

Range	Nathua	Location	Ramsai
Area	1 hectare	Total Number of trees	215
GBH	0.77m±0.18	Height	23.09m±1.66

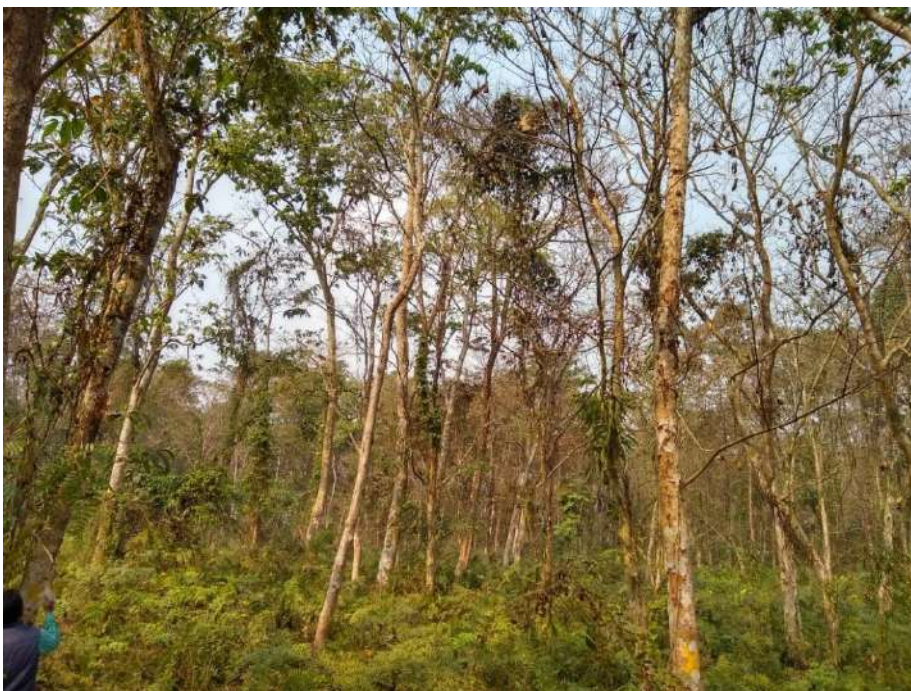
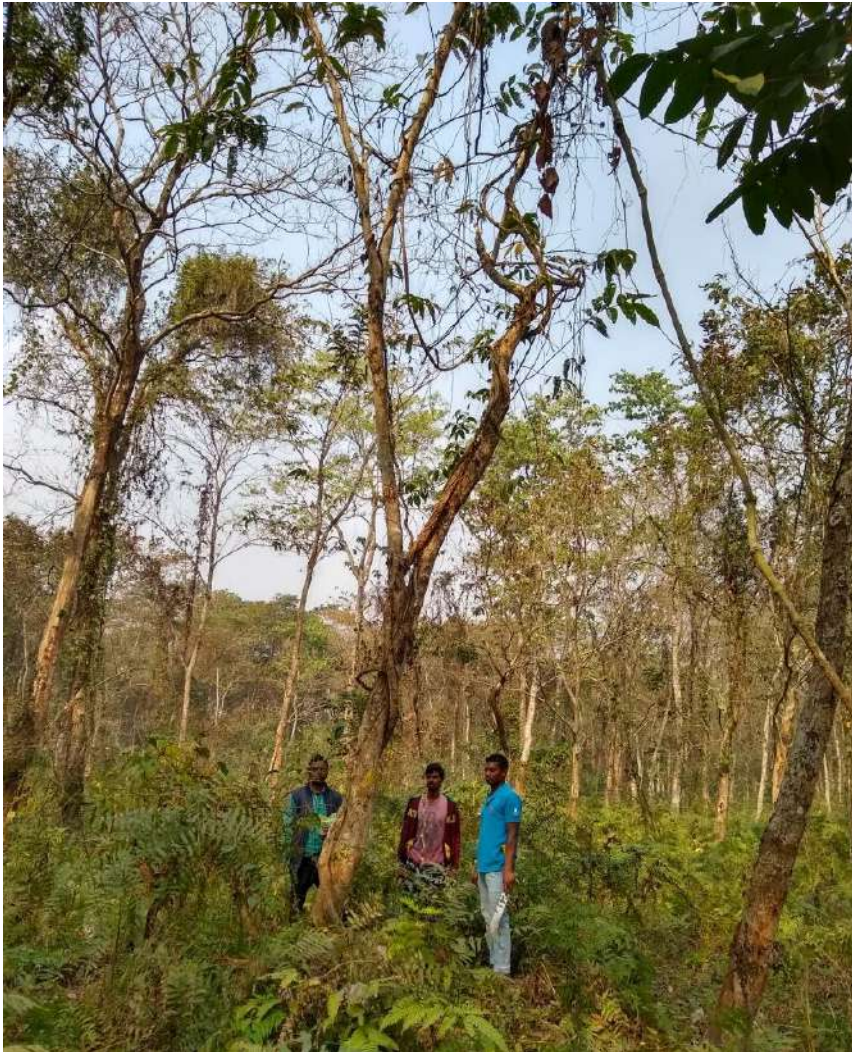
Status of Isolation zone: Different species are present along the seed stand zone.

Accessibility of the area for seed collection: It can be collected from the seed stand.



No. of trees recommended for culling – 19

Latitudes (N)	Longitudes (E)
26.43898 N	88.52703 E
26.43854 N	88.52695 E
26.43858 N	88.52637 E
26.43925 N	88.52635 E



Remarks:- It may be considered as a seed stand.

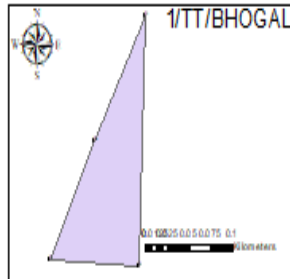
Sl. No.25.1

Seed Stand No. : 1/TT/BHOGAL

Species: *Terminalia tomentosa* Local name: Pakasaj

Range	NWL	Location	Bhogalmardi -1
Area	6 hectares	Total Number of trees	172+136
GBH	1.58m±0.26	Height	29.79m±1.35

Status of Isolation zone: **No isolation.**
 Same species along the seed stand zones.
 Accessibility of the area for seed collection: It is highly affected by wild animals (elephant) & difficult to carry out seed collection.



Latitudes	Longitudes
26.48851 N	88.50147 E
26.48857 N	88.50043 E
26.49045 N	88.50158 E
26.48948 N	88.50096 E

No. of trees recommended for culling – 23



Remarks:-It may not be considered as a seed stand as no isolation zone is maintained and the area is highly affected by elephants.

Sl. Number. 25.2 Seed Stand No. : 3/TT/SURS-2

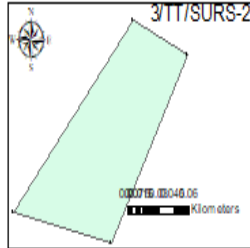
Species: *Terminalia tomentosa*

Local name: Pakasaj

Range	Lataguri	Location	Sursuti - 2
Area	1.25 hectares	Total Number of trees	33+39
GBH	1.64m±0.22	Height	33.58m±2.03

Status of Isolation

zone: Same species present along the seed stand.



Accessibility of the area for seed collection:

Easy to collect it.

Latitudes	Longitudes
26.47379 N	88.47422 E
26.47364 N	88.47495 E
26.47453 N	88.47554 E
26.4747 N	88.47513 E



No. of trees recommended for culling –
26

Regeneration status: Nil



Remarks: It may not be considered as seed stand because

- i) It has no isolation zone
- ii) After removal of poor trees (26), tree density will be low (30.6 trees/ha), which is not desirable.

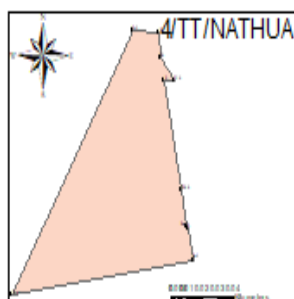
Sl. No. 25.3Species: *Terminalia tomentosa*

Seed Stand No. :4/TT/NATHUA

Local name: Pakasaj

Range	Nathua	Location	Ramsai
Area	3 hectare	Total Number of trees	318 + 159
GBH	0.92m±0.15	Height	22.94m±2.15

Status of Isolation zone: Different species (Panisaj & Sidha) are present outside the seed stand areas.



Accessibility of the area for seed collection: It is pure seed stand areas, so it is easy to collect the seed from the seed stand.

Latitudes	Longitudes
26.43898 N	88.5285 E
26.43911 N	88.52847 E
26.43912 N	88.52846 E
26.43976 N	88.52839 E
26.43986 N	88.52831 E
26.43997 N	88.5283 E
26.43998 N	88.52813 E
26.43884 N	88.52735 E

No. of trees recommended for culling – 16

Regeneration status: 74



Remarks: It may be considered as a seed stand.

Sl. No. 25.4

Species: *Terminalia tomentosa*

SeedStand No. : 5/TT/SRAJ

Local name: Pakasaj

Range	WRVK	Location	WRVK
Area	3.5 ha	Total Number of trees	Near about 400
GBH	0.83m±0.15	Height	24.61m±0.85

Status of Isolation zone: No isolation zone is created in the seed stand.

Condition: Seed can be collected easily from the seed stand. No maintenance.



Latitudes	Longitudes
26.36985 N	89.32352 E
26.36898 N	89.3232 E
26.36937 N	89.32276 E
26.36978 N	89.32271 E
26.36978 N	89.32242 E
26.37021 N	89.3224 E
26.37042 N	89.32287 E
26.36995 N	89.32296 E
26.36992 N	89.32292 E



Remarks: The stand is nearer to Vulture Breeding centre. The stand is accessible. But there is no isolation zone, several trees of same sp. are existed outside the area. Hence all poor trees inside as well as outside should be culled out, all bushes should be removed for ease of seed collection. Then it may be considered as seed stand/ SPA.



Sl.No.26.1

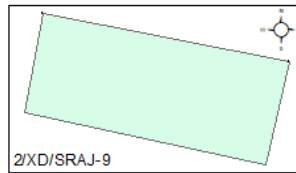
Seed Stand No. :2/XD/SRAJ-10

Species:*Xyliadolabriformis* Local name: Lohakat

Range	WRVK	Location	SRVK-10
Area	2.50 ha	Total Number of trees	128
GBH	2.45m±0.44	Height	26.24m±1.12

Status of Isolation zone:

Isolation zone is created in the seed stand.



Latitudes (N)	Longitudes (E)
26.37517 N	89.32718 E
26.37511 N	89.32748 E
26.37522 N	89.32748 E
26.37530 N	89.32756 E

Accessibility of the area for seed collection: Seed can be collected easily from the seed stand. In this seed stand mostly trees are in good condition. It is pure plot.

No. of trees recommended for culling – 07

Regeneration status:

No



Remarks: It may be considered as a seed stand.

Sl.No. 26.2

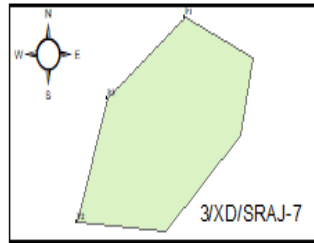
Seed Stand No. :3/XD/SRAJ-7

Species:*Xyliadolabriformis*Local name: Lohakat

Range	WRVK	Location	SRVK -10
Area	0.80 ha	Total Number of trees	69
GBH	1.69m±0.43	Height	22.88m±0.66

Status of Isolation zone:
Isolation zone is created
in the seed stand.

Condition: Mostly trees
are top broken &
diseased attack. **Age of
trees is 80 years.**It is
not maintained properly.
No. of trees
recommended for
culling – 23



Regeneration status: No

Latitudes	Longitudes
26.38313 N	89.32238 E
26.38303 N	89.32231 E
26.38309 N	89.32233 E
26.38312 N	89.32235 E



Remarks: It may not be considered as a seed stand.

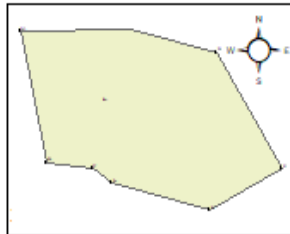
Sl. No. 26.3

Seed Stand No. :4/XD/SRAJ-9

Species: *Xyliadolabriformis* Local name: Lohakat

Range	WRVK	Location	SRVK-9
Area	0.42 ha	Total Number of trees	103
GBH	1.06m±0.21	Height	22.73m±0.60

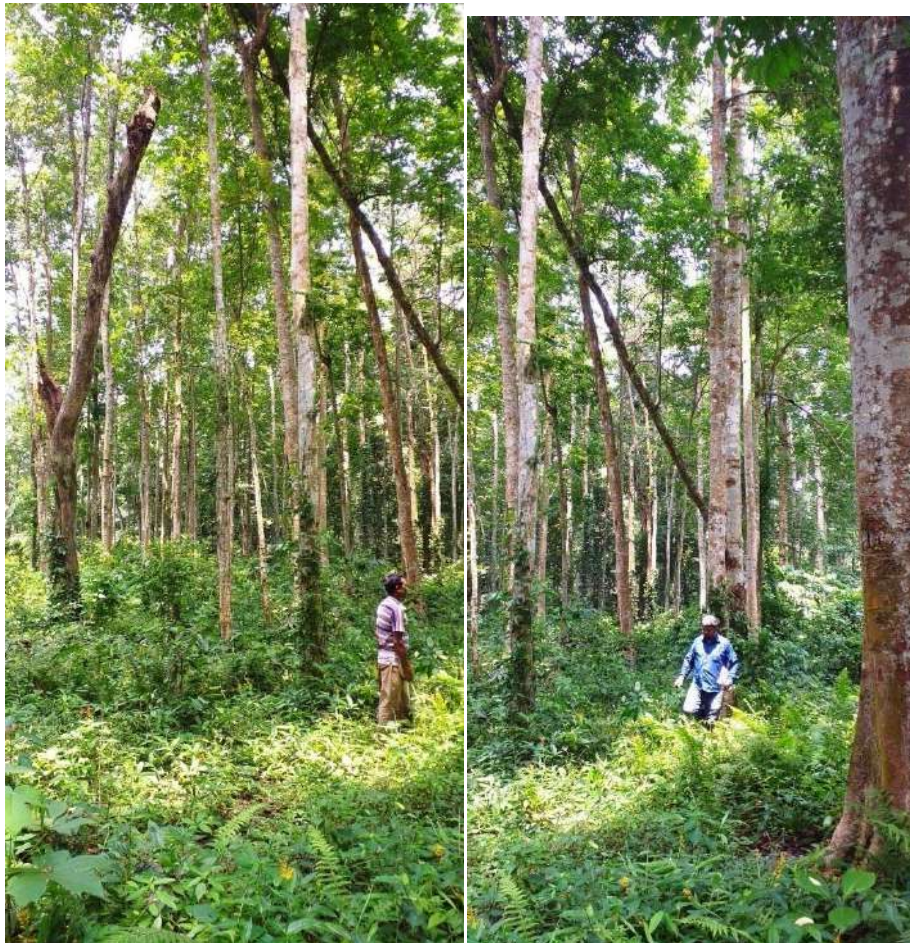
Status of Isolation zone:
Isolation zone is created
in the seed stand.



Accessibility of the area
for seed collection: Seed
can be collected easily
from the seed stand. The
seed stand is in the good
condition. It is pure plot
and well maintained. It is
young plantation. Tree
age 32

No. of trees
recommended for
culling – 07

Latitudes (N)	Longitudes (E)
26.38023 N	89.31257 E
26.38006 N	89.31267 E
26.38992 N	89.31271 E
26.38991 N	89.31258 E
26.38004 N	89.31241 E
26.38006 N	89.31238 E
26.38007 N	89.31231 E
26.38236 N	89.31236 E
26.38026 N	89.31227 E



Remarks: It may be considered as a seed stand.

Sl. No.26.4

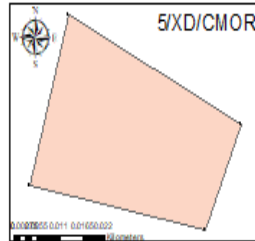
Seed Stand No. :5/XD/CMOR

Species: *Xyliadolabriformis* Local name: Lohakat

Range	Moraghat	Location	C.MOR-7
Area	0.5 hectare	Total Number of trees	52
GBH	1.18m±0.17	Height	32.45m±0.91

Status of Isolation zone:
Different species are present
near by the seed stand zones.

Condition: Several trees of
different species are present
in the seed stands. Condition
of Lahakat trees is poor.



Latitudes (N)	Longitudes (E)
26.4318 N	88.5955 E
26.43188 N	88.59507 E
26.43217 N	88.59517 E
26.43198 N	88.59559 E



Remarks: It may not be considered as a seed stand.

Table 5: Status of seed stands after evaluation in Silviculture South division

Sl No.	Species	Seed Stand No	Range	Area (ha)	Status*	Page No.
1.	<i>Acacia auriculiformis</i>	1/AA/Khisma	Ranaghat	2.0	NC	176
2.1	<i>Acacia mangium</i>	7/AM/Baherakhola	Barjora	0.2	NC	177
2.2	<i>Acacia mangium</i>	8/AM/Baherakhola	Barjora	0.6	C	178
2.3	<i>Acacia mangium</i>	1/AM/Deorang	Puncha	2	NC	179
2.4	<i>Acacia mangium</i>	2/AM/Deorang	Puncha	2	NC	179
2.5	<i>Acacia mangium</i>	9/AM/Baherakhola	Barjora	2	NC	180
3.	<i>Callistris intertropica</i>	1/CI	Jhargram	0.24	NC	180
4.	<i>Dalbergia sissoo</i>	2/DS/Bethula	Ranibandh	0.5	NC	181
5.	<i>Eucalyptus camaldulensis</i>	2/ECa/Dharampur	Barjora	0.5	NC	182
6.1	<i>Eucalyptus citriodora</i>	2/ECi/Dharampur	Barjora	1.5	C	184
6.2	<i>Eucalyptus citriodora</i>	3/ECi/Karatia	Guskara	1	C	185
6.3	<i>Eucalyptus citriodora</i>	4/ECi/Karatia	Guskara	0.55	C	186
7.1	<i>Eucalyptus hybrid</i>	1/EH/Ekaria	Barjora	0.5	NC	187
7.2	<i>Eucalyptus hybrid</i>	2/EH/Manikpara	Manikpara	1.21	NC	187
8.	<i>Eucalyptus tereticornis</i>	1/ET/Majhigarh	Arabari	1	NC	188
9.	<i>Leuceana leucocephala</i>	1/LL/Sutan	Jhilimili	0.5	NC	189
10.1	<i>Madhuca latifolia</i>	1/ML/Rupapatija	Bara bazaar	11.8	C	189
10.2	<i>Madhuca latifolia</i>	2/ML/Joypur	Joypur	2.66	C	191
10.3	<i>Madhuca latifolia</i>	3/ML/Arabari	Arabari	2.9	C	193
10.4	<i>Madhuca latifolia</i>	4/ML/Arabari	Arabari	1.50	C	194
11.	<i>Shorea robusta</i>	1/SR/Routhkona	Motgoda	0.25	NC	195
12.	<i>Tectona grandis</i>	1/TG/Bara bazaar	Bara bazaar	0.75	NC	197
13.1	<i>Terminalia arjuna</i>	1/TA/Khisma	Ranaghat	2	NC	199
13.2	<i>Terminalia arjuna</i>	1/TA/Mahatpur	Krishnagar	3.01	C	200

*C = may be considered as seed stand/SPA; NC = may not be considered as a seed stand/SPA

Sl. No. 1Species: - *Acacia auriculiformis*

Seed Stand No: - 1/AA/Khisma

Local name: -Akashmani

Range	Ranaghat	Location	Khisma
GBH	1.27m±0.16	Height	26.2m±3.93

Total area of plantation is around 15 ha. Part of this area is seed stand. Area of the seed stand: 2 ha. Total *Acacia* tree: 200 (as per record), but many trees were damaged and felled due to cyclone. However, the same area is also retained as seed stand of *Terminalia arjuna* (Seed Stand No. 1/TA/Khisma).

The seed stand contains other different species like eucalyptus, teak, jamun, van-neem, jarul, arjun, minjiri etc.

Latitudes (N)	Longitudes (E)
23°15.070'	88°35.842'
23°14.998'	88°35.770'
23°15.008'	88°35.778'
23°15.042'	88°35.798'



Felled acacia trees

Remarks: It may not be considered as a seed stand.

Sl. No. 2.1Species: - *Acacia mangium***Seed Stand No: - 7/AM/Baherakhola**

Local name: - Acacia

Range	Barjora	Location	Baherakhola
Area	0.2 hectare	Total Number of trees	12

Status: Only 4 trees are in good condition.**No. of trees recommended for culling-** 08**Remarks:**

It may be abandoned as a seed stand. However, all inferior trees should be culled out, as there is another seed stand of this species (8/AM/Baherakhola) adjacent to it.



Sl. No. 2.2Species: - *Acacia mangium***Seed Stand No: - 8/AM/Baherakhola**

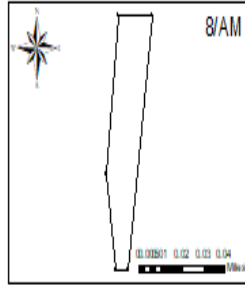
Local name: - Acacia

Range	Barjora	Location	Baherakhola
Area	0.6 hectare	Total Number of trees	88
GBH	1.26m±0.41	Height	8.66m±0.85

Status of Isolation zone:

Adjacent to this stand, 12 trees of this species is existed. Out of these 12 trees, eight poor trees should be removed.

Accessibility: Seed can be collected easily.



Latitudes(N)	Longitudes(S)
23.22472 N	87.15138S
23.22472 N	87.15113 S
23.22405 N	87.15104 S
23.22365 N	87.15111 S
23.22365 N	87.1512 S

No. of trees recommended for culling- 18

Regeneration status: observed

**Remarks:**

It may be considered as a seed stand.

Sl. No. 2.3Species: - *Acacia mangium***Seed Stand No: - 1/AM/Deorang**

Local name: - Acacia

Range	Puncha	Location	Deorang
Area	2 hectare	Total Number of trees	569 as per record, presently very few.

Status of Isolation zone: Seed stand completely damaged due to the unknown factors at the time of visit.

**Sl. Number.2.4**Species: - *Acacia mangium***Seed Stand No: - 2/AM/Deorang**

Local name: - Acacia

Range	Puncha	Location	Deorang
Area	2 hectare	Total Number of trees	-

Status of Isolation zone: Seed stand completely damaged due to the unknown factors at the time of visit.

List of Seed stand plants. C.P.T. ST which are over matured in following profile

Sl No	Species	Seed stand No/area Trees no (C.P.T. ST)	Year of Plantation	Present Condition	G.P.S Location	Remarks after physical verification
	NIL	NIL	NIL	NIL	NIL	NIL
2.	List of the Proposed seed plantations of future as (Seed stand) Seed Production area.					Terrestrial Division which can be taken up is
Sl No	Species	Range/IL No/area Division	Year of Plantation	Present Condition	G.P.S Location	Remarks after physical verification
	No found	No found	No found	No found	No found	No found
3.	List of Seed Stand which are not exist in field at present or badly damaged and which are in our records.					
Sl No	Species	Seed stand No/area Trees no (C.P.T. ST)	Year of Plantation	Present Condition	G.P.S Location	Remarks after physical verification
	<i>Acacia mangium</i>	1/AM 2 ha 596 trees	1990	Damage	N-23° 00' 16.0" E-086° 52' 14.0"	Damage after physical verification
	<i>Acacia mangium</i>	2/AM 2 ha 339 trees	1989	-	N-23° 00' 16.0" E-086° 24' 25.0"	-

Remarks:

Both Seed Stands (1/AM/Deorang and 2/AM/Deorang) may be abandoned.

Departmental report on damage of both *Acacia* Seed Stand at Deorang

Sl. No. 2.5**Seed Stand No:** - 9/AM/BaherakholaSpecies: - *Acacia mangium*

Local name: - Acacia

Range	Barjora	Location	Baherakhola
Area	2 hectare	Total Number of trees	

Remarks: Seed stand completely damaged due to the unknown factors at the time of visit, hence it may be abandoned as Seed Stand.

**Sl. No. 3.****Seed Stand No:** - 1/CI/JhargramSpecies: - *Callistris intertropica*

Range	Jhargram	Area	0.24 ha
Location	Amlachati		

Remarks: Already discarded by the SFD.

Sl. No . 4.**Seed Stand No:** - 2/DS/BethulaSpecies: - *Dalbergia sissoo*

Local name: - Sissoo

Range	Ranibandh	Location	Bethula
Area	0.5 hectare	Total Number of trees	Nil

Status of Isolation zone: Seed stand completely damaged due to the unknown factors at the time of visit. New sapling is being planted in the seed stand plot.

Remarks: It may be abandoned as a Seed Stand.

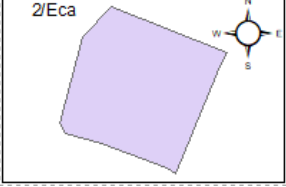



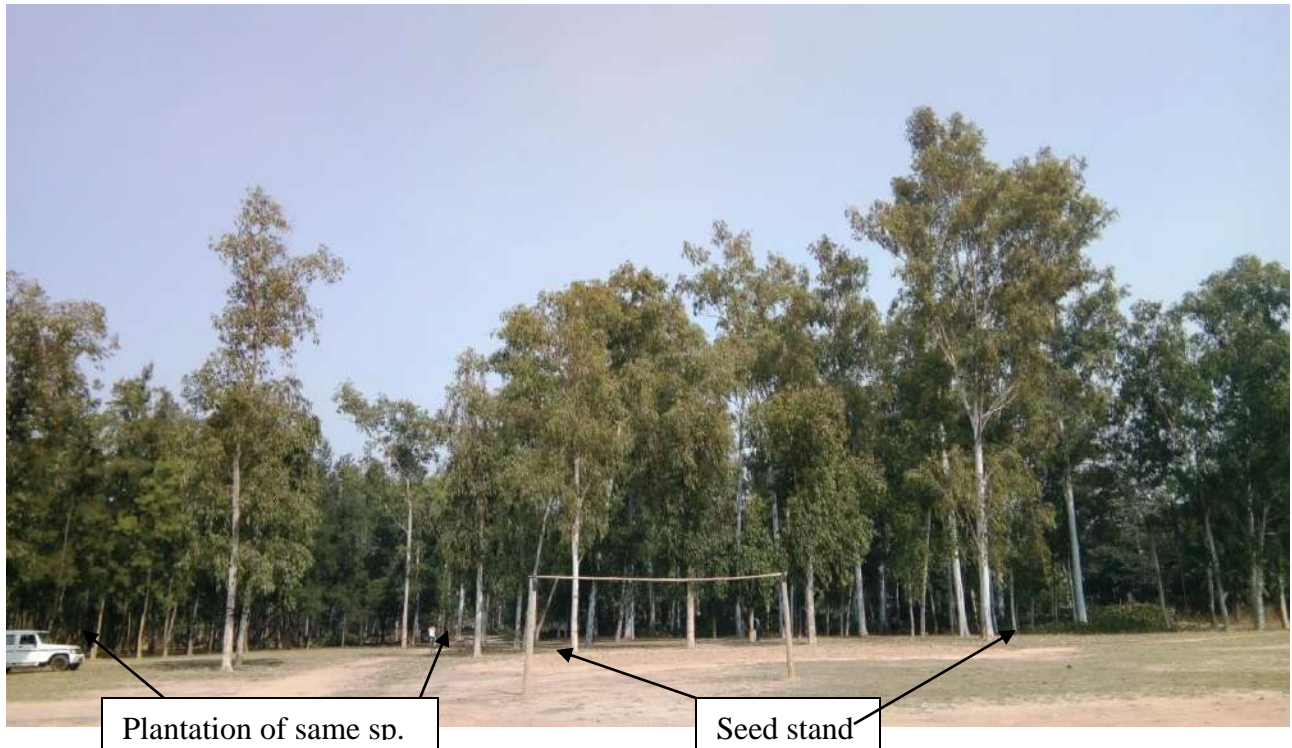
Sl. No. 5.

Seed Stand No: - 2/Eca/Dharampur

Species: - *Eucalyptus camaldulensis*

Range	Barjora	Location	Dharampur
Area	0.5 hectare	Total Number of trees	58
GBH	1.37m±0.43	Height	11.57m±1.73

<p>Status of Isolation zone: No isolation zone is maintained. In the west & north side there are so many trees of same species.</p>																			
			<p>No. of trees recommended for culling- 40</p> <p>Regeneration status: Nil.</p>	<table border="1"> <thead> <tr> <th>Latitudes</th> <th>Longitudes</th> </tr> </thead> <tbody> <tr> <td>23.20632 N</td> <td>87.13925 S</td> </tr> <tr> <td>23.20628 N</td> <td>87.13923 S</td> </tr> <tr> <td>23.20608 N</td> <td>87.13914 S</td> </tr> <tr> <td>23.20609 N</td> <td>87.13912 S</td> </tr> <tr> <td>23.20614 N</td> <td>87.13898 S</td> </tr> <tr> <td>23.20616 N</td> <td>87.1389 S</td> </tr> <tr> <td>23.20618 N</td> <td>87.13889 S</td> </tr> <tr> <td>23.20635 N</td> <td>87.13894 S</td> </tr> </tbody> </table>	Latitudes	Longitudes	23.20632 N	87.13925 S	23.20628 N	87.13923 S	23.20608 N	87.13914 S	23.20609 N	87.13912 S	23.20614 N	87.13898 S	23.20616 N	87.1389 S	23.20618 N
Latitudes	Longitudes																		
23.20632 N	87.13925 S																		
23.20628 N	87.13923 S																		
23.20608 N	87.13914 S																		
23.20609 N	87.13912 S																		
23.20614 N	87.13898 S																		
23.20616 N	87.1389 S																		
23.20618 N	87.13889 S																		
23.20635 N	87.13894 S																		



Remarks: There are several trees of eucalyptus in adjacent to this stand. It would be better not to remove 40 trees out of 58 from inside and hence it may not be considered as a seed stand.

Sl. No. 6.1**Seed Stand No: - 2/ECi/Dharampur**Species: - *Eucalyptus citriodora*

Range	Barjora	Location	Dharampur
Area	1.5 hectare	Total Number of trees	250
GBH	1.34m±0.27	Height	12.175m±2.96

Status of Isolation zone:

West & North side of this seed stand there is plantation of Eucalyptus hybrid.

Accessibility of the area for seed collection: Seed can easily be collected from it.



Latitudes(N)	Longitudes(S)
23.20908 N	87.13652 S
23.20906 N	87.13618 S
23.20953 N	87.13618 S
23.2098 N	87.13624 S
23.21009 N	87.13667 S
23.21011 N	87.13688 S
23.20962 N	87.13679 S
23.20938 N	87.13673 S
23.20925 N	87.13666 S
23.20933 N	87.13645 S

No. of trees recommended for culling- 24

Regeneration status:
Zero





Remarks: It may be considered. However, there is Eucalyptus hybrid plantation adjacent to this stand and problem of pollen mixing may occur. Seeds are to be collected from core area only.

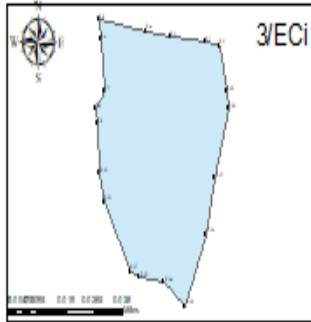
Sl. No. 6.2

Seed Stand No: - 3/ECi/Karatia

Species: - *Eucalyptus citriodora*

Range	Guskara	Location	Karatia
Area	1 hectare	Total Number of trees	394
GBH	1.03m±0.31	Height	19.78m±2.84

Status of Isolation zone: No isolation zone is maintained in this seed stand because the seed stand named 3/ECi & 4/ECi are adjacent to each other.



Latitudes	Longitudes
23.30602 N	87.39462 S
23.30606 N	87.39431 S
23.30603 N	87.39407 S
23.30585 N	87.39408 S
23.30547 N	87.39408 S
23.30519 N	87.3944 S
23.30536 N	87.39462 S
23.30579 N	87.39474 S
23.30589 N	89.39473 S
23.30592 N	89.39473 S
23.30595 N	89.39472 S

Accessibility of the area for seed collection: It can easily be collected from the seed stand.

No. of trees recommended for culling- 265

Regeneration status:
Zero



Trees recommended for culling are marked 'X' with paint

Sl. No. 6.3

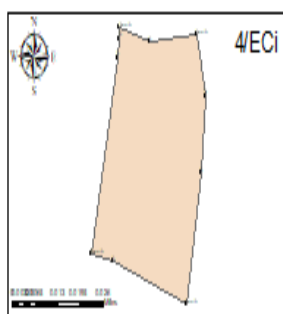
Seed Stand No: - 4/ECi/Karatia

Species: - *Eucalyptus citriodora*

Range	Guskara	Location	Karatia
Area	0.55 hectare	Total Number of trees	87
GBH	1.3m±0.39	Height	20.5m±0.3

Status of Isolation zone: No isolation zone is maintained in this seed stand.

Accessibility of the area for seed collection: It can easily be collected from the seed stand.



Latitudes	Longitudes
23.30608 N	87.39404 S
23.3061 N	87.39369 S
23.30607 N	87.39369 S
23.30551 N	87.39356 S
23.30549 N	87.39366 S
23.30538 N	87.39399 S
23.30572 N	87.39406 S
23.30592 N	87.39408 S

No. of trees recommended for culling- 66

Regeneration status:
Zero

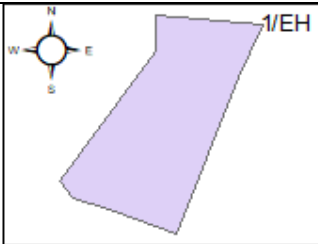


Remarks:

After culling of total of 331 inferior trees from both the stands (3/ECi/Karatia and 4/ECi/Karatia), 150 good trees in 1.5 ha (merging both stands) may be considered as a single seed stand.

Sl. No. 7.1**Seed Stand No: - 1/EH/Ekaria**Species: - *Eucalyptus hybrid*

Range	Barjora	Location	Ekaria
Area	0.5 hectare	Total Number of trees	88
GBH	0.97m±0.23	Height	11.85m±1.26

Status of Isolation zone: Isolation zone is maintained in this seed stand. Accessibility of the area for seed collection: Seed can easily be collected from the seed stand.	
	Regeneration status: Nil
No. of trees recommended for culling- 05	

Latitudes(N)	Longitudes(S)
23.20412 N	87.14582 S
23.20417 N	87.14567 S
23.2042 N	87.14557 S
23.2043 N	87.14559 S
23.20453 N	87.14577 S
23.20461 N	87.14577 S
23.20459 N	87.14603 S
23.20447 N	87.14597 S

Sl. No. 7.2**Stand No: - 2/EH/Manikpara**Species: - *Eucalyptus hybrid*

Range	Manikpara	Location	Manikpara
Area	1.21 hectare	Total Number of trees	100

Condition: The seed stand is converted into the **wood log depot**.



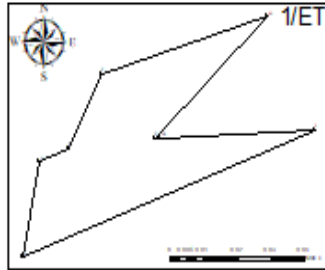
Remarks: Ideally, seeds collected from hybrid trees will produce F₂ generation, where so much variability may occur and seed quality expected to be low. Hence, both stands, **1/EH/Ekaria** and **2/EH/Manikpara** may not be considered as seed stands.

Sl. No. 8.**Seed Stand No: - 1/ET/Majhigarh**Species: - *Eucalyptus tereticornis*

Range	Arabari	Location	Mahjigarh
Area	1 hectare	Total Number of trees	65 trees
GBH	1.48m±0.08	Height	20.33m±1.23

Status of Isolation zone: No isolation zone is maintained in this seed stand.

Accessibility of the area for seed collection: Seed can easily be collected from the seed stand.



Latitudes	Longitudes
22.39752 N	87.23826 S
22.39796 N	87.23804 S
22.39768 N	87.27757 S
22.39774 N	87.23726 S
22.39749 N	87.23751 S
22.39749 N	87.23754 S
22.3974 N	87.23697 S
22.39703 N	87.23689 S
22.39745 N	87.2371 S

No. of trees recommended for culling- 07

Regeneration status: Zero



Remarks: It may not be considered as a seed stands because i) Outside trees of same species existed ii) Eucalyptus trees are sparsely distributed with less density iii) within this stand, new plantation of sal and neem was observed.

Sl. No. 9. Seed Stand No: - 1/LL/SutanSpecies: - *Leuceana leucocephala*

Local name: -

Range	Jhilimili	Location	Sutan
Area	0.5 hectare	Total Number of trees	19

Remarks: Already discarded by the department.**Sl. No. 10.1**Species: -*Madhuca latifolia***Seed Stand No: - 1/ML**

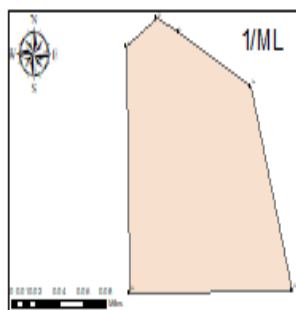
Local name: -Mahua

Range	Bara bazaar	Location	Rupapatija
Area	11.8 hectare	Total Number of trees	482 tree
GBH	1.40m±0.39	Height	7.20m±0.91

Status of Isolation zone:

Isolation zone is maintained in this seed stand.

Accessibility of the area for seed collection: Seed can be easily collected from the seed stand.



Latitudes(N)	Longitudes(S)
23.04702 N	86.21983 S
23.04714 N	86.21954 S
23.0469 N	86.21914 S
23.04488 N	86.2192 S
23.04491 N	86.22135 S
23.04659 N	86.22079 S

No. of trees**recommended for culling-**
70

Regeneration status:

Zero





Remarks: It may be considered as a seed stand.

Sl. No. 10.2Species: -*Madhuca latifolia*

Seed Stand No: - 2/ML

Local name: -Mahua

Range	Joypur	Location	Adkata
Area	2.66 hectare	Total Number of trees	414 + approx. 30 unmarked plants
GBH	1.28m±0.27	Height	7.07m±0.24

Status of Isolation zone:

No isolation zone is maintained in this seed stand. In outside (west and south side) of the stand, several mahua plants are existed.

Accessibility of the area for seed collection: Seed can easily be collected from the seed stand.

No. of trees recommended for culling- 22 inside the stand + inferior trees at outside the seed stand.



Latitudes	Longitudes
22.57415 N	87.2701 S
22.57425 N	87.27036 S
22.57425 N	87.27074 S
22.57413 N	87.27064 S
22.57403 N	87.27066 S
22.57389 N	87.27084 S
22.5736 N	87.27109 S
22.57325 N	87.27124 S
22.57174 N	87.27094 S
22.57264 N	87.27074 S
22.57394 N	87.27023 S
22.57404 N	87.27012 S

Regeneration status:
Zero





Remarks: It may be considered as a seed stand.

Sl. No. 10.3

Seed Stand No: - 3/ML/Arabari

Species: -*Madhuca latifolia*

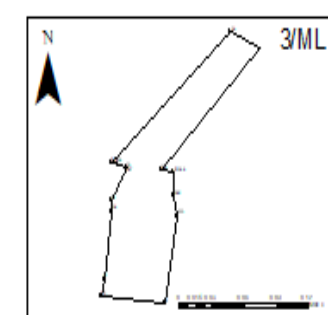
Local name: -Mahua

Range	Arabari	Location	Arabari
Area	2.9 hectare	Total Number of trees	270 as per record, but at present 246 trees
GBH	1.27m±0.12	Height	9.35m±0.35

Status of Isolation zone: No isolation zone is maintained in this seed stand.

Accessibility of the area for seed collection: Seed can easily be collected from the seed stand.

No. of trees recommended for culling- 12



Latitudes	Longitudes
22.69458 N	87.3371 S
22.69554 N	87.33724 S
22.69591 N	87.33725 S
22.69587 N	87.33747 S
22.69584 N	87.33799 S
22.69558 N	87.33817 S
22.69538 N	87.33822 S

Regeneration status:
Zero



Remarks: It may be considered as a seed stand. However, inferior trees of mahua at the outside of stand should also be removed.

Sl. No. 10.4Species: -*Madhuca latifolia*

Seed Stand No: - 4/ML

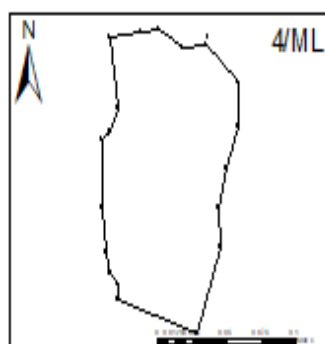
Local name: -Mahua

Range	Arabari	Location	Arabari
Area	1.50 hectare	Total Number of trees	223
GBH	1.25m±0.24	Height	8.34m±1.06

Status of Isolation zone:

No isolation zone is maintained in this seed stand.

Accessibility of the area for seed collection: Seed can easily be collected from the seed stand.



Latitudes(N)	Longitudes(S)
22.69428 N	87.35102 S
22.69449 N	87.35092 S
22.69466 N	87.35088 S
22.69556 N	87.35085 S
22.69636 N	87.35093 S
22.69642 N	87.3513 S
22.69629 N	87.35178 S
22.69602 N	87.3524 S
22.69532 N	87.35226 S
22.6947 N	87.35219 S
22.694 N	87.35193 S

No. of trees recommended for culling- 32

Regeneration status:
Zero



Remarks: It may be considered as a seed stand. However, inferior trees of mahua at the outside of stand should also be removed.

Sl. No. 11Species: - *Shorea robusta*

Seed Stand No: - 1/SR/Routhkona

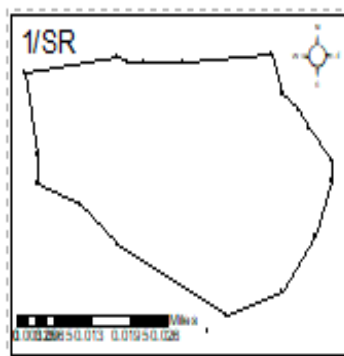
Local name: -Sal

Range	Motgoda	Location	Routhkona
Area	0.25 hectare	Total Number of trees	46
GBH	1.35m±0.30	Height	15.27m±2.01

Status of Isolation zone:

No isolation zone is created in this seed stand. Outside so many trees of same species existed.

Inside regeneration of *Acacia* plants.



Accessibility of the area for seed collection: Seed can be easily be collected from the seed stand.

No. of trees recommended for culling- 08

Regeneration status: Nil

Latitudes(N)	Longitudes(S)
22.52385 N	86.54236 S
22.52397 N	86.54214 S
22.52419 N	86.54211 S
22.52421 N	86.54243 S
22.52423 N	86.54278 S
22.52412 N	86.54285 S
22.52402 N	86.54294 S
22.52398 N	86.54294 S
22.52387 N	86.5429 S
22.52376 N	86.54281 S
22.52371 N	86.54266 S
22.52368 N	86.54261 S





Remarks: It may not be considered as a seed stand.

Sl. No. 12.Species: - *Tectona grandis*

Seed Stand No: - 1/TG/Bara bazaar

Local name: Teak

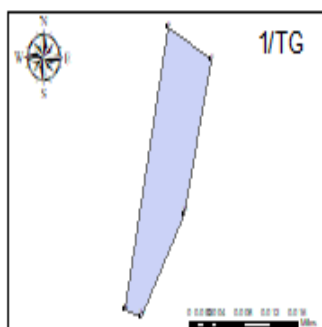
Range	Bara bazaar	Location	Bara bazaar
Area	0.75 hectare	Total Number of trees	63
GBH	1.43m±0.41	Height	21.27m±0.84

Status of Isolation zone: No isolation zone is maintained.

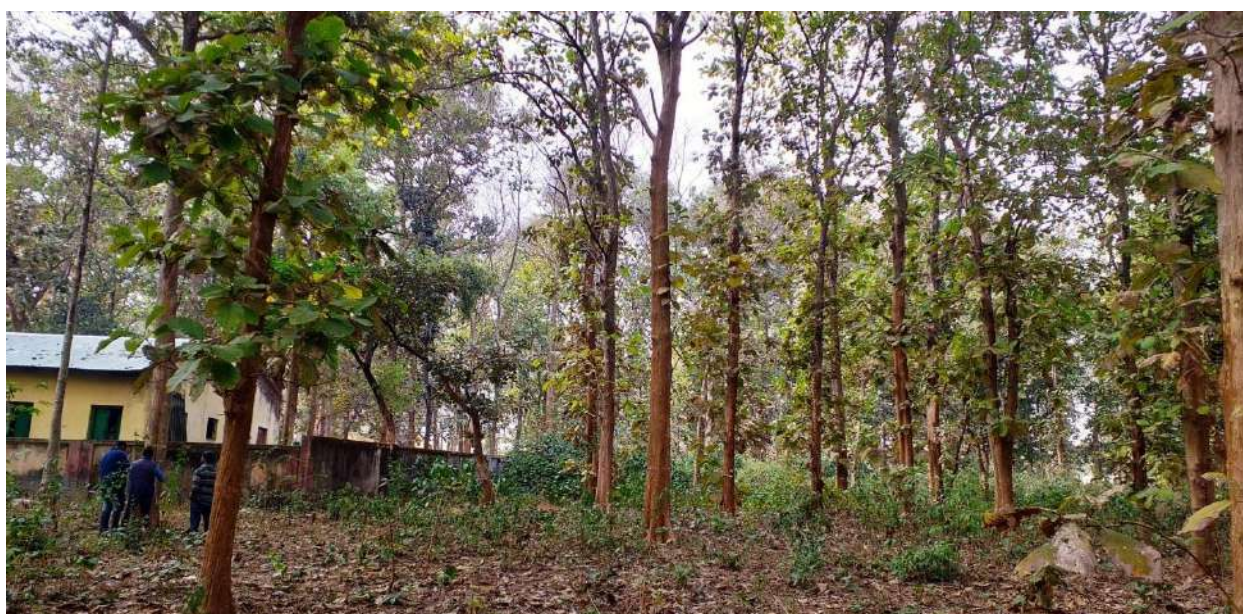
In adjacent area which is demarcated as sample plot, there are 210 teak trees of same age group. In another side, facing to east of seed stand there are around 20 unmarked teak trees.

Again, in the area of Range Office campus several teak trees are existed which are adjacent to this stand.

Accessibility of the area for seed collection: Seed can be easily be collected from the seed stand.



Latitudes	Longitudes
23.01.426 N	86.22.370 S
23.01.434 N	86.22.348 S
23.01.481 N	86.22.284 S
23.01.498 N	86.22.285 S
23.01.477 N	86.22.385 S



Seed stand



Teak trees inside office campus



Several trees of other species present in the seed stand



Teak trees outside of the seed stand

Remarks: It may not be considered as a seed stand, as the teak trees are present four times more in outside than in inside of the seed stand.

Sl. No. 13.1Species: - *Terminalia arjuna*

Seed Stand No: - 1/TA/Khisma

Local name: -Arjun

Range	Ranaghat	Location	Khisma
GBH	1.56m±0.26	Height	27.1m±2.1

Total area of plantation is around 15 ha. Part of this is area is seed stand. Area of the seed stand: 2 ha. Many trees were damaged and felled due to cyclone. However, the same area is also retained as seed stand of *Acacia auriculiformis* (Seed Stand No. 1/AA/Khisma).

The seed stand contains other different species like eucalyptus, teak, jamun, van-neem, jarul, acacia, minjiri etc.

Latitudes (N)	Longitudes (E)
23°15.071'	88°35.838'
23°14.998'	88°35.770'
23°15.008'	88°35.778'
23°15.070'	88°35.842'



Remarks: It may not be considered as a seed stand.

Sl. No. 13.2Species: - *Terminalia arjuna*

Seed Stand No: - 1/TA/ Mahatpur

Local name: -Arjun

Range	Krishnagar	Location	Mahatpur
GBH	1.37m±0.33	Height	22.5m±2.3

Area of the seed stand: 3.01 ha. It is a pure patch of arjun. Outside of this seed stand, many arjun trees are there. A young plantation of arjun is found adjacent to this seed stand.

Around 350 good and big trees were enumerated in seed stand. Whereas, another approx. 60 trees having small girth class were existed inside the stand. All these poor trees are to be culled out.

Latitudes (N)	Longitudes (E)
23°28.887'	88°32.477'
23°29.050'	88°42.490'
23°28.932'	88°32.487'
23°28.863'	88°32.605'
23°28.917'	88°32.604'
23°29.074'	88°32.599'



Few trees were damaged and felled due to cyclone.

Remarks: It may be considered as a seed stand. However, all inferior trees of arjun inside as well as outside of this seed stand should be culled out.

4.2 Assessment of the seed production capacity of selected seed stands

Estimation of seed production capacity was carried out on selected seed stands of three Silviculture Divisions viz., North, South and Hills of the Directorate of Forests, West Bengal. Selected seed stands were revisited for this estimation work. Seed production of seed stands (Table 7) were estimated by taking data on number of fruits in sample branches and then extrapolated to get the total number of fruits per tree. To estimate total seed production of a seed stand, where no isolation zone was maintained, only trees from core zone were considered. However, seed production estimation could not be carried out in some seed stands mainly those were not considered as seed stands after evaluation and seed stands where no seeding or bad seed year was observed.

In some cases, when we observed no seed in selected all seed stands of a particular species we explored the other stand of the species. For example, in Silviculture South division the targeted seed stands for *Madhuca latifolia* were 1/ML/Rupapatija, 2/ML/Joypur and 3/ML/Arabari. But no fruiting was observed in these stands. However, in 4/ML/Arabari fruiting was observed and the stand was considered after evaluation, hence, seed production estimation for the stand was carried out.

Table 7: Estimation of seed yield in selected seed stands of Silviculture divisions

Sl. No.	Species	Seed Stand	Range	Area (ha)	Seed Stand Status	Page No.
Silviculture Hills Division						
1	<i>Alnus nepalensis</i>	4/AN/PAKT	Lava	3.5	C	202
2	<i>Alnus nepalensis</i>	5/AN/RISUM	Pankhasari (Algarah)	2	C	203
3	<i>Ailanthus grandis</i>	1/AG/TASHI	Kalimpong	2.5	C	204
4	<i>Betula cylindrostachys</i>	1/BC/NUMB	Sevoke	3.5	C	204
5	<i>Chukrasia tabularis</i>	3/CT/MONG	CHEL	0.5	NC	206
6	<i>Lagerstroemia flosreginae</i>	2/LF/MAL	Neora	2	C	207
7	<i>Lagerstroemia flosreginae</i>	2/LF/KHUM	Jaldhaka	1	C	208
8	<i>Quercus pachyphylla</i>	1/QP/CHAT	Senchal	3	C	209
9	<i>Tectona grandis</i>	1/TG/SANG	Kalimpong	3	NC	210
10	<i>Tectona grandis</i>	2/TG/BAMON	Bamonpokhri	4.6	C	211
11	<i>Tectona grandis</i>	3/TG/BAMON	Bamonpokhri	4.6	C	211

Sl. No.	Species	Seed Stand	Range	Area (ha)	Seed Stand Status	Page No.
Silviculture North Division						
12	<i>Acacia catechu</i>	1/AC/PANJ	Chalsa	4	NC	212
13	<i>Chukrasia tabularis</i>	2/CT/SURS-2	Lataguri	3	NC	213
14	<i>Dalbergia sisoo</i>	1/DS/PANJ	Chalsa	2.50	NC	215
15	<i>Duabanga sonneretiodes</i>	1/DS/REHTI	Banarhat	5	C	216
16	<i>Lagerstroemia hypoleuca</i>	2/LH/GODAM-2	Hamiltonganj	4	NC	218
17	<i>Lagerstroemia hypoleuca</i>	4/LH/KHAIR	Panighata	3	C	219
18	<i>Lagerstroemia parviflora</i>	3/LP/DIANA	Diana	2.5	NC	220
19	<i>Schima wallichii</i>	4/SW/SURS	Lataguri	2	NC	221
20	<i>Tectona grandis</i>	3/TG/TUKR	Tukriajhar	5	C	223
21	<i>Tectona grandis</i>	8/TG/RETI	Banarhat	5	C	224
22	<i>Tectona grandis</i>	9/TG/ATIA	Coochbehar	5	NC	225
23	<i>Terminalia myriocarpa</i>	3/TM/SRAJ	WRVK	5	C	227
24	<i>Terminalia tomentosa</i>	1/TT/BHOGAL	Nathua	6	NC	228
25	<i>Terminalia tomentosa</i>	5/TT/SRAJ	WRVK	3.5	C	229
Silviculture South Division						
26	<i>Madhuca latifolia</i>	4/ML/Arabari	Arabari	1.50	C	230
27	<i>Terminalia arjuna</i>	1/TA/Khisma	Ranaghat	2	NC	232
28	<i>Terminalia arjuna</i>	1/TA/Mahatpur	Krishnagar	3	C	233

Sl. No. 1**Seed Stand No: - 4/AN/PAKT**Species: *-Alnus nepalensis* D.Don

Local name: Utis

Range	Lava	Location	Paktham-1
Area	3.5 ha	Total No. of trees	155



Fruiting of Utis.

Estimation of seed yield	
Average seed yield / tree	1.45 kg \pm 0.64
Approx. number of tree bearing seeds	120
Total seed yield of the seed stand	168 kg
Productivity	48 kg/ha

Sl. No. 2**Seed Stand No: - 5/AN/RISUM**Species: -*Alnus nepalensis* D.Don Local name: Utis

Range	Pankhasari	Location	Risum-4
Area	2 ha	Total No. of trees	400

Estimation of seed yield	
Average seed yield / tree	0.64 kg \pm 0.45
Approx. number of tree bearing seeds	260
Total seed yield of the seed stand	166.4 kg

Sl. No. 3**Seed Stand No: - 1/AG/TASHI**Species: - *Ailanthus grandis* Prain Local name: -Gokul

Range	Kalimpong	Location	Tashiding-1
Area	2.5 ha	Total No. of trees	104

Estimation of fruit yield	
Weight of 100 fruits	58.7 g
Average fruit yield / tree	Could not be carried out, as at the time of visit most of the seeds were fallen.

Sl. No. 4**Seed Stand No. : 1/BC/NUMB**Species: *Betula cylindrostachya* Wall

Local name: Sour

Range	Sevoke	Location	Numbung
Area	3.50 ha	Total No. of trees	120
GBH	2.6m±0.43	Height	34.7m±2.38





Average weight of seeds in this type of bunch= 1.74 g

Average weight of seeds in it = 0.102



Estimation of seed yield	
Average seed yield / tree	1.04 kg \pm 0.43
Approx. number of tree bearing seeds	95
Total seed yield of the seed stand	98.8 kg
Productivity	28.2 kg/ha

Sl.No.5

Seed Stand No. 3/CT/MONG

Species: *Chukrasia tabularis* A.Juss.

Local name: Chikrassi



Range	CHEL
Location	Mong-pong-2
Area	0.5 ha
Total No. of trees	30
GBH	1.42m±0.11
Height	21.13m±0.80



Estimation of seed yield	
Average fruit yield / tree	32.8 kg
Average seed yield / tree	5.9 kg
Approx. number of tree bearing seeds	25
Total seed yield of the seed stand (approx.)	147.5 kg

Sl. No. 6

Seed Stand No. 2/LF/MAL

Species: *Lagerstroemia flosreginae*

Local name: Jarul

Range	Neora	Location	MAL-13
Area	2hectare	Total No. of trees	173



Climbing on the tree



At the same time mature fruits and flower buds are available



Fruits collection from sample branches



Estimation of seed yield	
Average fruit yield / tree	10.96 kg
Average seed yield / tree	3.28 kg
Approx. number of tree bearing seeds	150
Total seed yield of the seed stand (approx.)	492 kg

Sl. No 7

Seed Stand No. : 2/LF/KHUM

Species: *Lagerstroemia flosreginae* Retz.

Local name: Jarul

Range	Jaldhaka	Location	Khumani – 6
Area	1ha	Total No. of trees	30



Estimation of seed yield	
Average fruit yield / tree	25.6 kg
Approx. number of tree bearing seeds	25
Total fruit yield of the seed stand (approx.)	640 kg

Sl. No – 8

Seed Stand No. : 1/QP/CHAT

Species: *Quercus pachyphylla*

Local name: Bantey Katus

Range	Senchel West	Location	Chattakpur-2
Area	3 ha	Total Number of trees	122



Estimation of seed yield	
Average seed yield / tree	4.0 kg \pm 0.8
Approx. number of tree bearing seeds	50
Total fruit yield of the seed stand	200 kg

Sl.No. 9

Seed Stand No: - 1/TG/SANG

Species: - *Tectona grandis*

Local name: Saigun

Range	Kalimpong	Location	Sangser-5
Area	3 ha	Total No. of trees	60
GBH	2.02m±0.3	Height	22.65m±1.9



Sl. No.	Estimation of seed yield	
1	Average seed yield / tree	2.13 kg ± 0.51
2	Approx. number of tree bearing seeds	40
3	Total seed yield of the seed stand	85.2 kg
4	Productivity	28.4 kg/ha

Sl. No – 10

Seed Stand No. : 2/TG/BAMON

Species: *Tectona grandis*

Local name: Saigun

Range	Bamonpokhri	Location	Bamonpokhri
Area	4.60 ha	Total No. of trees	403

Sl. No – 11

Seed Stand No. : 3/TG/BAMON

Species: *Tectona grandis*

Local name: Saigun

Range	Bamonpokhri	Location	Bamonpokhri
Area	4.60 ha	Total No. of trees	426

Both stands are adjacent to each other and merging of both has been recommended. Hence estimation was carried out as a whole.



Sl. No.	Estimation of seed yield	
1	Average seed yield / tree	1.6 kg \pm 1.1
2	Approx. number of tree bearing seeds	350
3	Total seed yield of the seed stand	560 kg
4	Productivity	60.9 kg/ha

Sl. No. 12

Seed Stand No. : 1/AC/PANJ-1

Species: *Acacia catechue*

Local name: Khair

Range	Chalsa	Location	Panjhora -1
Area	4 ha	Total Number of trees	113 as per record but at present it is less than 50



Estimation of pod yield	
Average pod yield / tree	9.2 kg \pm 1.6
Approx. number of tree bearing seeds	38
Total pod yield of the seed stand	3.5 q

Remarks: It has not been considered as a seed stand.

Sl. No. 13

Seed Stand No. : 2/CT/SURS-2

Species: *Chukrasia tabularis*

Local name: Chikrasi



Range	Lataguri
Location	Sursuti-2
Area	3 hectares
Total Number of trees	54+37





Sl. No.	Estimation of seed yield	
1	Average fruit yield / tree	22.89 kg \pm 3.0
2	Average seed yield / tree	3.94 kg
3	Approx. number of tree bearing seeds	40
4	Total seed yield of the seed stand	157.6 kg

Sl. No. 14

Seed Stand No. : 1/DS/PANJ

Species: *Dalbergia sisoo*Local name: *Sisoo*

Range	Chalsa	Location	Panjhora -1
Area	2.50 ha	Total Number of trees	20



Estimation of pod yield	
Average pod yield / tree	0.48 kg
Approx. number of tree bearing seeds	7
Total pod yield of the seed stand	3.4 kg

Remarks: It has not been considered as a seed stand.

Sl. No. 15

Seed Stand No. :1/DS/REHTI

Species: *Duabanga sonneratioidis*

Local name: Lampate

Range	Banarhat	Location	Rehti
Area	5.00 ha	Total Number. of trees	182+127
GBH	2.12m±0.30	Height	25.97m±2.53



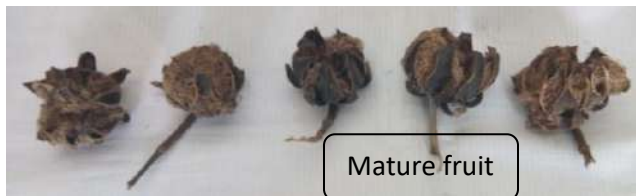
Seed collection



Fruits in a bunch



Seeds



Sl. No.	Estimation of seed yield	
1	Average number of fruits/ tree	1368.25
2	Average seed weight/ fruit	0.93 g
3	Average seed yield / tree	1.27 kg \pm 0.4
4	Number of tree bearing fruits (approx.0)	140
5	Total seed yield of the seed stand	177.8 kg

Sl. No.	Estimation of fruit yield	
1	Average number of fruits/ tree	1368.25
2	Average fruit weight	4.64 g
3	Average fruit yield / tree	6.35 kg
4	Number of tree bearing fruits (approx.)	140
5	Total fruit yield of the seed stand	889 kg

Sl. No.16

Seed Stand No. : 2/LH/GODAM-2

Species: *Lagerstroemia hypoleuca*

Local name: Benteak

Range	Hamiltonganj	Location	Godamdabri-2
Area	4 ha	Total Number of trees	Only 7



Estimation of seed yield	
Average fruit yield / tree	14.85 kg \pm 1.8
Average seed yield / tree	3.23 kg
Approx. number of tree bearing seeds	7
Total seed yield of the seed stand	22.61 kg

Sl. No. 17
Species: *Lagerstroemia hypoleuca*

Seed Stand No. : **4/LH/Khair**
Local name: Benteak

Range	Panighata	Location	Khairbani
Area	3 hectare	Total Number of trees	200
GBH	1.44m±0.2	Height	33.91m±1.7



Estimation of seed yield	
Average fruit yield / tree	13.4 kg
Average seed yield / tree	3.5 kg
Approx. number of tree bearing seeds	170
Total seed yield of the seed stand	595 kg

Sl. No. 18

Seed Stand No. : 1/LP/C.Diana

Species: *Lagerstroemia parviflora*

Local name: Sidha

Range	Diana	Location	Central Diana
Area	1.50 hectare	Total Number of trees	38



Estimation of seed yield	
Average seed yield / tree	1.67 kg \pm 0.2
Approx. number of tree bearing seeds	20
Total seed yield of the seed stand	40.6 kg

Remarks: As per MOU we have to estimate seed yield for stand No. 3/LP/C.Diana. As there was no tree in 3/LP/C.Diana, estimation work was carried out in 1/LP/C.Diana. However, it also has not been considered as a seed stand.

Sl. No. 19

Seed Stand No. : 4/SW/SURS

Species: *Schima wallichii*

Local name: Chilauni

Range	Lataguri	Location	Sursuti-2
Area	2 hectare	Total Number. of trees	77+38





Sl. No.	Estimation of fruit yield	
1	Average fruit yield / tree	5.8 kg \pm 1.2
2	Approx. number of tree bearing seeds	50
3	Total seed yield of the seed stand	2.9 q


Sl. No 20

Seed Stand No. : 3/TG/TUKR

Species: *Tectona grandis*

Local name:Teak

Range	Tukriajhar	Location	Tukriajhar
Area	5 ha	Total Number of trees	429+244 as per the record but during visit 337 (C)+48(B)

	Estimation of seed yield	
	Average seed yield / tree	1.8 kg ± 0.8
	Approx. number of tree bearing seeds	160
	Total seed yield of the seed stand	288 kg



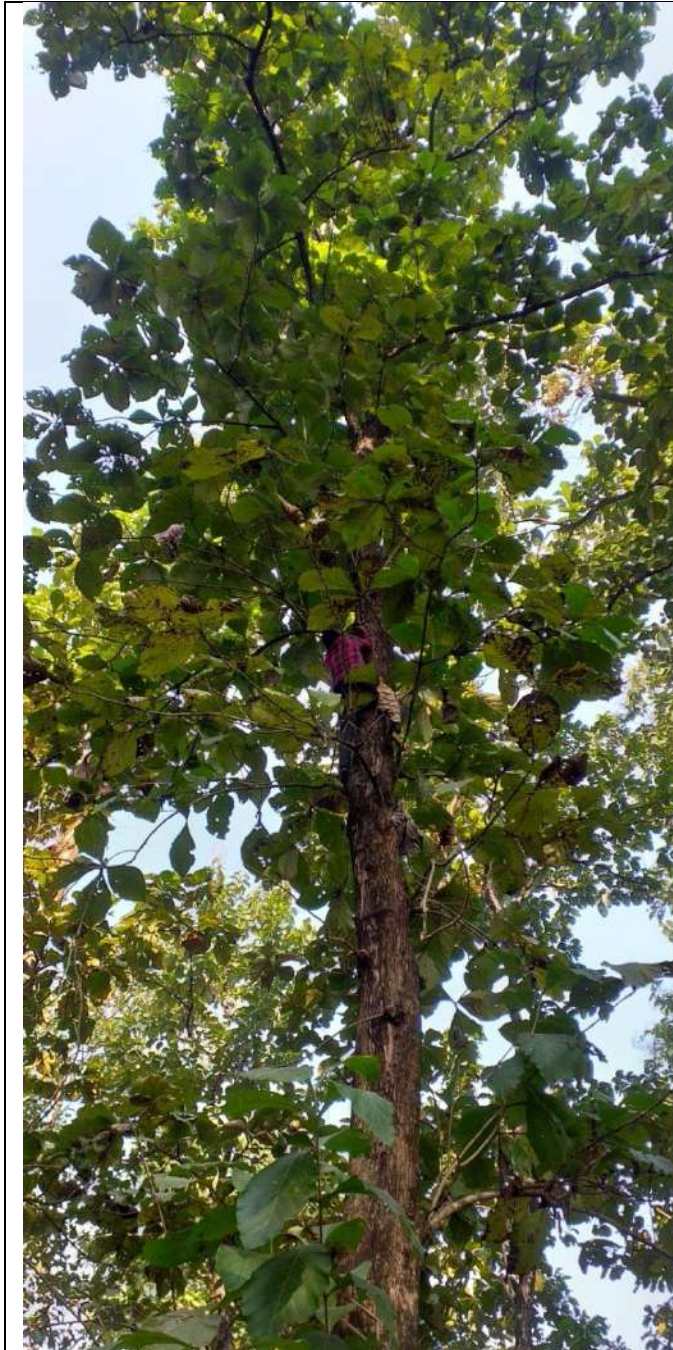
Sl. No. 21

Seed Stand No. :8/TG/REHTI

Species: *Tectona grandis*

Local name: Teak

Range	Banarhat	Location	Reti-1
Area	5 hectare	Total Number of trees	542



Estimation of seed yield	
Average seed yield / tree	2.0 kg \pm 0.9
Approx. number of tree bearing seeds	200
Total seed yield of the seed stand	400 kg

Sl. No. 22

Seed Stand No. :9/TG/ATIA

Species: *Tectona grandis*

Local name: Teak

Range	COB Territorial	Location	Atiamochor
Area	5 ha	Total Number of trees	410 (C) +375 (B)





Sl. No.	Estimation of seed yield	
1	Average seed yield / tree	1.9 kg \pm 1.1
2	Approx. number of tree bearing seeds in core zone	200
3	Total seed yield of the seed stand	380 kg



Sl. No. 23

Seed Stand No. : 3/TM/SRAJ

Species: *Terminalia myriocarpa*

Local name: Panisaj

Range WRVK

Location

SRVK-8

Area 5 ha

Total Number of trees

(C)174+274(B)



Estimation of seed yield	
Average seed yield / tree	10.03 kg \pm 2.67
Approx. number of tree bearing seeds in core zone	100
Total fruit yield of the seed stand	10.03 q

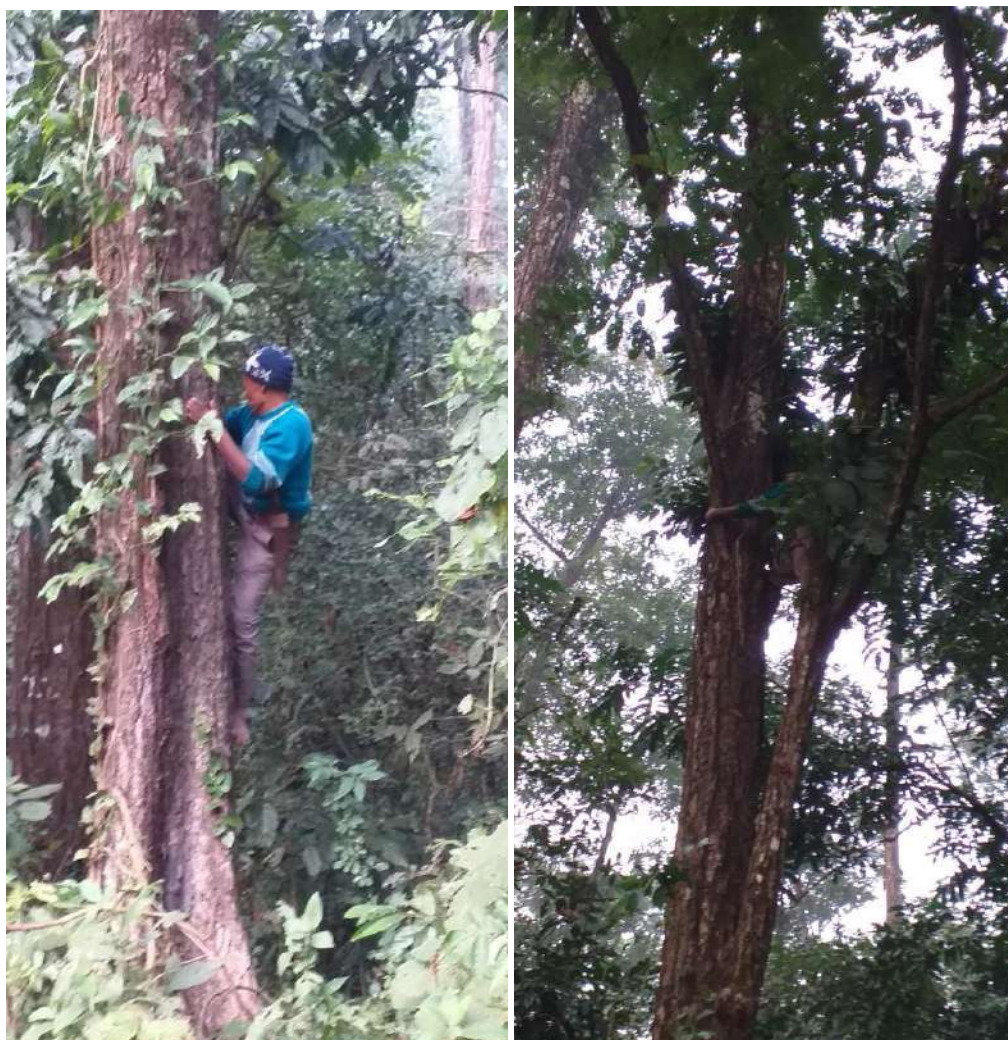
Sl. No. 24

Seed Stand No. : 1/TT/BHOGAL

Species: *Terminalia tomentosa*

Local name: Pakasaj

Range	NWL	Location	Bhogalmardi -1
Area	6 hectares	Total Number of trees	172+136



Sl. No.	Estimation of seed yield	
1	Average fruit yield / tree	2.27 kg \pm 1.11
2	Approx. number of tree bearing seeds	85
3	Total fruit yield of the seed stand	1.9 q

Sl. No. 18

Seed Stand No. : 5/TT/SRAJ

Species: *Terminalia tomentosa*

Local name: Pakasaj

Range	WRVK	Location	WRVK
Area	3.5 ha	Total Number of trees	Near about 400



Estimation of seed yield	
Average fruit yield / tree	1.797 kg \pm 0.22
Approx. number of tree bearing seeds	240
Total fruit yield of the seed stand	4.3 q

Sl. No. 26

Seed Stand No: - 4/ML

Species: -*Madhuca latifolia*

Local name: -Mahua

Range	Arabari	Location	Arabari
Area	1.50 hectare	Total Number of trees	223
GBH	1.25m±0.24	Height	8.34m±1.06





Sl. No.	Estimation of seed yield	
1	Average seed yield / tree	5.67 kg \pm 3.49
2	Approx. number of tree bearing seeds	107
3	Total seed yield of the seed stand	606.7 kg

Sl. No. 27

Seed Stand No: - 1/TA/Khisma

Species: - *Terminalia arjuna*

Local name: -Arjun

Range	Ranaghat	Location	Khisma
GBH	1.56m±0.26	Height	27.1m±2.1



Estimation of fruit yield	
Average fruit yield / tree	2.46 kg
Approx. number of tree bearing seeds	Not known, demarcation is not clear. Total area of plantation is around 15 ha. Part of this area is seed stand.

Sl. No. 28

Seed Stand No: - 1/TA/ Mahatpur

Species: - *Terminalia arjuna*

Local name: -Arjun

Range	Krishnagar	Location	Mahatpur
GBH	1.37m±0.33	Height	22.5m±2.3



Estimation of fruit yield	
Average fruit yield / tree	3.9 kg
Approx. number of tree bearing fruits	300
Total fruit yield of the seed stand	1170 kg

Table 8: List of stands where estimation of seed production could not be carried out for different reasons

Species	Seed Stand	Range	Area (ha)	Seed Stand Status*	Reasons for not estimating seed production**
Silviculture North (Hills) Division					
<i>Alnus nepalensis</i>	3/AN/MAYO	Loleygaon	6	C	ii
<i>Castanopsishystrix</i>	1/CH/LOPC	Takdah	4	NC	i
<i>Castanopsishystrix</i>	2/CH/RAJA	Dilaram	7	NC	i
<i>Cupressus cashmeriana</i>	1/CC/CPLOT	Kalimpong	2	C	ii
<i>Duabanga indica</i>	1/DI/SUMB	Badamtam	3	NC	i *
	*However, observation taken in seed stand No.1/DS/REHTI at Banarhat				
<i>Micheliachampaca</i>	2/MC/MOHO	Sukna	0.7	NC	i
<i>Micheliachampaca</i>	2/MC/HATI	Sukna	5.8	NC	i
<i>Micheliachampaca</i>	3/MC/HATI	Sukna	0.7	NC	i
<i>Micheliaexcelsa</i>	2/ME/LAVA	Lava	1.77	C	ii
<i>Micheliaexcelsa</i>	3/ME/LAVA	Lava	1.77	C	ii
<i>Pinus patula</i>	1/PP/LOPC	Takdah	0.4	NC	i
<i>Pinus patula</i>	2/PP/LOPC	Takdah	2.6	NC	i
<i>Pinus patula</i>	3/PP/LOPC	Takdah	1.5	NC	i
<i>Pinus patula</i>	4/PP/PUBO	Takdah	2	NC	i
<i>Populus gamblei</i>	1/PG/CPLOT	Loleygaon	2	NC	i
<i>Quercus lamellosa</i>	4/QL/RISO	Kalimpong	1	C	ii*
	*100 fruit weight was recorded to 6.3 kg				
<i>Quercus lamellosa</i>	5/QL/RISO	Kalimpong	2	NC	i
<i>Quercus lineata</i>	2/QL/RISO	Kalimpong	5	NC	i
<i>Shorearobusta</i>	5/SR/SANG	Kalimpong	4.5	C	ii
<i>Tsuga brunoniana</i>	1/TD/RAMA	Rimbik	3.4	C	ii
<i>Xyliadolabrifformis</i>	1/XD/PANC	Sukna	3	C	Ii

Species	Seed Stand	Range	Area (ha)	Seed Stand Status*	Reasons for not estimating seed production**
Silviculture North (Plain) Division					
<i>Acacia catechu</i>	4/AC/HILAJHORA	Diana	3	NC	i*
	*However, observation taken in seed stand No.1/AC/PANJ at Chalsa				
<i>Anthocephalus chinensis</i>	3/AC/ATIA	COB	3	NC	i
<i>Anthocephalus chinensis</i>	4/AC/SRAJ-9	WRVK	5	NC	i
<i>Bischofia javanica</i>	1/BJ/KARTIK	N.Rydak	2.27	NC	i
<i>Bombax ceiba</i>	2/BC/DIANA	Diana	4	NC	i& ii
<i>Chukrasia tabularis</i>	4/CT/N.KHAIR	Madarihat	8	C	ii*
	* However, observations were taken in seed stand No.2/CT/SURS-2 at Lataguri and seed stand No. 3/CT/MONG at Chel				
<i>Chukrasia tabularis</i>	5/CT/KHAIR	Panighata	5	NC	i& ii*
	*100 fruit weight was recorded to 1.29 kg				
<i>Gmelina arborea</i>	2/GA/ATIA	COB	3.4	NC	i& ii
<i>Gmelina arborea</i>	3/GA/ATIA	COB	2.5	C	ii
<i>Gmelina arborea</i>	4/GA/RETI	Banarhat	3	NC	i
<i>Gmelina arborea</i>	5/GA/SRAJ	WRVK	2	C	ii
<i>Lagerstroemia hypoleuca</i>	4/LH/KHAIR	Panighata	3	C	ii
<i>Lagerstroemia parviflora</i>	2/LP/C.RYDAK	N.Rydak	7.54	NC	i
<i>Lagerstroemia parviflora</i>	4/LP/NATHUA	Nathua	2.5	C	ii*
	*estimation carried out in Seed Stand No. : 1/LP/C. Diana				
<i>Micheliachampaca</i>	5/MC/BUXA	DPO (E)	10	NC	i& ii
<i>Micheliachampaca</i>	6/MC/BUXA	DPO (E)	10	C	ii
<i>Micheliachampaca</i>	8/MC/DPO	DPO (E)	5	C	ii
<i>Schimawallichii</i>	5/SW/HUR	Bagdogra	3	C	ii
<i>Shorearobusta</i>	12/SR/SRAJ	W.Rajabhatkhawa	20	NC	i& iii
<i>Shorearobusta</i>	13/SR/SRAJ	W.Rajabhatkhawa	10	NC	i& iii
<i>Shorearobusta</i>	14/SR/LTG	Ramsai	5	C	ii

<i>Tectona grandis</i>	6/TG/TUKR	Tukriajhar	10	NC	i*
<i>Tectona grandis</i>	7/TG/N.KHAIR	Madarihat	10	NC	i*
*estimation was carried out in seed stands 2/TG/BAMON & 3/TG/BAMON					
<i>Terminalia tomentosa</i>	4/TT/NATHUA	Lataguri	3	C	ii*
*100 fruit weight was recorded to 129 g; however estimation was carried out in seed stands 1/TT/BHOGAL & 5/TT/SRAJ.					
<i>Xyliadolabrifomis</i>	2/XD/SRAJ-10	WRVK	2.50	C	ii
Silviculture South Division					
<i>Acacia auriculiformis</i>	1/AU/Khisma	Ranaghat	2	NC	i
<i>Acacia mangium</i>	1/AM/Deorang	Puncha	2	NC	i
<i>Acacia mangium</i>	2/AM/Deorang	Puncha	2	NC	i
<i>Madhuca latifolia</i>	1/ML/Rupapatija	Bara bazaar	11.8	C	ii
<i>Madhuca latifolia</i>	2/ML/Joypur	Joypur	2.7	C	ii*
<i>Madhuca latifolia</i>	3/ML/Arabari	Arabari	2.9	C	ii*
*estimation work was carried out in seed stand No. 4/ML/Arabari					
<i>Terminalia arjuna</i>	1/TAR/Mahatpur	Krishnagar	3	C	ii
<i>Terminalia arjuna</i>	1/TAR/Khisma	Ranaghat	2	NC	i

*C = may be considered as seed stand/SPA; NC = may not be considered as a seed stand/SPA

**Seed estimation could not be carried out for following reasons:

- i) Stands were not considered as seed stands after evaluation
- ii) Observation year was not a seeding year for the species of that seed stand or most of the seeds already fallen during visit



During June, 2020 at seed stand No. 2/GA/ATIA and 3/GA/ATIA no fruit was observed.

5. Summary

West Bengal is among the few states to achieve the positive trend of forest cover increase. The forest cover in the state has been increased 4.4% in the last ten years. At present, the state contains 19.04% forest cover over the total geographical area. To increase forest cover in the state, SFDs are continuously following a long term afforestation programmes, which require huge quality seeds. In past, West Bengal had developed 200 seed stands covering an area of 453.68 ha for 63 species. Now, quite some of those got older or its production capacity has fallen. Hence, the necessity to evaluate the health of the stands and their seed production capacity was felt and the present study was carried out with following objectives:

- i) To evaluate status of seed stands on the basis of minimum area, tree density, isolation zone and infestation of pest and diseases
- ii) To recommend culling of inferior trees
- iii) To assess the production capacity of seeds of selected seed stands.

Evaluation of seed stands and recommending culling of inferior trees:

Evaluation of seed stands was carried out by verification on the basis of 'Area', 'Tree density', 'Isolation zone' and 'Tree health'. However, seed stands of species were not discarded out right based on area/density alone and studied even though area is less than 2 ha as per the requirement of the Forest Departments. After detail study, the status of seed stands has been categorized into two groups: i) it may be considered as seed stand/ SPA (C) and ii) it may not be considered as seed stand/ SPA (NC). Overall, 203 seed stands (Table 5.1) were evaluated and among them 87 stands (42.9% of total stand evaluated) may be considered as seed stand. SPAs recorded more tree density was studied thoroughly to recommend the culling of inferior trees. Trees having poor phenotypic characteristics such as slow growth, crooked stem form, attacked by pest or disease was tagged and recommended for culling. Species wise numbers of seed stands of three Silviculture divisions into two categories after evaluation are given in Tables 5.2 to 5.4.

Table 5.1: Status of Seed Stands after evaluation

Silviculture Division	Number of seed stands where evaluation work carried out	Status* after evaluation	
		C	NC
Hills	107	44	63
North (Plain)	72	34	38
South	24	9	15
Total	203	87	116

*C = may be considered as seed stand/SPA; NC = may not be considered as a seed stand/SPA

Table 5.2: Species wise number of seed stands of Silviculture Hills division into two categories after evaluation

Sl. No.	Species	Local Name	Status	
			C	NC
1	<i>Abies densa</i>	Gobresallah	2	0
2	<i>Ailanthus grandis</i>	Gokul	2	2
3	<i>Alnus nepalensis</i>	Utis	3	2
4	<i>Anthocephaluscadamba</i>	Kadan	0	1
5	<i>Betula alnoides</i>	Sour	1	1
6	<i>Betula cylindrostachya</i>	Sour	1	0
7	<i>Bombax ceiba</i>	Simul	0	3
8	<i>Bucklandiapopulnea</i>	Pipli	1	0
9	<i>Castanopsishystrix</i>	Patleykatush	1	2
10	<i>Chukrassiatabularis</i>	Chikrassi	0	3
11	<i>Cryptomeria japonica</i>	Dhupi	0	3
12	<i>Cupressus cashmeriana</i>	K.Dhupi	1	0
13	<i>Cupressus lucitonica</i>	Dhupi	1	0
14	<i>Dalbergia sissoo</i>	Sisoo	0	1
15	<i>Dipterocarpus terbinatus</i>	Garjan	2	2
16	<i>Duabanga indica</i>	Lampatey	1	3
17	<i>Dysoxylumprocerum</i>	Lasune	0	1
18	<i>Eucalyptussaligna</i>	Tarpin	1	1
19	<i>Lagerstroemia flosreginae</i>	Jarul	2	1
20	<i>Lagerstroemia hypoleuca</i>	Benteak	1	0
21	<i>Mesua ferrea</i>	Nageswar	1	0
22	<i>Micheliacathcartii</i>	T.Champ	1	1
23	<i>Micheliachampaca</i>	Champ	1	6
24	<i>Micheliaexcelsa</i>	M.Champ	3	1
25	<i>Pinus insularis</i>	Pine	0	1
26	<i>Pinus patula</i>	Pinus	3	6
27	<i>Populus gamblei</i>	Poplar	0	1
28	<i>Prunus napaulensis</i>	Arupatey	1	1
29	<i>Quercus lamellosa</i>	Buk	1	4
30	<i>Quercus lineata</i>	Phalant	1	1
31	<i>Quercus pachyphylla</i>	BanteyKatus	1	0
32	<i>Schimawallichii</i>	Chillowni	1	1
33	<i>Shorearobusta</i>	Sal	3	2
34	<i>Tectona grandis</i>	Teak	2	4
35	<i>Terminalia crenulata</i>	Pacasaj	0	3
36	<i>Terminalia myriocarpa</i>	Panisaj	1	4
37	<i>Tsuga brunoniana</i>	Hemlock	2	1
38	<i>Xyliadolabrifformis</i>	Lohakath	2	0
	Total		44	63

Table 5.3: Species wise number of seed stands of Silviculture North (Plain) division into two categories after evaluation

Sl. No.	Species	Local Name	Status	
			C	NC
1	<i>Acacia catechue</i>	Khair	0	2
2	<i>Ailanthus grandis</i>	Gokul	2	0
3	<i>Amoorawallichii</i>	D. Lali	1	0
4	<i>Anthocephalus chinensis</i>	Kadam	0	3
5	<i>Bischofia javanica</i>	Kainjal	0	2
6	<i>Bombax ceiba</i>	Simul	0	1
7	<i>Chukrasia tabularis</i>	Chikrasi	1	2
8	<i>Cordia alleodora</i>	Spanish elm, Cypre	0	3
9	<i>Dalbergia Sissoo</i>	Sissoo	0	1
10	<i>Dipterocarpus macrocarpus</i>	Hollong	1	2
11	<i>Dipterocarpus turbinatus</i>	Garjan	5	0
12	<i>Duabangasonneratioidis</i>	Lampate	1	0
13	<i>Eleocarpus ganitrus</i>	Rudrakha	1	0
14	<i>Emblica officinalis</i>	Amloki	0	1
15	<i>Gmelina arborea</i>	Gamar	3	2
16	<i>Lagerstroemia flosreginae</i>	Jarul	2	1
17	<i>Lagerstroemia hypoleuca</i>	Benteak	1	1
18	<i>Lagerstroemia parviflora</i>	Sidha	1	3
19	<i>Lophopetalum fimbriatum</i>	Narkeli	0	1
20	<i>Michelia champaca</i>	Champ	2	3
21	<i>Schimawallichii</i>	Chilauni	2	2
22	<i>Shorea robusta</i>	Sal	2	2
23	<i>Tectona grandis</i>	Teak	3	2
24	<i>Terminalia myriocarpa</i>	Panisaj	2	0
25	<i>Terminalia tomentosa</i>	Pakasaj	2	2
26	<i>Xyliadolabrififormis</i>	Lohakat	2	2
	Total		34	38

Table 5.4: Species wise number of seed stands of Silviculture South division into two categories after evaluation

Sl. No.	Species	Status	
		C	NC
1	<i>Acacia auriculiformis</i>	0	1
2	<i>Acacia mangium</i>	1	4
3	<i>Callistris intertropica</i>	0	1
4	<i>Dalbergia sisoo</i>	0	1
5	<i>Eucalyptus camaldulensis</i>	0	1
6	<i>Eucalyptus citriodora</i>	3	0
7	<i>Eucalyptus hybrid</i>	0	2
8	<i>Eucalyptus tereticornis</i>	0	1
9	<i>Leuceanaleucocephala</i>	0	1
10	<i>Madhuca latifolia</i>	4	0
11	<i>Shorea robusta</i>	0	1
12	<i>Tectona grandis</i>	0	1
13	<i>Terminalia arjuna</i>	1	1
	Total	9	15

Estimation of seed production capacity

Estimation of seed production capacity was carried out on selected seed stands of three Silviculture Divisions. Seed production of as many as 19 seed stands were estimated by taking data on number of fruits in sample branches and then extrapolated to get the total number of fruits per tree. To estimate total seed production of a seed stand, where no isolation zone was maintained, only trees from core zone were considered. After evaluation those stands were not considered as a seed stand, estimation of seed yield was not carried out there, in general. Seed estimation could not be carried out when observation year was not a seeding year for the species of that seed stand or most of the seeds already fallen during visit.

In some cases, when we observed no seed in selected all seed stands of a particular species we explored the other stand of the species. For example, in Silviculture South division the targeted seed stands for *Madhuca latifolia* were 1/ML/Rupapatija, 2/ML/Joypur and 3/ML/Arabari. But no fruiting was observed in these stands. However, in 4/ML/Arabari fruiting was observed and the stand was considered after evaluation, hence, seed production estimation for the stand was carried out.

During the field visits, staffs of the concerned department were trained in the subject related to establishment and maintenance of seed stands / SPAs and estimation of seed production capacities of stands.

6. References

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