

Assessment of Current Status of Breeding Seed Orchard (BSO) and Species Conservation Plot (SCP)



Prepared by
Government of Nepal
Ministry of Forests and Environment
Department of Forest and Soil Conservation
Forest Seed Laboratory and Storage Center
Nepalgunj, Banke
Ashad, 2081

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Cover Photo:

Sissoo (*Dalbergia Sissoo*) BSO, Krishnapur-08, Kanchanpur, Nepal © Ashok Khatri

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Abbreviations & Acronyms

BSO	Breeding Seed Orchard
CSO	Clonal Seed Orchard
DANIDA	Danish International Development Agency
DoF	Department of Forest
DoFSC	Department of Forest and Soil Conservation
DFRS	Department of Forest Research and Survey Center
FRA	Forest Resource Assessment
FSLSC	Forest Seed laboratory and Storage Center
GoN	Government of Nepal
NA	Not Available
NARMSAP	Natural Resource Management Sector Assistance Programme
OWL	Other Wood Land
OECD	Organization for Economic Cooperation and Development
SCP	Species Conservation Plot
SPA	Seed Production Area
TISC	Tree Improvement and Silviculture Component

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Chapter I

INTRODUCTION

1.1. Background

Nepal is blessed with abundant forest resources, which play a vital role in the country's economy, environment, and culture. It is crucial part of rural livelihoods for wood energy, their role in compost-based farming systems, and valuable marketable and subsistence non timber forest products and so forth. Forest resources in Nepal are essential for the country's environmental sustainability, biodiversity conservation, and socioeconomic development. Protecting and managing these resources sustainably are crucial for the well-being of current and future generations. Nepal's forest with occupying a total of 5.96 million ha which is 40.36% and other Wooded Land (OWL) covers 0.65 million ha (4.38%) with sum 44.74% of the total area of the country (DFRS, 2015) aimed to contribute greatly to sustainable development and poverty reduction.

The relationship between forest resources and tree improvement is integral to the sustainable management and utilization of forest ecosystems. Tree improvement refers to the application of scientific techniques to enhance the genetic characteristics of trees to meet specific objectives, such as improved growth rates, resistance to diseases and pests, and adaptation to changing environmental conditions. Tree improvement mostly related with genetic diversity, production and quality of stands, adaptation to climate change, restoration, reforestation as well as support various forest regime with access to improved tree germplasm and technical expertise and livelihood improvement of people.

Nepal's forestry sector has progressed in many aspects of forest resources management especially in people participation and increase of forest covers. Beside this, there is still some challenges such as limited research and resources, adaptation to local condition, integration with local knowledge and collaboration and capacity building to strengthen tree improvement programs to sustainably manage and utilize forest resources for the benefit of present and future generations.

Numerous tree improvement techniques are identified and adopted in Nepal aiming to enhance the genetic characteristics of trees to improve their productivity, resilience, and quality. Some common techniques adopted in Nepal are Selection and Clonal propagation, Seed Orchard establishment, Breeding programs, Provenance Trials and Seed testing, Silvicultural practices, Biotechnology and Genomic. Among these, one of the reliable

technologies of seed production in mass quantity is quality seed production from seed orchard. A seed orchard is a specialized plantation established to produce high-quality seeds of selected tree species for use in reforestation, afforestation, and tree improvement programs. Seed orchards play a crucial role in ensuring a consistent and reliable supply of genetically superior seeds, which can contribute to the productivity, resilience, and quality of forest stands. Seed orchards are strong link between breeding programs and plantation establishment. They are designed and managed to produce seeds of genetically superior quality compared to those obtained from seed production areas, seed stands, or unimproved stands.

A **seed orchard** is an intensively-managed plantation of specifically-arranged trees for the mass production of genetically improved seeds to create plants or seeds for the establishment of new forests. It is considered as an output systems for the production of superior seed for breeding programmes and forestry establishment. According and organization for economic cooperation and development (OECD, 1947) the seed orchard as a plantation of selected clones or progenies which is isolated from outside source, managed to produce frequent, abundant and easily harvested crop of seed.

1.1.1 Breeding Seed Orchards (BSOs)

Breeding seed orchards are specialized plantations established for the purpose of producing genetically improved seeds through controlled breeding of selected parent trees. These orchards are an essential component of tree improvement programs aimed at enhancing the genetic quality and performance of tree species for various purposes, including reforestation, afforestation, and commercial forestry. These are established seed sources i.e. sources with a documented parental history of pedigree. In seed orchards seed lots, i.e. mother trees, are kept separate and the identity maintained in order to do family selection and breeding part of advanced seed production. Seed orchards can be established by seed or clones. In both cases the product is seed. A new concept, breeding seed orchard (BSO) has been introduced as a special sub category of the seedling seed orchards. BSOs are based on a high number of families (Mother trees), which permit selection for breeding during several generations without introduction of new material. Seedling seed orchards may thus be classified as ordinary seed orchards or BSOs dependent on their base material. The term Clonal seed Orchard (CSO) is maintained in the revised system.

The concept in BSO establishment starts with carefully selection of superior parent trees based on desirable traits such as growth rate, form, wood quality, disease resistance and adaptation to local conditions, followed controlled pollination for the genetically improved offspring in isolated and quality

control condition for maintaining genetic purity with the aim to produce large quantity of high quality seeds.

Depending upon the establishment method there are two basic types of seed orchards viz. seedling seed orchards and vegetative or clonal seed orchards. Seed orchards established and maintained for breeding purposes are known as breeding seed orchards (BSO). The main logic behind BSO is to allow for the breeding and subsequent genetic testing of a greater number of parents than are normally established in a production orchard. In BSO, the spacing of plants is normally low than in other production orchards in order to facilitate breeding.

In Nepal, forest establishment (Afforestation, reforestation, tree farming and agroforestry) and the development of breeding seed orchards are critical components of efforts to enhance forest resources, promote sustainable land management, limit climate change and support rural livelihoods. Programs and initiatives had been envisioned and implemented, yet there were less significant and successful stories realized in spite of the efforts of the various government implementing agencies and private sectors. Strategies for revegetation of denuded and degraded areas had never been successful, due to poor selection of species to be used, lack of research and study coupled by the low quality of seeds and other planting materials.

Although efforts had been made to produce the needed high-quality planting materials, administrative, technical and policy support was not fully realized yet. Policy instruments governing forest tree seed and seedling production need to be assessed and reviewed to determine the effectiveness of the old guidelines and to see if it is still adapted to current situations or not. The policy instrument was revised to cope with new programs and initiatives in the current situation of the nation. The need to produce high quality forestry planting stock was recognized in Nepal as early as 1990, with the creation of the Tree Improvement and Silvicultural component (TISC) under the former Department of Forest (DoF). The re-structuring process in the past dissolved TISC with the establishment of Silviculture Division absorbing the functions of TISC. In recognition of the need to improve seeds and seedling quality in Nepal, various actions have been undertaken, the most recent being establishment of four Tree Seed Laboratory and storage Centers (Kathmandu, Biratnagar, Pokhara and Nepalgunj) within the organization of the Department of Forests and Soil Conservation (DoFSC).

National Tree Seed Project in Nepal implemented programs of seed production in order to fulfil the quality seed requirement. This program established seed stand and breeding seed orchard in different parts of Nepal. Due to the lack of updated information about BSOs various different has been arise for its management and conduct important tree improvement related works. In this

context, updating of information about BSO is crucial and mandatory. This study was conducted with the aim of generating the updated information of BSOs of working area of the Forest seed Laboratory and Storage Center, Nepalgunj, Banke.

1.1.2 Seed Production Area (SPA)

Seed Production Area (SPA) refers to a designated area where seeds of selected tree species with desirable traits, such as good growth rates, disease resistance, adaptability to specific climatic conditions, or other characteristics are produced under controlled conditions for use in reforestation, afforestation, and other purposes. These areas are carefully managed to ensure genetic diversity and the production of viable and genetically superior seeds.

The objectives of seed production areas are production of high quality seed, genetic improvement, conservation of genetic resources, sustainable land management, supply of quality seeds etc. Seed production areas play a vital role in supporting sustainable land management, genetic improvement, biodiversity conservation, and livelihood development. By producing high-quality seeds of selected tree species, seed production areas contribute to the resilience, productivity, and sustainability of forests, agroforestry systems, and agricultural landscapes as well.

The process of establishing seed production areas (SPAs) involves several steps to ensure the production of high-quality seeds of selected tree species under controlled conditions. Identifying suitable site considering various factors such as soil fertility, drainage, elevation, climate, and other ecological requirements are pre-requisite. Species or variety selection with desirable traits followed by preparation of land and plantation. Regular management such as irrigation, fertilization, weed control, pest and disease management and pruning are necessary management activities to execute in various interval of time. Facilitate controlled pollination of selected parent trees or plants and ensure proper isolation and genetic purity to prevent unwanted cross-pollination and monitor flowering, pollination, seed set and seed maturation stages are necessary before seed collection. Mature seed collection, processing (Clean, dry, and process the seeds or fruits to remove debris, husks, pulp, or other contaminants) and Label, package, and store the seeds in suitable containers under appropriate conditions play vital role in Seed production from SPA. Maintaining accurate records of all activities, inputs, and observations related to the establishment and management of the seed production area, including planting dates, seed sources, treatments, yields, and quality assessments helps for future improvement for decision making and planning.

1.1.3 In-situ conservation of rare and threatened tree species

In-situ conservation of rare and threatened tree species refers to the preservation and management of these species within their natural habitats. For rare and threatened tree species, this typically entails preserving their natural ecosystems, ensuring their survival and promoting their regeneration. This approach involves protecting the ecosystems where these trees naturally occur, along with the populations of the trees themselves. In-situ conservation aims to maintain the genetic diversity, ecological roles, and overall viability of rare and threatened tree species by addressing the various threats they face, such as habitat loss, overexploitation, invasive species, and climate change.

The objectives of in-situ conservation of rare and threatened tree species are multifaceted, aiming to ensure the survival and sustainable management of the species within their natural habitats. The primary goal of in-situ conservation is to prevent the extinction of rare and threatened tree species by protecting their populations and habitats from threats such as habitat destruction, invasive species, and overexploitation. Besides this, maintaining genetic diversity, preserving ecosystem functionality, restoring and rehabilitating habitats, increase public awareness and education, supporting sustainable livelihood.

Key components of in-situ conservation include establishing and managing identified areas, restoring degraded habitats, promoting sustainable land use practices, engaging local communities in conservation efforts, conducting research and monitoring, and implementing species-specific conservation actions. By conserving rare and threatened tree species in their natural environments, in-situ conservation helps safeguard biodiversity, ecosystem services, cultural values, and resilience to environmental changes.

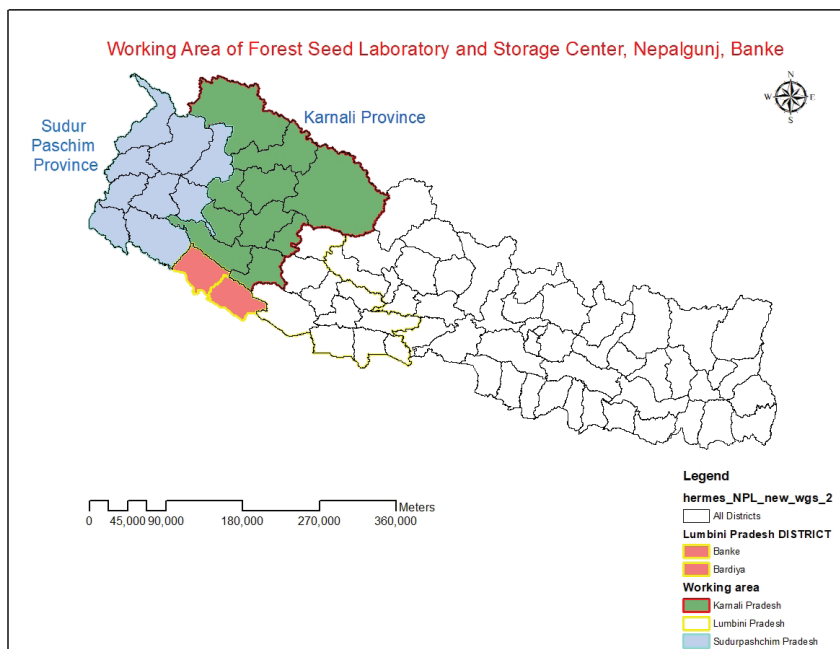
1.2 Objectives

The general objectives of this study was to assess the current status of BSOs, SPAs, SCP of the selected site of the working areas of Forest Seed Laboratory and Storage center, Banke. It includes the areas at Kanchanpur, Bardiya and Banke districts. The specific objectives of this study were as follows;

- To analyse the current status of selected sites.
- To produce the GIS map and location of those sites
- To prepare stem mapping of the sites.
- To analyse the problems and challenges of sites and recommend for further improvement.

1.3 Working Area of Forest Seed Laboratory and Storage Center, Banke

This center working area covers Karnali Province (all 10 districts), Lumbini Province (2 districts Banke and Bardiya) and Sudur Paschim Province (all 9 districts) with total of 21 districts.



CHAPTER II

METHODOLOGY

The study was based on field data collection, map preparation and report preparation, Literature review was done prior to the field visit. Relevant information supported to prepare checklist and format for data collection and also provided information about the location of sites in working districts. During the field visit boundary survey and tree tagging were conducted for the selected stand located in various districts of working areas. Participatory tools were applied and the use of secondary materials were instrumental to triangulate and substantiate the information generated through inventory.

2.1 Study Area

This scope of this study was within the Lumbini Province ie Banke, Bardiya and Sudurpachim Province Kanchanpur districts. The Study was conducted at four BSOs; *Dalbergia Sissoo* (sissoo) Banke, *Pterocarpus marsupium* (Bijaya sal), *Dalbergia Sissoo* (sissoo), *Neolamarckia cadamba* (Kadam) kanchanpur and two In-situ conservation plot of rare and threatened species; *Bombex ceiba* (Simal) and *Alstonia scholaris* (Chatiwan) Bardiya district.

2.2 Data Collection

Both primary and secondary data collection methods were used to collect the required data for this study. These included field visit of the selected sites consultation, focus group discussion and key informant and informal meeting with the forest officials and executives committee of community forest and extensive literature review.

2.3 Literature review

Information about the distribution and status of the BSOs were collected from various published and unpublished sources. Approved five-year forest management plan of working districts, publications of silvicultural division and previous tree improvement and silviculture unit office were reviewed.

2.4 Inventory

2.4.1 Field Preparation

A format attached in the Annex I was used for the field data collection BSOs. Initially developed format was revised based on the review of the literatures to make it more practical and scientific. Data were collected by visiting respective

BSOs and SCPs of working area of the Forest Seed Laboratory and Storage Center, Banke.

2.4.2 Formulation of Field crew team

The coordinator of the assigned task followed by the forest graduate, technician and helper were mobilized to the study sites. The team were initially provided a short orientation to handle the instruments, forms and record data. Ample safety protocol followed by the researcher ethics was oriented prior to the field mobilization.

2.4.3 Participatory Appraisal

A number of participatory tools were used during the field work. These includes:

- Focus group discussion
- Information meeting
- Key informant interviews.

These tools were used selectively for different purposes. Information with these tools was particularly relevant to identify sites and other information.

2.5 Data Analysis

Collected data was analysed using different software's and standard methodology. Distribution maps of the BSOs and SCPs was prepared by using Arc GIS using GPS points of BSOs and SCP.

CHAPTER III

RESULT AND DISCUSSION

3.1 Description of sites

There are four Breeding Seed Orchards, eight Seed Production Areas, and six Species Conservation Plots and one Provincial Fruit Garden in the working areas of FSLSC. Consultation with the official from FSLSC, Banke, interaction with local stakeholders, and literature review, four breeding seed orchards (BSO) and two Species Conservation Plots (SCP) were selected for the assessment. The BSO of *Dalbergia Sissoo* at Dalitheet Buffer zone community forest Kohalpur 12, Banke, the BSO of *Pterocarpus marsupium*, *Neolamaeckia cadamba* and *Dalbergia Sissoo* at Sayapatri community forest, Krishnapur 06, Kanchanpur are selected for assessment. So on, the In-situ conservation of *Bombex ceiba* at Hajari community forest Basgadhi 9, Bardiya and the in-situ conservation of *Alstonia scholaris* at Shree Ganesh Shiva Durga community forest Madhuban 8, Bardiya are selected for assessment. All the sites are accessible by road and represent the terai area from three districts of Lumbini and Sudur Paschim Province.

3.2 Detail Description of Sites

3.2.1 Sissoo BSO, Kohalpur, Banke

Name/Species of BSO : *Dalbergia Sissoo* (Sissoo) Breeding Seed Orchard (BSO)

Area

Gross area (fenced) : 2.16 ha.

Net area (sissoo planted) : 1.30 ha.

Net area (other species) : 0.86 ha.

Address

Districts : Banke

Local Level : Kohalpur

Ward No. : 12

Tole : Daunna tole

Contact person/CFUG/Watcher

Name of CFUG : Dalitheet Buffer Community Forest

CFUG Chairperson : Bal Bahadur Batha

Contact No : 9843805259
 Watcher Name : Bhakta Bahadur Batha
 Contact no : 9867941326

Specific Information

Topics	Description
Establishment year	2056
Origin of parent Material	Various Districts of Terai Region of Nepal
No. of Family	54
Establishment Report	NA
Design and BSO type	Randomized Complete Block design. 16 trees square plot design with 6 replication. 5184 Progenies of 54 Super Sissoo Trees planted in 1.5m×1.5m spacing.
Thinning Reports	NA
Management/ other Reports	NA
Land Ownership	Government of Nepal (GoN)
Established by	DoF, DANIDA/NARMSAP/Regional Seed Center Pokhara
Accessibility	Mahendra Highway Chappargaudi , Kohalpur
GPS location	X-Co-ordinate: 0570506 and Y-Co-ordinate: 3121230
Total no. of plant planted	5184
Tending and Cultural Operation	Cleaning
Thinning status & requirements	Required
Status of disease and pests	Some tree are totally dying and uprooting problem
Fruiting/seed production status	Fruiting but seed not collected yet.
Seed production/Collection records	Not Recorded
Income via seed, Thinned materials	No

Topics	Description
Protection by	Buffer Community Forest User Groups
Protection Measures	1 Forest watcher supported from FSLSC.
Recent no of trees/plants	290 trees of Sissoo in Sissoo plot and 154 trees of other species (Harro, Barro, Eucalyptus, Khair, Siris, Mango)
Fencing condition	Partial Mesh wire face, bare wire fenced in the establishment time.
Information board	Available but Immediate replacement is necessary.
Block separation pillars & Family Tags (in case of intermediate level)	Block separation pillars are available but Family tags not available.
Awareness/Involvement of Division/sub-division forest offices/CFUGs/Local residents	Good

Boundary of BSO

Station No.	Longitude (X-Coordinate)	Latitude (Y-Coordinate)	Remarks
1	570629	3121193	North-east station
2	570543	3121276	North-west station
3	570457	3121178	sisoo BSO south-west station
4	570425	3121139	South-west station
5	570509	3121055	South-east station
6	570551	3121101	sisoo BSO south-east station

Stem mapping details of *Dalbergia Sissoo* (sissoo)

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
1	570611	3121193	143	23	high
2	570610	3121194	116	15	medium
3	570608	3121186	107	13	medium

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
4	570607	3121190	82	10	low
5	570603	3121187	124	21	high
6	570602	3121185	130	17	high
7	570604	3121200	122	18	high
8	570604	3121205	114	18	high
9	570606	3121207	90	15	medium
10	570604	3121212	114	10	4D
11	570600	3121211	133	17	high
12	570601	3121206	54	10	low
13	570601	3121200	72	15	medium
14	570599	3121197	82	15	medium
15	570593	3121203	92	17	high
16	570591	3121205	74	10	low
17	570592	3121209	73	15	low
18	570592	3121210	76	15	low
19	570591	3121211	73	15	medium
20	570594	3121215	123	18	high
21	570599	3121188	75	15	medium
22	570596	3121192	68	15	low
23	570589	3121199	96	15	medium
24	570586	3121199	47	10	low
25	570577	3121196	104	18	high
26	570578	3121195	52	8	low
27	570582	3121198	80	15	medium
28	570585	3121190	113	18	high
29	570586	3121202	67	15	low
30	570587	3121205	120	22	high
31	570584	3121206	59	10	low
32	570573	3121208	80	18	medium

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
33	570570	3121207	66	15	medium
34	570566	3121208	136	24	high
35	570583	3121213	45	8	low
36	570586	3121219	66	5	low
37	570582	3121218	67	15	low
38	570578	3121214	68	10	low
39	570576	3121220	61	12	4D
40	570578	3121214	69	10	low
41	570585	3121229	128	19	high
42	570583	3121232	162	26	high
43	570582	3121233	134	19	medium
44	570570	3121230	56	8	low
45	570569	3121227	127	18	high
46	570568	3121227	95	15	medium
47	570568	3121232	75	10	4D
48	570565	3121234	83	10	low
49	570565	3121228	53	8	low
50	570561	3121225	69	10	medium
51	570559	3121227	60	10	medium
52	570558	3121225	126	20	high
53	570561	3121222	68	10	low
54	570563	3121220	52	10	low
55	570567	3121221	58	10	low
56	570566	3121218	80	13	medium
57	570564	3121215	55	8	low
58	570554	3121229	117	15	medium
59	570556	3121235	82	15	medium
60	570565	3121245	100	15	medium
61	570555	3121244	74	12	medium

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
62	570553	3121238	58	10	low
63	570551	3121239	113	19	high
64	570550	3121240	118	19	high
65	570549	3121240	66	10	low
66	570543	3121243	124	23	high
67	570545	3121247	61	12	medium
68	570547	3121250	66	15	medium
69	570551	3121252	113	18	4D
70	570553	3121251	91	15	medium
71	570553	3121257	83	10	medium
72	570546	3121265	120	20	medium
73	570540	3121259	82	12	medium
74	570542	3121257	84	14	medium
75	570537	3121254	98	15	high
76	570544	3121253	69	10	medium
77	570539	3121248	91	15	4D
78	570535	3121244	68	10	medium
79	570531	3121253	78	12	4D
80	570524	3121250	90	15	4D
81	570522	3121247	92	10	medium
82	570524	3121241	90	15	high
83	570528	3121243	88	17	high
84	570526	3121235	90	10	medium
85	570535	3121232	77	10	medium
86	570519	3121238	74	15	4D
87	570523	3121233	86	17	high
88	570523	3121231	88	18	high
89	570521	3121227	79	17	high
90	570519	3121228	102	19	high

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
91	570515	3121225	85	18	high
92	570513	3121228	62	10	medium
93	570510	3121232	112	15	high
94	570514	3121232	105	19	high
95	570523	3121221	95	12	high
96	570525	3121216	56	8	low
97	570523	3121214	65	10	low
98	570533	3121215	81	12	medium
99	570534	3121211	113	20	high
100	570534	3121207	115	22	high
101	570535	3121207	92	19	high
102	570539	3121210	80	16	4D
103	570540	3121220	79	10	high
104	570547	3121220	65	10	low
105	570551	3121215	73	15	medium
106	570560	3121211	103	20	high
107	570561	3121210	91	19	high
108	570547	3121207	103	20	high
109	570545	3121204	95	19	medium
110	570544	3121197	105	20	4D
111	570543	3121197	72	10	medium
112	570541	3121197	80	15	medium
113	570542	3121197	66	10	low
114	570539	3121192	65	12	low
115	570540	3121192	73	10	4D
116	570547	3121183	66	8	low
117	570546	3121178	125	19	high
118	570550	3121174	74	15	high
119	570552	3121180	81	15	high

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
120	570555	3121180	70	8	low
121	570556	3121180	77	18	medium
122	570562	3121193	54	8	low
123	570562	3121194	80	12	medium
124	570562	3121193	87	16	high
125	570568	3121201	66	15	medium
126	570568	3121203	64	12	medium
127	570570	3121203	109	20	high
128	570572	3121199	60	10	medium
129	570569	3121197	50	8	low
130	570566	3121196	60	12	medium
131	570565	3121193	59	11	medium
132	570566	3121191	125	19	high
133	570575	3121188	128	18	high
134	570579	3121192	83	15	medium
135	570584	3121188	88	14	high
136	570591	3121181	60	10	low
137	570591	3121179	96	12	medium
138	570590	3121179	75	10	medium
139	570583	3121174	143	18	4D
140	570582	3121167	152	24	high
141	570576	3121174	131	18	high
142	570579	3121180	104	15	4D
143	570568	3121169	140	24	high
144	570560	3121166	102	15	high
145	570555	3121167	120	18	high
146	570554	3121165	74	15	low
147	570552	3121164	120	20	high
148	570552	3121160	139	22	high

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
149	570551	3121157	60	10	low
150	570556	3121158	103	16	high
151	570556	3121159	141	26	high
152	570557	3121160	70	15	medium
153	570560	3121150	66	15	medium
154	570567	3121148	114	16	high
155	570572	3121147	180	27	high
156	570561	3121137	120	20	high
157	570559	3121134	143	24	high
158	570558	3121136	84	15	medium
159	570557	3121138	76	14	medium
160	570556	3121128	184	25	high
161	570552	3121126	203	28	high
162	570551	3121125	87	15	high
163	570553	3121128	152	24	high
164	570550	3121130	72	10	medium
165	570537	3121131	162	25	high
166	570538	3121135	54	8	low
167	570539	3121136	103	20	high
168	570542	3121138	69	15	medium
169	570542	3121139	65	8	low
170	570544	3121140	110	20	4D
171	570547	3121142	88	15	medium
172	570540	3121143	118	18	high
173	570542	3121148	81	15	medium
174	570540	3121154	65	10	high
175	570539	3121157	107	18	high
176	570538	3121157	58	10	4D
177	570535	3121151	81	12	medium

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
178	570534	3121150	95	12	high
179	570534	3121149	51	10	medium
180	570535	3121149	86	18	high
181	570534	3121150	75	15	high
182	570532	3121140	93	18	high
183	570529	3121144	52	8	low
184	570520	3121144	112	20	high
185	570526	3121145	61	10	low
186	570522	3121150	129	22	high
187	570519	3121153	70	15	4D
188	570518	3121154	76	18	4D
189	570519	3121155	97	20	high
190	570522	3121158	140	18	high
191	570522	3121160	69	12	low
192	570522	3121161	99	18	4D
193	570522	3121163	102	18	4D
194	570520	3121164	66	15	4D
195	570514	3121159	59	10	low
196	570513	3121159	93	15	high
197	570517	3121157	98	18	4D
198	570516	3121158	146	20	high
199	570515	3121158	115	22	high
200	570514	3121158	84	12	medium
201	570511	3121159	52	10	low
202	570506	3121162	76	12	low
203	570505	3121163	104	15	high
204	570503	3121164	119	19	high
205	570503	3121165	67	15	medium
206	570502	3121166	92	15	high

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
207	570503	3121168	76	15	high
208	570502	3121167	67	12	medium
209	570504	3121168	114	19	high
210	570506	3121163	90	18	high
211	570509	3121167	57	12	low
212	570513	3121171	87	18	high
213	570515	3121171	72	12	medium
214	570524	3121171	99	20	high
215	570522	3121173	94	19	high
216	570519	3121173	65	12	low
217	570519	3121174	60	10	low
218	570517	3121173	61	10	medium
219	570516	3121176	120	21	high
220	570526	3121179	69	8	low
221	570528	3121184	80	15	high
222	570527	3121184	125	18	high
223	570540	3121181	90	10	4D
224	570523	3121186	88	16	high
225	570523	3121184	77	18	high
226	570523	3121183	111	20	high
227	570524	3121183	63	10	high
228	570521	3121182	48	10	low
229	570519	3121181	67	12	medium
230	570513	3121177	101	19	high
231	570507	3121177	62	5	low
232	570507	3121180	88	12	medium
233	570507	3121182	62	10	4D
234	570511	3121185	72	12	4D
235	570513	3121184	86	15	high

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
236	570515	3121185	64	12	4D
237	570516	3121191	82	16	high
238	570517	3121192	77	15	high
239	570518	3121198	69	12	low
240	570519	3121198	59	10	medium
241	570526	3121201	72	14	high
242	570517	3121206	72	10	4D
243	570516	3121205	67	12	4D
244	570514	3121203	110	18	4D
245	570514	3121200	70	12	4D
246	570509	3121195	73	12	high
247	570510	3121194	90	15	high
248	570511	3121192	82	15	high
249	570510	3121191	106	18	high
250	570509	3121189	117	23	high
251	570504	3121185	74	15	medium
252	570503	3121184	63	12	medium
253	570495	3121183	64	10	low
254	570494	3121184	74	15	medium
255	570497	3121187	69	11	4D
256	570490	3121181	87	13	high
257	570487	3121180	122	23	high
258	570487	3121186	177	26	high
259	570485	3121189	70	8	medium
260	570483	3121189	60	10	medium
261	570481	3121190	89	16	high
262	570477	3121192	85	12	high
263	570476	3121197	145	18	4D
264	570480	3121201	125	19	high

S.N	X -Coordinate	Y -Coordinate	Circumference (cm) at breast height	Height (m)	Seed production condition
265	570487	3121196	86	16	4D
266	570484	3121206	122	17	high
267	570489	3121207	105	15	4D
268	570486	3121208	119	13	4D
269	570490	3121213	78	10	low
270	570494	3121219	75	10	4D
271	570497	3121222	140	15	4D
272	570497	3121222	110	13	4D
273	570497	3121221	107	13	4D
274	570500	3121224	130	18	high
275	570498	3121215	69	12	4D
276	570495	3121215	66	10	4D
277	570496	3121215	78	14	4D
278	570496	3121211	89	12	high
279	570501	3121210	60	10	4D
280	570503	3121214	82	15	4D
281	570515	3121214	75	12	low
282	570510	3121210	113	18	high
283	570507	3121204	80	15	4D
284	570509	3121204	101	20	high
285	570507	3121204	114	23	high
286	570505	3121204	69	10	medium
287	570503	3121203	56	11	low
288	570500	3121199	94	16	high
289	570493	3121201	58	12	low
290	570487	3121194	47	8	4D

Stem mapping details of other species in BSO

S.N.	Species Name	X-Coordinate	Y-Coordinate	Circumference (cm) at breast height	Height (m)
1	Khair	570456	3121175	114	12
2	Eucalyptus	570453	3121171	109	15
3	Khair	570452	3121167	110	10
4	Khair	570449	3121166	89	5
5	Eucalyptus	570446	3121162	139	18
6	Eucalyptus	570443	3121158	78	10
7	Eucalyptus	570443	3121155	82	10
8	Eucalyptus	570438	3121154	90	12
9	Eucalyptus	570428	3121142	92	12
10	Eucalyptus	570431	3121141	94	15
11	Eucalyptus	570433	3121140	67	10
12	Eucalyptus	570432	3121140	52	5
13	Eucalyptus	570435	3121137	104	15
14	Eucalyptus	570436	3121136	90	20
15	Eucalyptus	570438	3121133	98	10
16	Eucalyptus	570442	3121131	106	20
17	Eucalyptus	570442	3121129	159	15
18	Eucalyptus	570451	3121121	111	15
19	Eucalyptus	570453	3121120	110	22
20	Eucalyptus	570452	3121120	123	22
21	Eucalyptus	570455	3121117	78	10
22	Eucalyptus	570462	3121113	129	20
23	Eucalyptus	570466	3121110	81	10
24	Eucalyptus	570472	3121105	58	10
25	Khair	570470	3121097	150	15
26	Khair	570441	3121144	116	10

S.N.	Species Name	X-Coordinate	Y-Coordinate	Circumference (cm) at breast height	Height (m)
27	Khair	570440	3121146	101	10
28	Khair	570441	3121149	71	5
29	Khair	570439	3121152	51	5
30	Khair	570440	3121158	80	10
31	Khair	570463	3121164	110	14
32	Khair	570467	3121168	76	5
33	Khair	570470	3121157	123	15
34	Khair	570462	3121148	92	15
35	Khair	570467	3121141	130	12
36	Khair	570479	3121160	102	8
37	Khair	570485	3121155	90	12
38	Eucalyptus	570486	3121155	68	8
39	Khair	570493	3121160	62	10
40	Barro	570491	3121156	56	17
41	Khair	570500	3121146	95	12
42	Eucalyptus	570492	3121144	65	8
43	Eucalyptus	570488	3121138	66	10
44	Eucalyptus	570492	3121130	65	8
45	Eucalyptus	570481	3121124	110	18
46	Khair	570482	3121122	60	8
47	Khair	570481	3121119	105	10
48	Khair	570482	3121120	90	12
49	Bel	570482	3121119	75	5
50	Khair	570488	3121119	87	10
51	khair	570493	3121115	75	10
52	khair	570492	3121108	120	13
53	khair	570501	3121123	92	12

S.N.	Species Name	X-Coordinate	Y-Coordinate	Circumference (cm) at breast height	Height (m)
54	khair	570503	3121126	84	12
55	khair	570514	3121138	94	13
56	khair	570516	3121134	86	13
57	siris	570511	3121126	139	12
58	siris	570516	3121121	126	13
59	siris	570509	3121115	120	13
60	siris	570504	3121107	110	11
61	siris	570502	3121104	128	10
62	Eucalyptus	570498	3121079	66	8
63	Eucalyptus	570497	3121076	136	15
64	Mango	570505	3121066	110	5
65	Eucalyptus	570509	3121070	110	15
66	Eucalyptus	570512	3121075	42	5
67	Eucalyptus	570513	3121076	155	15
68	Khair	570504	3121076	73	10
69	Khair	570503	3121078	58	10
70	Barro	570497	3121081	42	3
71	Barro	570495	3121085	95	15
72	Barro	570496	3121084	127	15
73	Barro	570497	3121085	45	5
74	Barro	570501	3121082	70	13
75	Barro	570504	3121080	92	12
76	Barro	570500	3121081	59	8
77	Barro	570507	3121081	52	10
78	Barro	570507	3121082	65	10
79	Barro	570506	3121082	108	17
80	Harro	570506	3121084	39	5

S.N.	Species Name	X-Coordinate	Y-Coordinate	Circumference (cm) at breast height	Height (m)
81	Harro	570503	3121087	42	8
82	Harro	570501	3121087	51	12
83	Barro	570499	3121091	109	17
84	Harro	570494	3121095	66	12
85	Harro	570493	3121095	68	12
86	Harro	570496	3121097	43	8
87	Barro	570497	3121097	84	13
88	Barro	570499	3121098	85	13
89	Barro	570500	3121096	92	15
90	Barro	570505	3121093	71	15
91	Barro	570506	3121091	70	14
92	Barro	570507	3121090	66	12
93	Barro	570511	3121084	80	13
94	Harro	570515	3121086	41	5
95	Barro	570515	3121087	119	14
96	Barro	570514	3121086	78	15
97	Harro	570513	3121087	52	8
98	Harro	570509	3121091	42	8
99	Harro	570505	3121094	56	12
100	Barro	570511	3121099	100	10
101	Barro	570511	3121096	75	12
102	Barro	570515	3121097	76	8
103	Barro	570515	3121095	72	15
104	Harro	570516	3121094	58	10
105	Harro	570518	3121093	42	8
106	Barro	570519	3121094	101	13
107	Barro	570520	3121095	110	15

S.N.	Species Name	X-Coordinate	Y-Coordinate	Circumference (cm) at breast height	Height (m)
108	Barro	570520	3121096	80	14
109	Barro	570522	3121100	147	18
110	Harro	570525	3121103	67	14
111	Eucalyptus	570531	3121099	97	10
112	Barro	570529	3121103	128	20
113	Barro	570529	3121104	79	13
114	Harro	570529	3121107	67	12
115	Harro	570531	3121100	72	12
116	Harro	570535	3121110	55	10
117	Barro	570537	3121115	104	18
118	Harro	570534	3121114	63	12
119	Barro	570531	3121110	82	14
120	Harro	570524	3121103	37	12
121	Harro	570524	3121101	60	14
122	Harro	570523	3121100	42	12
123	Harro	570521	3121098	50	13
124	Barro	570516	3121098	61	10
125	Barro	570517	3121099	95	14
126	Barro	570519	3121102	50	12
127	Barro	570523	3121104	75	12
128	Barro	570525	3121105	85	13
129	Barro	570525	3121107	88	15
130	Harro	570530	3121112	52	15
131	Barro	570532	3121115	58	10
132	Harro	570533	3121117	76	10
133	Barro	570530	3121118	118	18
134	Barro	570521	3121117	110	19

S.N.	Species Name	X-Coordinate	Y-Coordinate	Circumference (cm) at breast height	Height (m)
135	Barro	570524	3121116	91	18
136	Barro	570523	3121115	92	19
137	Harro	570525	3121111	60	11
138	Harro	570519	3121122	50	12
139	Harro	570517	3121105	61	12
140	Harro	570511	3121106	62	17
141	Barro	570510	3121106	118	17
142	Barro	570511	3121107	69	15
143	Harro	570515	3121107	54	10
144	Barro	570517	3121106	107	18
145	Barro	570518	3121108	75	17
146	Barro	570516	3121112	92	18
147	Harro	570518	3121116	68	14
148	Harro	570517	3121121	65	12
149	Barro	570521	3121118	74	14
150	Barro	570522	3121124	119	19
151	Harro	570520	3121126	76	15
152	Harro	570520	3121132	55	5
153	Barro	570528	3121131	80	18
154	Barro	570530	3121128	58	12

Findings and observation

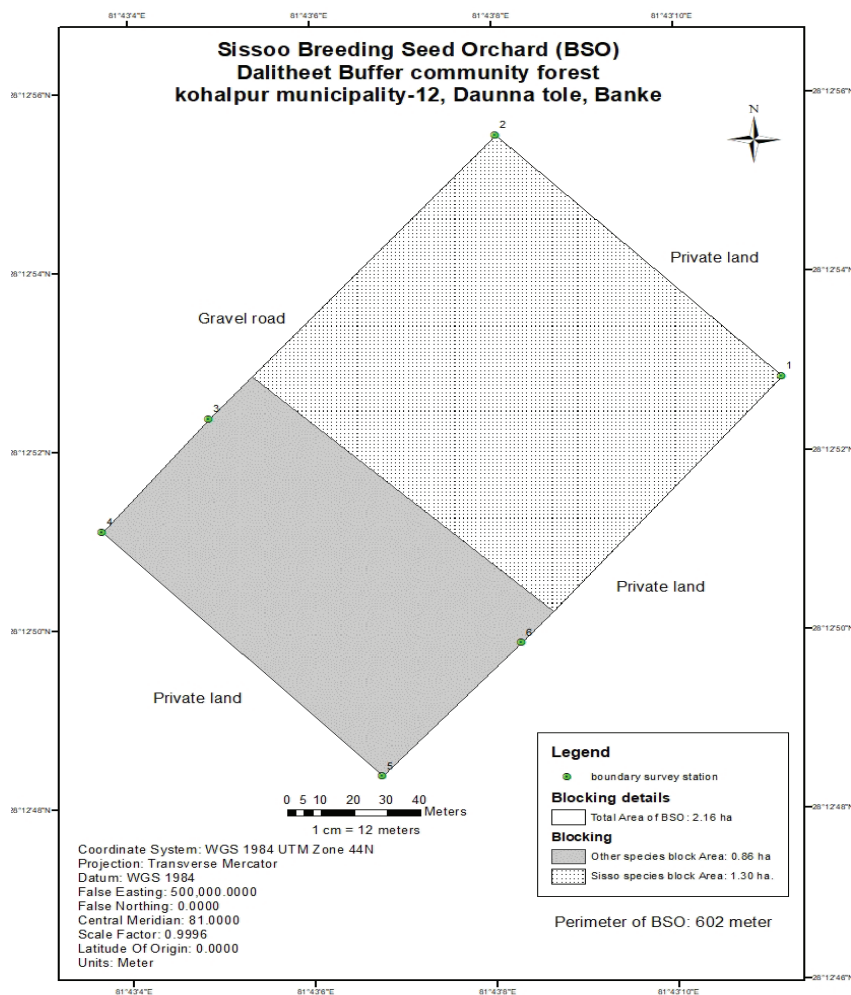
- This breeding seed orchard was established in 2056 B.S designing Randomized Complete Block design. 16 trees square plot design with 6 replication planted total of 5184 Progenies of 54 Super Sissoo Trees planted in 1.5m×1.5m spacing selected from different Terai districts.
- BSO had established in an isolated forest patch surrounded by the settlement and agriculture land so there is null chance of cross pollination from other source.

- According to the present assessment, 290 total pole and tree size of *sisso* are enumerated in northern block of BSO and 154 other species are enumerated in southern block.
- 188 pole size *sisso* and 102 tree size *sisso* are numbered of which 29 pole and 16 of tree are dead, dying, decayed and diseased (4D).
- The top circumference at breast height in the BSO is 203 centimetre and top height is 25 metre and the least circumference at breast height in the BSO is 45 centimetre and height is 5 metre.
- About 5.6% (290 tree) of planted progenies are survival till date and of which 40.34% (117 tree and pole) have possibility to produce seed in future according to the phenotype observation of tree species.
- Invasive plant have covered ground surface and different rodent insects and animals has made the soil surface lose and holes.
- Uprooting and branches broken by wind is another problem in the BSO.
- Boundary trees has a better growth in comparison to other location. Few management practices and thinning were conducted in the past and there was no clear data of the management activities.

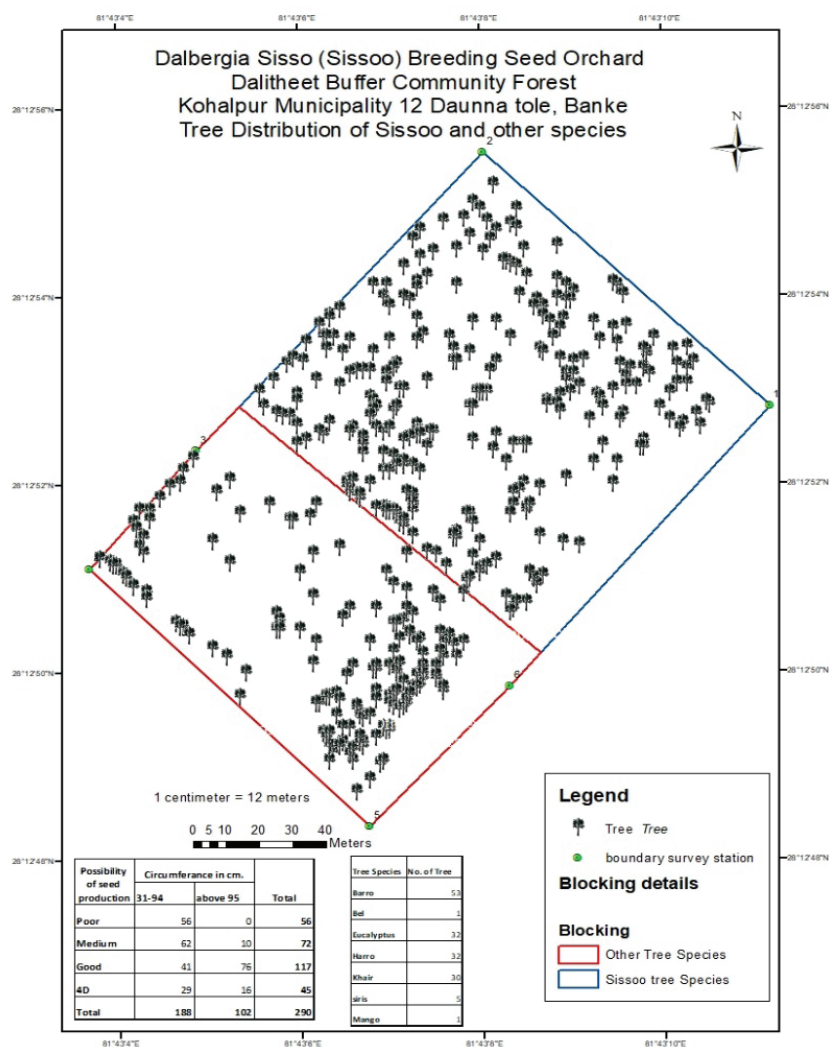
Remarks (Challenges/opportunities):

- Thinning, cleaning and climber cutting required.
- Thinning of diseased, dead, decay and dying trees is too recommended.
- Limited management activities has resulted in growth of other competitive species namely (Banmara) *Lantana camara*, (*Aula Banmara*) *Eupatorium odoratum*, other parasitic plants from orchideacea family.
- High risk of encroachment although fencing is done around the BSO.
- Large hole are made by rodents due to low management activities in ground surface such as cleaning, due to dense weeds etc so management activities to control this should be executed.
- The death of the *Sisso* (*Dalbergia Sisso*) has too been noticed due to fungal infection.
- Removal of fungal infected and dead tree should be done according to approved operational plan

Map of BSO



Stem mapping



Google location map



3.2.2 Bijayasal BSO, Krishnapur, Kanchanpur

Name/Species of BSO : *Pterocarpus marsupium* (Bijaya sal) Breeding Seed Orchard (BSO)

Area

Gross area (fenced) : 2.95 ha.

Net area (Bijayasal planted) : 2.56 ha.

Net area (other species) : 0.39 ha.

Address

Districts : Kanchanpur

Local Level : Krishnapur Municipality

Ward No. : 06

Tole : Gulariya

Contact person/CFUG/Watcher

Name of CFUG : Sayapatri Community Forest

CFUG Chairperson : Krishna Prasad Chaudhary

Contact No : +977 9848636399

Watcher Name : Suryaman Dagura

Contact no : 9868889565

Specific Information

Topics	Description
Establishment year	July, 2005 (Fiscal year 2061/062)
Origin of parent Material	Kailali and Kanchanpur District
No. of Family	40
Establishment Report	NA
Design and BSO type	Randomized Complete Block design (RCBD) with 4 replications, each family is represented in each rectangular block of 40 trees plot planted in 2m×2m. (Intermediate level BSO)
Thinning Reports	NA

Topics	Description
Management/ other Reports	NA
Land Ownership	Government of Nepal (GoN)
Established by	DoF/Regional Seed Center Dhangadhi
Accessibility	Mahendra Highway Atariya to Chauraha section, Gulariya
GPS location	X-Co-ordinate: 0451512 and Y-Co-ordinate: 3189959
Total no. of plant planted	NA
Tending and Cultural Operation	Cleaning
Thinning status & requirements	Required
Status of disease and pests	Some tree are dead
Fruiting/seed production status	Seed not collected yet.
Seed production/Collection records	Not Recorded
Income via seed, Thinned materials	NA
Protection by	Community Forest User Groups
Protection Measures	1 Forest watcher supported from FSLSC.
Recent no of trees/plants	615 (pole and tree size) and 97 sapling
Fencing condition	Barbed wire fenced at the establishment time.
Information board	Available but Immediate replacement is necessary.
Block separation pillars & Family Tags (in case of intermediate level)	Block separation pillars are available but Family tags not available.
Awareness/Involvement of Division/sub-division forest offices/CFUGs/Local residents	Good

Boundary of BSO

Station No	Longitude (X-Coordinate)	Latitude (Y-Coordinate)	Remarks
1	451474	3189949	
2	451570	3189944	
3	451638	3190121	
4	451548	3190170	
5	451443	3190100	

Stem mapping details of *Pterocarpus marsupium* (Bijayasal)

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
1	451483	3189964	90	5	good
2	451485	3189965	84	6	good
3	451486	3189968	70	4	medium
4	451483	3189966	42	3	poor
5	451481	3189968	62	7	good
6	451478	3189968	51	4	poor
7	451475	3189968	40	3	medium
8	451480	3189973	86	9	good
9	451486	3189974	85	11	good
10	451489	3189973	69	11	medium
11	451490	3189974	72	12	good
12	451493	3189972	66	7	good
13	451494	3189966	130	15	good
14	451491	3189963	49	3	medium
15	451495	3189968	63	6	medium
16	451498	3189967	47	7	good
17	451498	3189963	46	4	poor
18	451500	3189964	84	5	medium
19	451495	3189970	61	12	good
20	451495	3189970	57	12	good
21	451487	3189977	76	15	good

S.N.	X_ ordinate	Y_ ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
22	451491	3189977	65	13	good
23	451480	3189978	75	10	good
24	451478	3189976	56	8	good
25	451478	3189979	39	3	poor
26	451474	3189979	55	5	medium
27	451473	3189982	40	3	poor
28	451476	3189984	55	4	good
29	451480	3189983	56	7	poor
30	451481	3189983	68	12	good
31	451488	3189985	72	7	good
32	451495	3189984	110	8	good
33	451500	3189980	55	7	good
34	451501	3189979	60	9	good
35	451502	3189977	70	9	good
36	451494	3189975	69	16	good
37	451499	3189973	62	10	medium
38	451506	3189973	67	10	medium
39	451506	3189973	58	10	medium
40	451506	3189970	52	8	medium
41	451512	3189969	63	7	medium
42	451509	3189962	65	11	poor
43	451513	3189963	49	4	good
44	451512	3189970	74	7	medium
45	451518	3189965	52	7	poor
46	451525	3189962	50	4	good
47	451520	3189962	47	4	poor
48	451529	3189964	43	2	poor
49	451529	3189962	51	5	medium
50	451537	3189961	50	7	poor
51	451542	3189961	53	5	good

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
52	451544	3189961	47	7	good
53	451546	3189961	45	8	good
54	451545	3189964	58	9	good
55	451549	3189963	62	8	medium
56	451551	3189962	58	5	good
57	451553	3189966	56	7	poor
58	451554	3189966	45	7	poor
59	451557	3189966	44	5	medium
60	451559	3189961	51	8	medium
61	451562	3189960	95	14	good
62	451570	3189976	76	15	good
63	451570	3189977	62	8	poor
64	451575	3189989	56	7	good
65	451575	3189989	52	7	good
66	451579	3189990	50	8	good
67	451575	3189994	64	8	good
68	451579	3190000	56	4	medium
69	451582	3190014	73	5	good
70	451586	3190018	45	6	good
71	451589	3190018	69	7	good
72	451577	3190031	73	8	good
73	451571	3190036	47	6	medium
74	451582	3190040	65	8	good
75	451588	3190050	63	9	good
76	451592	3190055	57	5	good
77	451591	3190056	74	7	good
78	451587	3190063	49	5	medium
79	451583	3190059	60	7	good
80	451579	3190058	83	6	good
81	451574	3190060	44	3	poor

S.N.	X_ cordinate	Y_ cordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
82	451578	3190050	66	15	good
83	451574	3190048	67	7	good
84	451579	3190066	88	12	good
85	451583	3190066	67	10	good
86	451584	3190069	93	13	good
87	451578	3190072	93	14	good
88	451582	3190082	63	11	good
89	451584	3190084	73	10	good
90	451587	3190082	80	7	good
91	451587	3190085	59	6	good
92	451592	3190082	73	9	good
93	451599	3190072	80	12	good
94	451606	3190080	70	13	good
95	451599	3190085	91	15	good
96	451603	3190097	80	15	good
97	451620	3190100	78	12	good
98	451612	3190120	103	18	good
99	451600	3190122	112	15	good
100	451600	3190119	80	12	good
101	451598	3190111	86	13	good
102	451596	3190110	76	16	good
103	451592	3190107	97	15	good
104	451581	3190120	88	10	medium
105	451585	3190120	87	12	good
106	451588	3190123	84	16	good
107	451589	3190137	83	14	good
108	451584	3190139	94	15	good
109	451584	3190142	83	14	good
110	451585	3190147	92	15	good
111	451579	3190134	90	16	good

S.N.	X_ cordinate	Y_ cordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
112	451581	3190132	95	11	good
113	451572	3190110	80	13	good
114	451571	3190105	75	10	good
115	451567	3190093	95	14	good
116	451567	3190085	88	14	good
117	451577	3190082	102	14	good
118	451569	3190079	89	15	good
119	451568	3190078	80	14	good
120	451520	3190069	88	7	medium
121	451525	3190049	98	17	good
122	451519	3190042	93	12	good
123	451519	3190031	85	10	good
124	451533	3190040	86	12	good
125	451535	3190033	80	10	good
126	451554	3190024	78	7	medium
127	451552	3190020	82	8	good
128	451557	3190010	90	12	good
129	451538	3190008	78	8	good
130	451537	3189990	90	7	good
131	451539	3189985	82	8	good
132	451529	3189979	89	9	good
133	451498	3190003	78	7	good
134	451495	3190003	76	8	good
135	451498	3190019	84	12	medium
136	451498	3190025	77	12	medium
137	451494	3190026	86	10	medium
138	451488	3190009	72	11	good
139	451483	3189997	78	10	good
140	451482	3189996	80	12	good
141	451489	3189978	28	6	poor

S.N.	X_ cordinate	Y_ cordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
142	451493	3189986	58	9	good
143	451489	3189989	60	10	good
144	451487	3189990	35	7	medium
145	451488	3189987	68	11	good
146	451483	3189983	28	5	medium
147	451483	3189981	30	5	medium
148	451476	3189981	56	10	good
149	451474	3189982	46	9	medium
150	451477	3189985	44	9	good
151	451473	3189987	50	9	good
152	451479	3189991	36	5	medium
153	451479	3189995	40	8	medium
154	451477	3189995	54	8	good
155	451476	3190000	40	7	good
156	451476	3190001	30	6	medium
157	451471	3190000	50	11	good
158	451469	3189998	34	7	medium
159	451468	3189995	30	4	poor
160	451470	3190007	40	8	medium
161	451471	3190006	35	9	medium
162	451473	3190008	35	6	medium
163	451484	3190011	46	12	good
164	451483	3190012	40	7	medium
165	451478	3190012	50	8	good
166	451478	3190006	58	9	good
167	451482	3190002	50	8	good
168	451489	3190002	20	4	poor
169	451490	3190000	57	8	medium
170	451490	3189990	65	7	good
171	451497	3189985	35	6	good

S.N.	X_ cordinate	Y_ cordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
172	451497	3189991	35	6	good
173	451505	3189982	70	13	good
174	451508	3189986	57	10	good
175	451510	3189989	60	11	good
176	451507	3189991	59	11	good
177	451507	3189985	65	10	good
178	451509	3189986	55	9	medium
179	451501	3189977	46	7	medium
180	451507	3189972	55	12	good
181	451511	3189969	68	11	good
182	451515	3189968	40	6	medium
183	451512	3189973	62	7	medium
184	451518	3189968	56	8	good
185	451523	3189966	81	12	good
186	451523	3189963	42	8	medium
187	451526	3189963	50	9	good
188	451528	3189964	46	9	good
189	451529	3189965	37	6	medium
190	451531	3189961	50	9	medium
191	451525	3189969	44	7	4D
192	451525	3189972	30	4	poor
193	451517	3189977	39	7	poor
194	451519	3189978	36	7	medium
195	451515	3189979	34	5	poor
196	451509	3189980	47	7	medium
197	451508	3189979	30	5	poor
198	451512	3189981	47	7	medium
199	451516	3189985	30	3	poor
200	451517	3189982	30	4	poor
201	451518	3189986	30	4	poor

S.N.	X_ ordinate	Y_ ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
202	451520	3189986	30	4	poor
203	451514	3189988	38	5	medium
204	451510	3189989	60	9	good
205	451510	3189994	61	9	good
206	451513	3189988	38	6	medium
207	451512	3189995	92	12	good
208	451511	3190001	57	11	good
209	451512	3190002	56	12	good
210	451505	3190001	30	4	poor
211	451501	3190007	54	5	medium
212	451497	3190005	47	6	medium
213	451494	3190006	42	8	medium
214	451493	3190006	38	7	medium
215	451491	3190015	32	4	poor
216	451492	3190017	52	8	poor
217	451492	3190018	46	7	medium
218	451495	3190023	37	4	poor
219	451492	3190025	47	6	medium
220	451487	3190025	47	10	good
221	451484	3190026	50	11	good
222	451483	3190027	28	3	poor
223	451470	3190015	30	6	poor
224	451469	3190015	28	6	medium
225	451473	3190022	34	5	medium
226	451467	3190029	40	7	medium
227	451462	3190029	38	7	medium
228	451466	3190036	59	13	good
229	451462	3190043	39	6	medium
230	451459	3190044	37	5	medium
231	451461	3190050	54	5	medium

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
232	451459	3190061	40	5	medium
233	451479	3190034	42	6	poor
234	451478	3190034	31	6	poor
235	451477	3190029	33	5	poor
236	451486	3190034	29	4	poor
237	451490	3190038	52	4	poor
238	451488	3190041	45	4	poor
239	451481	3190054	33	5	medium
240	451483	3190054	40	7	good
241	451488	3190054	48	6	medium
242	451490	3190058	52	7	good
243	451491	3190064	32	4	medium
244	451492	3190064	45	6	medium
245	451490	3190068	58	10	good
246	451495	3190055	48	7	medium
247	451495	3190046	55	5	medium
248	451494	3190045	42	5	medium
249	451496	3190044	55	7	medium
250	451497	3190040	42	6	poor
251	451501	3190045	74	12	good
252	451503	3190044	74	12	good
253	451505	3190045	25	4	poor
254	451504	3190046	37	6	poor
255	451506	3190046	58	10	good
256	451505	3190053	45	6	medium
257	451500	3190051	52	12	good
258	451498	3190057	58	11	good
259	451501	3190057	68	11	good
260	451498	3190058	48	9	medium
261	451495	3190056	71	10	good

S.N.	X_ ordinate	Y_ ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
262	451502	3190061	44	6	medium
263	451501	3190065	50	7	good
264	451507	3190066	33	6	poor
265	451511	3190070	46	8	medium
266	451510	3190074	58	8	medium
267	451502	3190084	26	5	poor
268	451509	3190081	46	5	poor
269	451512	3190081	24	4	poor
270	451517	3190080	56	5	medium
271	451521	3190075	50	8	medium
272	451516	3190073	65	7	medium
273	451519	3190073	38	5	medium
274	451514	3190068	54	7	medium
275	451511	3190064	59	8	medium
276	451516	3190055	63	8	good
277	451514	3190058	42	7	medium
278	451533	3190053	36	5	poor
279	451528	3190050	53	5	medium
280	451525	3190052	40	7	medium
281	451531	3190039	40	6	medium
282	451535	3190039	60	8	good
283	451531	3190036	51	6	medium
284	451534	3190036	55	8	good
285	451538	3190029	45	7	good
286	451531	3190031	29	5	poor
287	451528	3190030	46	10	good
288	451526	3190041	38	4	poor
289	451521	3190034	37	6	medium
290	451522	3190030	58	8	good
291	451508	3190027	68	11	good

S.N.	X_ cordinate	Y_ cordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
292	451502	3190025	28	4	4D
293	451500	3190024	62	11	good
294	451503	3190018	78	13	good
295	451508	3190020	55	10	good
296	451515	3190015	46	8	medium
297	451514	3190009	50	8	medium
298	451519	3190013	80	12	good
299	451520	3190015	35	7	poor
300	451521	3190022	46	8	medium
301	451524	3190022	61	9	good
302	451527	3190024	66	10	good
303	451528	3190017	73	11	good
304	451527	3190015	63	10	good
305	451525	3190011	50	8	good
306	451524	3190008	50	7	medium
307	451519	3190005	35	6	medium
308	451518	3190000	22	4	poor
309	451521	3189998	34	4	medium
310	451520	3189993	44	5	medium
311	451518	3189989	28	5	medium
312	451522	3189987	33	4	medium
313	451523	3189984	59	10	medium
314	451531	3189982	32	3	poor
315	451531	3189983	35	4	poor
316	451534	3189984	55	8	good
317	451540	3189978	39	5	poor
318	451541	3189977	32	3	poor
319	451540	3189976	49	8	medium
320	451535	3189975	56	7	good
321	451531	3189970	34	6	poor

S.N.	X_ ordinate	Y_ ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
322	451532	3189970	53	7	medium
323	451540	3189969	40	8	good
324	451539	3189968	40	7	medium
325	451537	3189963	62	8	good
326	451540	3189966	73	9	good
327	451539	3189965	70	10	good
328	451547	3189967	47	7	medium
329	451545	3189968	27	5	poor
330	451549	3189970	34	5	poor
331	451550	3189970	51	7	medium
332	451552	3189969	30	4	poor
333	451554	3189970	50	8	medium
334	451556	3189968	37	5	poor
335	451551	3189968	36	7	poor
336	451551	3189965	57	9	good
337	451555	3189978	35	5	medium
338	451558	3189977	30	4	poor
339	451567	3189985	57	10	medium
340	451563	3189987	54	7	medium
341	451566	3189990	50	6	medium
342	451563	3189989	44	4	poor
343	451570	3189993	46	7	good
344	451575	3189997	48	8	good
345	451574	3189999	63	10	good
346	451578	3189983	32	6	poor
347	451574	3189999	35	5	poor
348	451572	3190003	58	9	good
349	451569	3190004	39	7	medium
350	451572	3190004	34	6	medium
351	451570	3190011	67	10	good

S.N.	X_ ordinate	Y_ ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
352	451567	3190009	32	5	poor
353	451565	3190008	51	8	good
354	451566	3190006	29	3	poor
355	451561	3190006	74	11	good
356	451569	3190022	55	9	good
357	451584	3190021	27	4	poor
358	451573	3190018	48	7	medium
359	451565	3190027	67	9	good
360	451562	3190033	50	6	medium
361	451565	3190030	36	6	poor
362	451560	3190038	52	9	good
363	451553	3190037	77	10	good
364	451543	3190037	27	4	poor
365	451541	3190037	28	3	poor
366	451543	3190031	38	6	medium
367	451543	3190033	38	6	medium
368	451539	3190026	36	3	poor
369	451543	3190018	42	5	poor
370	451561	3190013	70	10	good
371	451557	3190014	32	8	good
372	451544	3190010	58	6	medium
373	451542	3190009	29	7	poor
374	451536	3190006	42	5	poor
375	451534	3190008	30	3	poor
376	451533	3190006	40	10	good
377	451536	3190003	57	9	good
378	451540	3189999	46	5	medium
379	451533	3189998	38	7	medium
380	451530	3190000	42	8	poor
381	451532	3189997	51	5	poor

S.N.	X_ ordinate	Y_ ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
382	451531	3189991	30	4	poor
383	451525	3189994	64	10	good
384	451524	3189992	39	6	medium
385	451536	3190052	60	9	medium
386	451536	3190049	36	4	poor
387	451539	3190047	63	7	good
388	451537	3190050	68	8	good
389	451556	3190040	70	9	good
390	451558	3190043	32	6	poor
391	451562	3190041	38	3	poor
392	451563	3190044	32	3	poor
393	451569	3190042	31	5	medium
394	451584	3190037	32	5	medium
395	451601	3190058	37	5	medium
396	451612	3190059	51	10	medium
397	451618	3190075	31	6	poor
398	451612	3190079	50	5	poor
399	451614	3190081	56	7	medium
400	451611	3190084	35	6	medium
401	451615	3190088	37	6	poor
402	451615	3190089	31	4	poor
403	451617	3190087	55	7	medium
404	451614	3190092	33	5	poor
405	451611	3190090	41	9	medium
406	451611	3190088	57	10	good
407	451608	3190087	33	5	poor
408	451603	3190087	45	8	medium
409	451598	3190081	55	8	good
410	451602	3190075	37	7	medium
411	451598	3190085	47	7	medium

S.N.	X_ ordinate	Y_ ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
412	451595	3190084	64	10	good
413	451593	3190091	73	11	good
414	451606	3190099	46	5	medium
415	451615	3190099	67	8	good
416	451618	3190099	50	10	good
417	451619	3190099	55	10	good
418	451619	3190101	34	4	poor
419	451625	3190100	41	8	medium
420	451627	3190116	75	12	good
421	451605	3190119	76	13	good
422	451606	3190124	77	13	good
423	451602	3190134	71	14	good
424	451602	3190135	58	5	medium
425	451601	3190133	74	14	good
426	451595	3190130	75	15	good
427	451599	3190124	34	5	poor
428	451602	3190122	32	5	poor
429	451602	3190119	50	7	medium
430	451600	3190111	58	6	medium
431	451599	3190114	36	5	poor
432	451598	3190118	34	6	poor
433	451598	3190122	53	7	medium
434	451593	3190124	56	6	medium
435	451594	3190124	48	6	medium
436	451593	3190122	55	12	good
437	451590	3190123	63	12	good
438	451590	3190118	52	8	medium
439	451592	3190116	30	4	poor
440	451590	3190113	82	13	good
441	451593	3190106	63	12	good

S.N.	X_ cordinate	Y_ cordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
442	451598	3190100	37	4	poor
443	451596	3190099	26	5	poor
444	451592	3190098	40	7	medium
445	451584	3190111	58	12	good
446	451580	3190109	49	8	medium
447	451580	3190112	36	7	medium
448	451575	3190112	48	5	medium
449	451585	3190112	52	8	good
450	451593	3190126	37	4	poor
451	451590	3190134	26	3	poor
452	451589	3190138	33	5	poor
453	451591	3190138	42	6	medium
454	451591	3190140	80	15	good
455	451585	3190140	51	7	medium
456	451586	3190135	40	6	poor
457	451576	3190137	50	6	medium
458	451579	3190140	57	8	good
459	451580	3190142	64	9	good
460	451585	3190145	54	6	medium
461	451586	3190148	28	5	poor
462	451579	3190145	38	4	poor
463	451567	3190153	66	9	good
464	451566	3190151	23	4	poor
465	451568	3190150	52	9	good
466	451567	3190147	45	6	medium
467	451565	3190147	42	6	medium
468	451559	3190146	32	5	poor
469	451545	3190160	48	8	medium
470	451550	3190137	30	3	poor
471	451546	3190142	38	5	poor

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
472	451540	3190138	71	12	h
473	451535	3190140	53	6	medium
474	451532	3190136	55	7	good
475	451528	3190136	43	4	medium
476	451540	3190120	43	4	medium
477	451540	3190119	56	6	medium
478	451541	3190117	97	13	good
479	451546	3190125	47	7	medium
480	451555	3190125	66	12	good
481	451556	3190123	47	8	medium
482	451558	3190122	73	11	good
483	451555	3190115	34	3	poor
484	451558	3190120	54	8	medium
485	451560	3190115	63	9	good
486	451564	3190113	38	4	poor
487	451565	3190113	41	6	medium
488	451570	3190115	75	12	good
489	451567	3190122	26	3	poor
490	451569	3190123	37	5	poor
491	451571	3190127	54	10	good
492	451569	3190131	68	6	medium
493	451570	3190130	69	10	good
494	451571	3190132	73	12	good
495	451564	3190136	50	5	medium
496	451567	3190140	43	7	good
497	451571	3190138	74	10	good
498	451575	3190130	75	12	good
499	451576	3190133	37	6	poor
500	451580	3190134	33	5	poor
501	451576	3190122	50	6	medium

S.N.	X_ cordinate	Y_ cordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
502	451575	3190121	40	5	medium
503	451575	3190123	47	5	medium
504	451566	3190109	51	9	good
505	451569	3190111	64	9	good
506	451570	3190109	68	11	good
507	451571	3190110	77	9	good
508	451568	3190108	45	9	good
509	451568	3190107	30	5	poor
510	451572	3190107	54	7	medium
511	451573	3190104	61	8	good
512	451570	3190105	37	5	medium
513	451570	3190104	33	5	medium
514	451579	3190100	55	8	good
515	451581	3190103	68	10	good
516	451583	3190100	43	2	4D
517	451583	3190102	38	4	poor
518	451586	3190098	71	12	good
519	451586	3190095	37	6	medium
520	451583	3190095	28	3	poor
521	451589	3190093	45	6	medium
522	451586	3190091	41	5	poor
523	451585	3190088	51	8	good
524	451583	3190088	34	5	poor
525	451582	3190092	40	8	medium
526	451580	3190095	31	5	poor
527	451578	3190094	69	9	good
528	451573	3190091	40	7	medium
529	451576	3190093	38	5	medium
530	451572	3190088	56	6	medium
531	451575	3190086	45	5	poor

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
532	451579	3190086	52	7	good
533	451574	3190084	35	6	medium
534	451579	3190080	40	5	medium
535	451588	3190079	43	6	medium
536	451573	3190077	50	8	good
537	451574	3190085	47	6	good
538	451572	3190076	65	9	good
539	451577	3190071	47	8	medium
540	451577	3190062	36	5	poor
541	451569	3190058	56	8	good
542	451564	3190056	63	9	good
543	451563	3190052	41	6	medium
544	451564	3190071	36	4	poor
545	451561	3190069	61	7	good
546	451562	3190071	59	6	good
547	451570	3190078	60	10	good
548	451566	3190080	49	6	medium
549	451567	3190083	55	9	good
550	451569	3190088	39	4	poor
551	451562	3190087	42	5	poor
552	451562	3190097	44	5	poor
553	451559	3190095	54	8	good
554	451561	3190092	44	7	medium
555	451558	3190093	54	8	medium
556	451556	3190091	88	6	medium
557	451558	3190103	64	11	good
558	451549	3190106	61	12	good
559	451544	3190098	31	3	poor
560	451533	3190108	38	7	medium
561	451532	3190107	30	3	poor

S.N.	X_ ordinate	Y_ ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
562	451530	3190107	45	5	medium
563	451528	3190108	35	7	good
564	451531	3190106	80	7	medium
565	451526	3190107	55	7	good
566	451525	3190106	48	7	good
567	451527	3190110	57	8	good
568	451524	3190108	58	7	medium
569	451524	3190114	28	3	poor
570	451513	3190116	31	5	poor
571	451521	3190109	60	7	medium
572	451520	3190107	34	3	poor
573	451521	3190104	38	4	poor
574	451514	3190098	29	4	poor
575	451509	3190099	59	7	good
576	451507	3190103	45	9	good
577	451523	3190098	36	5	poor
578	451526	3190100	34	5	poor
579	451529	3190099	49	7	medium
580	451528	3190101	36	3	poor
581	451527	3190103	44	5	poor
582	451532	3190103	55	8	good
583	451525	3190093	55	7	good
584	451521	3190090	62	8	good
585	451528	3190094	52	7	medium
586	451531	3190094	35	4	poor
587	451537	3190096	67	9	good
588	451548	3190092	64	8	good
589	451539	3190086	59	7	medium
590	451538	3190084	45	6	poor
591	451541	3190081	63	6	good

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
592	451547	3190085	63	6	medium
593	451551	3190081	58	9	good
594	451552	3190074	78	13	good
595	451556	3190073	72	11	good
596	451549	3190072	54	10	medium
597	451548	3190069	46	6	medium
598	451547	3190071	78	12	good
599	451544	3190074	58	9	good
600	451542	3190071	82	14	good
601	451545	3190069	44	6	medium
602	451540	3190069	30	4	poor
603	451542	3190067	42	6	medium
604	451540	3190065	36	5	poor
605	451538	3190067	39	6	medium
606	451537	3190066	48	6	good
607	451538	3190070	77	10	good
608	451533	3190072	65	11	good
609	451531	3190071	28	5	poor
610	451530	3190073	47	7	medium
611	451528	3190070	36	5	medium
612	451535	3190060	26	4	poor
613	451537	3190061	25	4	poor
614	451538	3190062	53	6	medium
615	451534	3190058	42	5	poor

Findings and observation

- This breeding seed orchard was established in fiscal year 2060/061 B.S. Randomized Complete Block design (RCBD) with 4 replications, each family is represented in each rectangular block of 40 trees plot planted in 2m×2m. (Intermediate level BSO)
- BSO had established in a community forest as an isolated patch surrounded by the other species natural forest rather than bijayasal

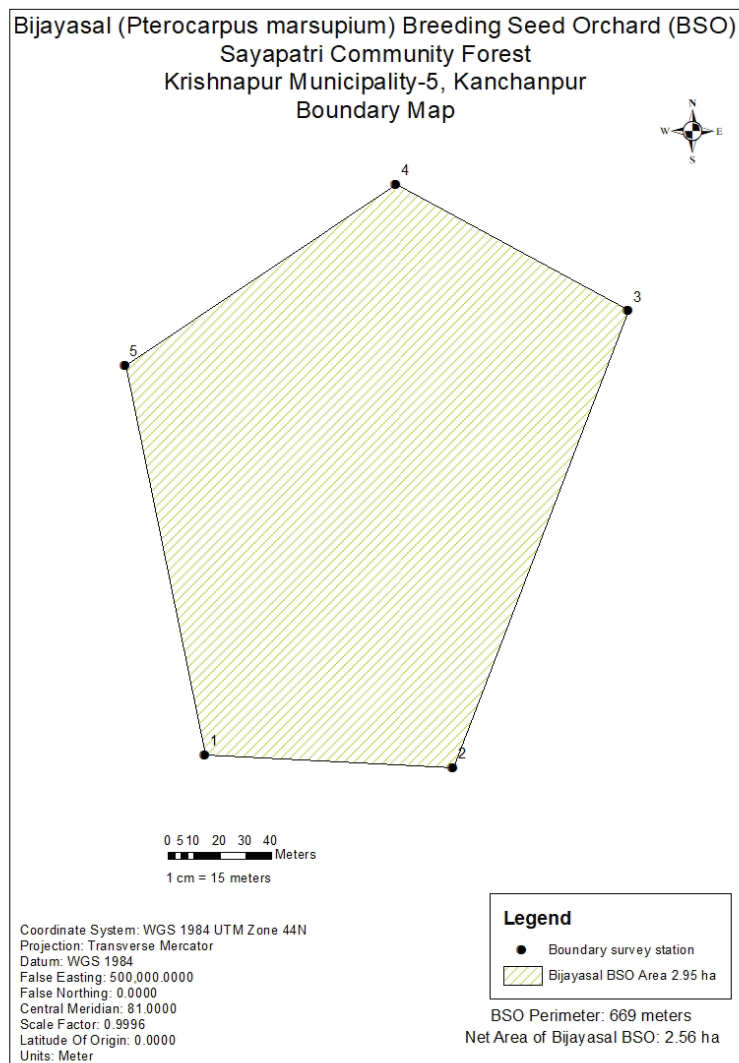
so there is null chance of cross pollination from other source.

- According to the present assessment, 615 total pole and tree size of bijayasal are enumerated.
- 50 sapling size, 553 pole size and 12 tree size Bijayasal are numbered of which 1 sapling and 2 pole are dead, dying, decayed and diseased (4D).
- The top circumference at breast height in the BSO is 130 centimetre and top height is 16 metre and the least circumference at breast height in the BSO is 20 centimetre and height is 2 metre.
- 43.74% (269 tree and pole) have possibility to produce good seed in future according to the phenotype observation of tree species.
- Invasive plant have covered ground surface and different rodent insects and animals has made the soil surface lose and holes.
- Crown cover open trees has a better growth in comparison to other location. Few management practices and thinning were conducted in the past and there was no clear data of the management activities.

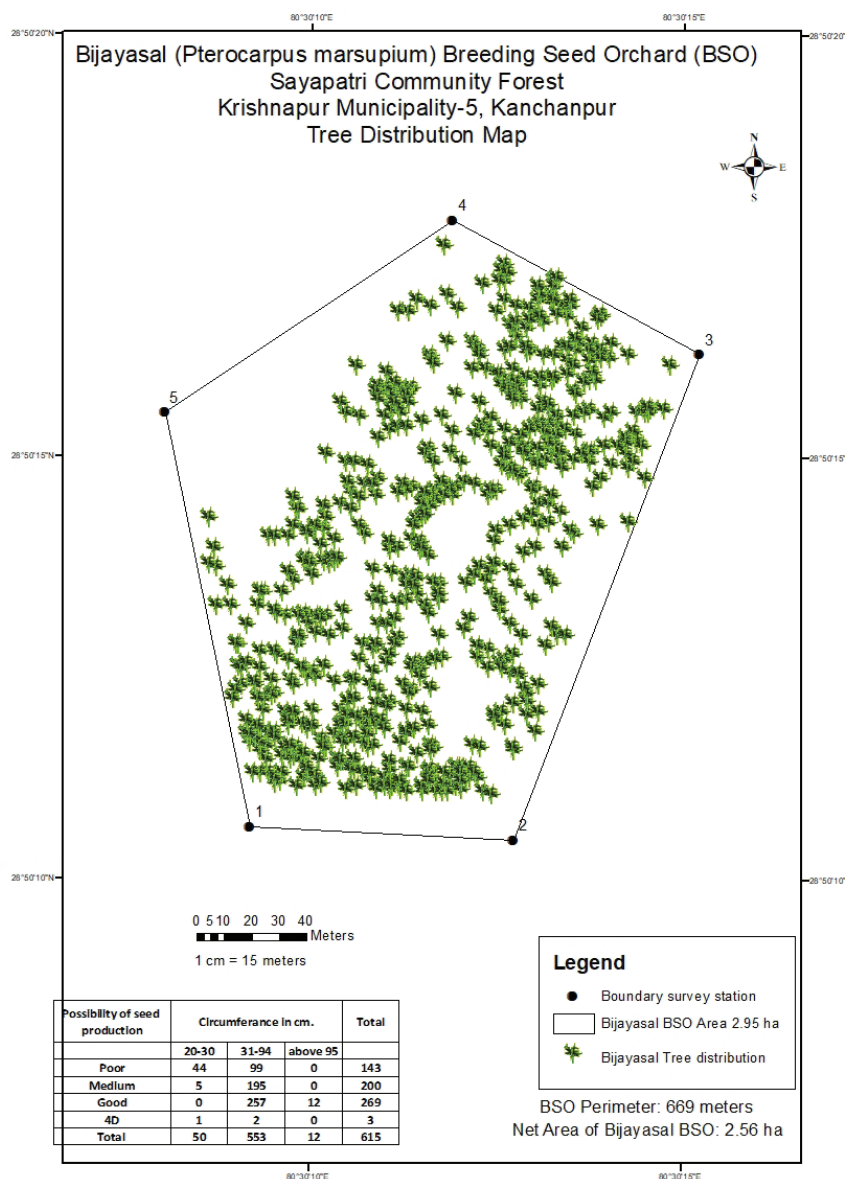
Remarks (Challenges/opportunities):

- Thinning, cleaning and climber cutting required.
- Thinning of diseased, dead, decay and dying trees is too recommended.
- Limited management activities has resulted in growth of other competitive species namely *Lantana camara*, (*Aula Banmara*) *Eupatorium odoratum*, (Khair) *Acacia catechu*, (*Bayer*) *Ziziphus species*, other parasitic plants from orchideacea family.
- Holes are made by rodents due to low management activities in ground surface such as cleaning, due to dense weeds etc.
- Plantation in some open area is necessary.

Map of BSO



Stem Mapping



Google location map



3.2.3 Kadam BSO, Krishnapur, Kanchanpur

Name/Species of BSO : *Neolamarckia cadamba* (Kadam) (Open pollination) Breeding Seed Orchard (BSO)

Area

Gross area (fenced) : 1 ha.

Net area (Kadam planted) : 0.68 ha.

Address

Districts : Kanchanpur

Local Level : Krishnapur Municipality

Ward No. : 06

Tole : Gulariya

Contact person/CFUG/Watcher

Name of CFUG : Sayapatri Community Forest

CFUG Chairperson : Krishna prasad Chaudhary

Contact No : 9848636399

Watcher Name : Suryaman Dagura

Contact no : 9868889565

Specific Information

Topics	Description
Establishment year	2073
Origin of parent Material	Kailali and Kanchanpur District
No. of Family	NA
Establishment Report	NA
Design and BSO type	Open pollinated, Unidentified family Simple level BSO
Thinning Reports	NA
Management/ other Reports	NA
Land Ownership	Government of Nepal (GoN)
Established by	DoF, Silviculture Division, Babarmahal kathmandu

Topics	Description
Accessibility	Mahendra Highway Atariya to Chauraha section, Gulariya
GPS location	X-Co-ordinate: 0451493 and Y-Co-ordinate: 3189798
Total no. of plant planted	NA
Tending and Cultural Operation	Cleaning
Thinning status & requirements	Not Required
Status of disease and pests	NA
Fruiting/seed production status	Seed not collected yet.
Seed production/Collection records	Not Recorded
Income via seed, Thinned materials	No
Protection by	Community Forest User Groups
Protection Measures	1 Forest watcher supported from FSLSC.
Recent no of trees/plants	145 pole size and 62 sapling
Fencing condition	Barbed wire fenced at the establishment time.
Information board	Not installed. Immediate instalment is necessary.
Block separation pillars & Family Tags (in case of intermediate level)	No
Awareness/Involvement of Division/sub-division forest offices/ CFUGs/Local residents	Good

Boundary of BSO

Station No	Longitude (X-Coordinate)	Latitude (Y-Coordinate)	Remarks
1	451531	3189876	
2	451530	3189855	
3	451531	3189834	
4	451511	3189832	
5	451498	3189835	

Station No	Longitude (X-Coordinate)	Latitude (Y-Coordinate)	Remarks
6	451496	3189808	
7	451499	3189788	
8	451565	3189755	
9	451568	3189760	
10	451564	3189770	
11	451593	3189862	
12	451597	3189871	
13	451607	3189911	
14	451543	3189927	

Stem mapping details of *Neolamarckia cadamba* (Kadam)

S.N.	X_coordinate	Y_coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
1	451572	3189802	45	3	high
2	451571	3189799	62	5	high
3	451570	3189795	44	4	high
4	451569	3189793	53	5	high
5	451566	3189793	43	4	high
6	451563	3189791	49	3	high
7	451565	3189787	50	3	high
8	451564	3189787	48	4	high
9	451565	3189785	60	5	high
10	451568	3189786	37	2	high
11	451568	3189785	43	3	medium
12	451564	3189783	49	4	high
13	451561	3189775	60	5	high
14	451561	3189774	64	7	high
15	451565	3189773	34	4	medium
16	451564	3189770	58	5	high
17	451563	3189769	68	7	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
18	451563	3189764	58	5	high
19	451561	3189767	40	6	high
20	451560	3189770	57	8	high
21	451560	3189773	47	7	high
22	451557	3189770	65	5	high
23	451553	3189773	60	6	high
24	451553	3189776	49	5	medium
25	451554	3189775	60	5	high
26	451553	3189776	64	8	high
27	451554	3189777	53	6	high
28	451554	3189779	43	5	medium
29	451554	3189780	53	4	medium
30	451552	3189782	40	2	low
31	451551	3189784	47	3	low
32	451552	3189783	62	6	high
33	451551	3189783	42	4	low
34	451552	3189782	40	5	high
35	451552	3189780	61	8	high
36	451551	3189777	48	4	high
37	451547	3189777	54	5	medium
38	451544	3189778	56	6	high
39	451544	3189780	47	3	medium
40	451543	3189780	45	5	high
41	451542	3189780	52	6	high
42	451536	3189783	45	4	low
43	451532	3189785	50	4	low
44	451534	3189787	47	3	high
45	451533	3189785	49	4	high
46	451532	3189784	56	3	high
47	451532	3189784	53	4	high

S.N.	X_ ordinate	Y_ ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
48	451527	3189787	44	3	high
49	451522	3189795	70	5	high
50	451521	3189797	54	4	medium
51	451520	3189799	51	3	low
52	451517	3189800	57	4	low
53	451516	3189796	59	5	high
54	451513	3189801	56	4	high
55	451510	3189801	50	4	high
56	451506	3189803	49	6	high
57	451507	3189799	48	7	high
58	451507	3189799	60	7	high
59	451509	3189789	50	5	high
60	451502	3189798	50	4	low
61	451504	3189803	56	6	high
62	451503	3189806	80	7	high
63	451503	3189810	72	8	high
64	451506	3189813	82	9	high
65	451504	3189814	76	12	high
66	451508	3189817	63	11	high
67	451508	3189820	60	10	high
68	451509	3189820	82	12	high
69	451511	3189819	59	8	high
70	451514	3189818	69	8	high
71	451509	3189826	75	13	high
72	451504	3189826	70	10	high
73	451503	3189827	52	7	medium
74	451504	3189833	61	10	high
75	451506	3189831	54	8	high
76	451508	3189828	56	12	high
77	451506	3189833	93	13	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
78	451509	3189829	87	10	high
79	451508	3189831	70	15	high
80	451513	3189832	75	8	high
81	451512	3189835	51	6	medium
82	451515	3189830	92	10	high
83	451517	3189827	76	8	high
84	451524	3189826	62	6	high
85	451576	3189813	75	6	medium
86	451575	3189818	63	7	medium
87	451578	3189823	57	5	medium
88	451577	3189825	57	8	high
89	451579	3189828	54	5	medium
90	451572	3189830	62	6	high
91	451566	3189829	58	6	high
92	451562	3189833	50	4	low
93	451552	3189833	67	7	high
94	451543	3189836	85	8	high
95	451554	3189848	62	6	high
96	451562	3189847	57	5	high
97	451566	3189844	57	5	medium
98	451573	3189842	52	4	low
99	451574	3189839	62	7	high
100	451580	3189835	52	5	medium
101	451584	3189836	47	4	low
102	451583	3189840	52	5	medium
103	451579	3189840	59	8	medium
104	451579	3189845	62	7	high
105	451575	3189841	59	5	medium
106	451588	3189850	55	5	medium
107	451590	3189856	53	4	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
108	451585	3189855	40	4	high
109	451584	3189854	40	5	high
110	451579	3189861	62	7	high
111	451579	3189862	40	6	low
112	451576	3189860	48	6	high
113	451573	3189859	68	8	high
114	451573	3189857	58	10	high
115	451575	3189858	48	4	medium
116	451575	3189853	58	8	high
117	451571	3189851	61	7	high
118	451569	3189848	63	6	medium
119	451569	3189849	41	5	low
120	451566	3189850	62	7	medium
121	451569	3189855	41	7	medium
122	451568	3189855	58	8	high
123	451563	3189856	47	6	high
124	451562	3189860	60	8	medium
125	451564	3189863	43	5	low
126	451563	3189866	52	7	high
127	451562	3189865	44	7	low
128	451559	3189869	63	6	high
129	451558	3189864	48	7	low
130	451559	3189863	53	6	high
131	451559	3189862	43	8	high
132	451562	3189859	49	9	high
133	451560	3189857	64	8	high
134	451554	3189864	63	6	high
135	451554	3189867	60	5	high
136	451554	3189867	50	5	high
137	451545	3189858	65	10	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
138	451543	3189860	47	4	medium
139	451541	3189862	52	3	high
140	451541	3189863	50	4	high
141	451539	3189860	46	3	low
142	451539	3189859	44	4	medium
143	451542	3189857	46	5	medium
144	451546	3189857	43	5	medium
145	451541	3189849	48	5	medium

Findings and observation

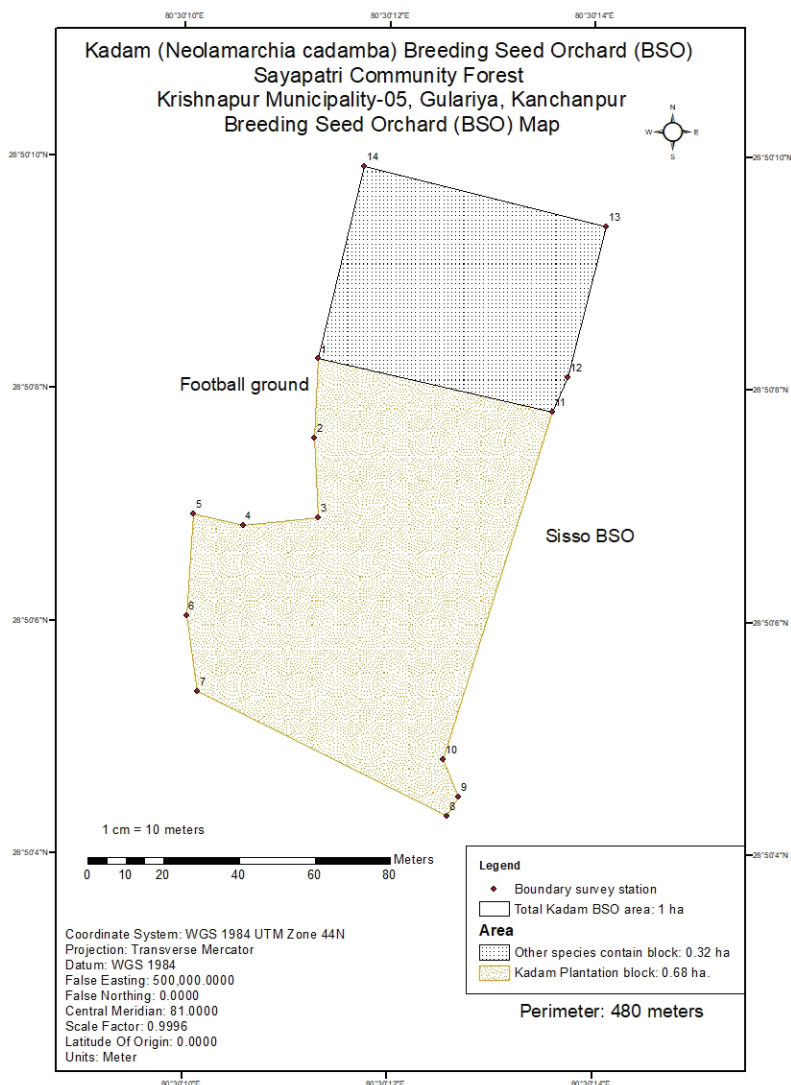
- This breeding seed orchard was established in 2073 B.S as an Open pollinated, unidentified family Simple level BSO, seed collected from Kailali and Kanchanpur districts.
- BSO has established in a community forest as an isolated patch surrounded by the other species natural forest rather than Kadam, so there is null chance of cross pollination from other source.
- According to the present assessment, 145 total pole are enumerated. Centre part of the BSO is barren due to waterlogged problem during rainy season and a long more. Planted progenies were dead due to this problem and converted into barren land.
- The top circumference at breast height in the BSO is 93 centimetre and top height is 15 metre and the least circumference at breast height in the BSO is 34 centimetre and height is 2 metre.
- About 67.58% (98 tree and pole) have possibility to produce seed in future according to the phenotype observation of tree species.
- Boundary trees has a better growth in comparison to other location. No management practices and thinning were conducted in the past and there was no clear data of the management activities.

Remarks (Challenges/opportunities):

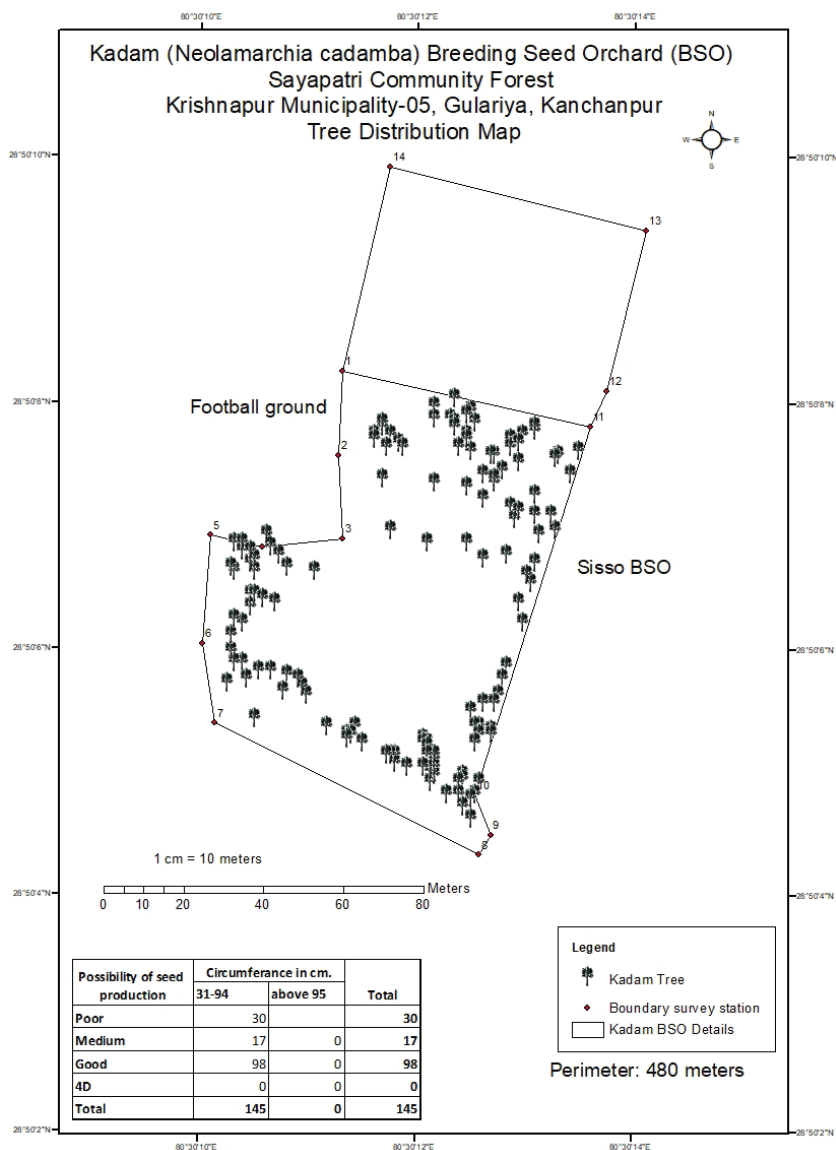
- Thinning required.
- High risk of Encroachment for playing ground due to close connected with public playing ground.
- Proper Mesh wire fencing is necessary to avoid encroachment and management of BSO.

- Large number of planted seedling were dead due to waterlogged problem in BSO so created open ground space in the centre of the BSO. Proper management of waterlogged during rainy season should be managed by digging trench, water holes or channel near BSO.
- Plantation should be done in open area.

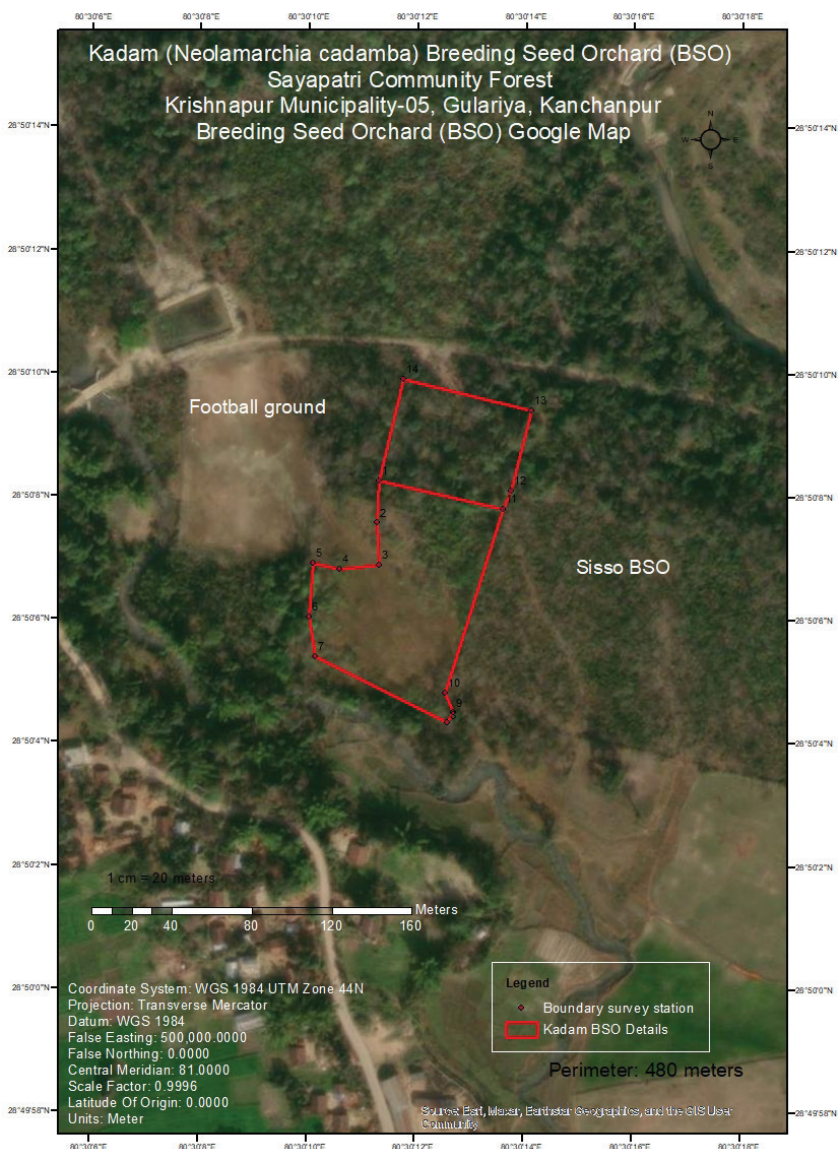
Map of BSO



Stem mapping



Google location Map



3.2.4 Sissoo BSO, Krishnapur, Kanchanpur

Name/Species of BSO : *Dalbergia Sisso* (Sissoo) Breeding Seed Orchard (BSO)

Area

Gross area (fenced) : 1.87 ha.

Net area (sissoo planted) : 1.87 ha.

Address

Districts : Kanchanpur

Local Level : Krishnapur Municipality

Ward No. : 06

Tole : Gulariya

Contact person/CFUG/Watcher

Name of CFUG : Sayapatri Community Forest

CFUG Chairperson : Krishna prasad Chaudhary

Contact No : 9848636399

Watcher Name : Suryaman Dagura

Contact no : 9868889565

Specific Information

Topics	Description
Establishment year	2061
Origin of parent Material	Kailali and Kanchanpur District
No. of Family	84
Establishment Report	NA
Design and BSO type	Randomized Complete Block design (RCBD) with 4 replications, each family is represented in each rectangular block of 84 trees plot planted in 1.5m×1.5m. (Intermediate level BSO)
Thinning Reports	NA
Management/ other Reports	NA
Land Ownership	Government of Nepal (GoN)

Topics	Description
Established by	DoF, DANIDA/NARMSAP/Tree Improvement and Silviculture Component
Accessibility	Mahendra Highway Atariya to Chauraha section, Gulariya
GPS location	X-Co-ordinate: 0451561 and Y-Co-ordinate: 3189890
Total no. of plant planted	5376
Tending and Cultural Operation	Cleaning
Thinning status & requirements	Required
Status of disease and pests	Some tree are totally dead
Fruiting/seed production status	Seed not collected yet.
Seed production/Collection records	Not Recorded
Income via seed, Thinned materials	No
Protection by	Community Forest User Groups
Protection Measures	1 Forest watcher supported from FSLSC.
Recent no of trees/plants	520
Fencing condition	Barbed wire fenced in the establishment time.
Information board	Available but Immediate replacement is necessary.
Block separation pillars & Family Tags (in case of intermediate level)	Block separation pillars are available but Family tags not available.
Awareness/Involvement of Division/sub-division forest offices/ CFUGs/Local residents	Good

Boundary of BSO

Station No	Longitude (X-Coordinate)	Latitude (Y-Coordinate)	Remarks
1	451597	3189871	
2	451564	3189770	

Station No	Longitude (X-Coordinate)	Latitude (Y-Coordinate)	Remarks
3	451621	3189758	
4	451749	3189736	
5	451771	3189827	
6	451730	3189845	
7	451620	3189872	

Stem mapping details of *Dalbergia sisso* (Sisso)

S.N.	X_ordinate	Y_ordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
1	451596	3189866	92	14	medium
2	451605	3189869	85	13	medium
3	451618	3189870	87	13	medium
4	451623	3189867	79	14	medium
5	451628	3189870	83	21	high
6	451636	3189862	70	8	4d
7	451637	3189863	72	8	medium
8	451640	3189861	81	12	medium
9	451646	3189856	70	10	low
10	451657	3189854	96	15	high
11	451674	3189852	80	14	high
12	451669	3189843	82	14	high
13	451671	3189841	73	13	medium
14	451680	3189847	68	11	medium
15	451683	3189844	85	14	medium
16	451693	3189851	105	17	high
17	451694	3189850	73	16	high
18	451695	3189847	93	21	high
19	451702	3189842	77	14	medium
20	451706	3189842	83	9	low
21	451709	3189842	106	16	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
22	451714	3189842	77	15	high
23	451718	3189845	100	19	high
24	451717	3189837	87	17	high
25	451722	3189839	73	11	low
26	451723	3189838	75	11	low
27	451720	3189835	72	12	medium
28	451719	3189831	95	18	high
29	451720	3189826	84	17	high
30	451716	3189825	77	18	high
31	451713	3189827	88	15	high
32	451714	3189828	62	14	high
33	451706	3189820	95	21	high
34	451710	3189819	90	18	high
35	451709	3189813	83	19	high
36	451700	3189820	90	17	high
37	451718	3189822	103	21	high
38	451724	3189815	90	20	high
39	451722	3189811	87	18	high
40	451714	3189806	100	22	high
41	451711	3189798	100	21	high
42	451709	3189794	76	18	medium
43	451707	3189790	62	7	4d
44	451698	3189786	93	18	high
45	451696	3189784	69	15	medium
46	451697	3189782	70	14	low
47	451699	3189782	88	15	medium
48	451701	3189782	102	18	high
49	451707	3189776	102	22	high
50	451707	3189773	90	17	high
51	451708	3189782	82	17	medium

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
52	451711	3189787	70	16	medium
53	451711	3189787	100	21	high
54	451717	3189783	95	20	high
55	451709	3189758	70	17	low
56	451698	3189759	93	19	medium
57	451695	3189760	72	15	medium
58	451698	3189756	73	11	4d
59	451698	3189757	72	11	low
60	451700	3189753	64	10	low
61	451700	3189749	75	16	medium
62	451709	3189750	88	17	medium
63	451716	3189744	109	22	high
64	451717	3189743	120	28	high
65	451725	3189747	80	17	medium
66	451735	3189740	96	20	high
67	451734	3189750	88	17	medium
68	451732	3189749	98	23	high
69	451729	3189752	66	17	low
70	451721	3189757	77	18	medium
71	451723	3189757	87	17	low
72	451721	3189760	68	15	low
73	451733	3189757	85	20	high
74	451732	3189758	96	22	high
75	451733	3189764	76	18	low
76	451742	3189758	86	19	medium
77	451747	3189758	100	22	high
78	451749	3189754	100	23	high
79	451762	3189808	103	24	high
80	451766	3189811	78	17	high
81	451763	3189815	98	20	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
82	451767	3189817	106	24	high
83	451753	3189827	74	16	medium
84	451748	3189822	94	21	high
85	451743	3189831	108	24	high
86	451739	3189835	86	21	high
87	451736	3189832	93	22	high
88	451726	3189834	90	21	high
89	451726	3189837	98	18	medium
90	451731	3189842	93	19	high
91	451684	3189807	90	18	high
92	451684	3189802	107	20	high
93	451684	3189806	80	18	medium
94	451685	3189807	78	17	medium
95	451686	3189800	90	19	high
96	451672	3189822	90	17	medium
97	451673	3189816	85	17	high
98	451677	3189816	76	18	high
99	451674	3189804	103	20	high
100	451668	3189806	93	18	high
101	451676	3189801	80	17	high
102	451673	3189795	84	20	high
103	451680	3189784	100	22	high
104	451682	3189778	88	19	high
105	451685	3189776	87	20	high
106	451665	3189753	119	24	high
107	451666	3189753	130	21	high
108	451666	3189754	80	17	medium
109	451661	3189753	110	19	medium
110	451659	3189755	90	18	medium
111	451648	3189756	115	23	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
112	451649	3189761	90	14	4d
113	451642	3189757	120	20	high
114	451625	3189767	114	23	medium
115	451619	3189771	92	18	high
116	451612	3189764	105	19	high
117	451607	3189776	109	22	high
118	451605	3189778	82	20	high
119	451604	3189782	105	21	high
120	451591	3189791	95	15	4d
121	451575	3189791	83	18	low
122	451604	3189862	42	11	low
123	451608	3189858	72	17	high
124	451605	3189860	37	6	low
125	451601	3189858	69	15	high
126	451593	3189855	56	13	high
127	451595	3189852	65	15	high
128	451601	3189853	48	11	medium
129	451603	3189850	59	11	medium
130	451606	3189851	60	13	high
131	451607	3189852	50	12	high
132	451605	3189848	73	18	high
133	451608	3189849	51	15	high
134	451608	3189853	40	11	medium
135	451613	3189852	67	12	high
136	451618	3189849	71	18	high
137	451618	3189844	72	17	high
138	451617	3189841	38	5	low
139	451611	3189837	64	15	high
140	451609	3189837	60	13	high
141	451605	3189844	69	15	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
142	451604	3189841	53	14	high
143	451596	3189839	61	15	high
144	451594	3189840	46	8	high
145	451590	3189840	76	16	low
146	451588	3189836	61	13	high
147	451588	3189834	50	10	medium
148	451592	3189835	55	11	medium
149	451591	3189838	65	12	high
150	451597	3189834	77	15	high
151	451602	3189831	61	14	high
152	451601	3189834	68	15	high
153	451605	3189829	34	5	low
154	451609	3189834	48	11	medium
155	451610	3189830	58	13	high
156	451609	3189829	63	14	high
157	451607	3189821	72	16	high
158	451609	3189818	51	7	medium
159	451602	3189821	42	6	medium
160	451601	3189821	54	11	high
161	451592	3189829	41	5	low
162	451594	3189821	62	11	medium
163	451582	3189818	76	10	low
164	451583	3189812	105	18	high
165	451594	31899814	28	4	low
166	451596	3189812	69	12	medium
167	451596	3189813	48	8	low
168	451600	3189818	34	5	low
169	451602	3189813	30	3	low
170	451604	3189812	44	10	medium
171	451605	3189811	29	5	low

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
172	451603	3189816	63	8	medium
173	451612	3189817	40	5	low
174	451616	3189817	43	6	medium
175	451606	3189807	55	10	high
176	451604	3189805	68	12	high
177	451601	3189802	70	16	high
178	451600	3189801	60	13	high
179	451593	3189802	45	10	medium
180	451588	3189802	55	8	low
181	451585	3189801	50	11	high
182	451588	3189800	68	12	medium
183	451579	3189801	53	13	high
184	451578	3189800	75	16	high
185	451574	3189780	67	10	high
186	451572	3189779	70	15	high
187	451570	3189772	85	13	medium
188	451568	3189770	115	25	high
189	451578	3189772	89	18	high
190	451590	3189766	53	10	medium
191	451592	3189770	50	7	low
192	451591	3189774	43	8	low
193	451583	3189782	53	9	medium
194	451580	3189784	45	7	medium
195	451593	3189794	60	8	medium
196	451595	3189792	50	9	high
197	451599	3189800	52	10	high
198	451601	3189793	42	8	medium
199	451604	3189794	70	15	high
200	451605	3189798	80	16	high
201	451608	3189796	40	7	low

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
202	451607	3189792	38	6	medium
203	451612	3189797	48	10	medium
204	451616	3189801	50	8	high
205	451617	3189798	42	7	low
206	451602	3189781	55	11	high
207	451601	3189777	60	12	medium
208	451598	3189775	40	8	low
209	451599	3189772	90	14	high
210	451602	3189774	65	12	medium
211	451607	3189771	54	7	medium
212	451610	3189780	65	10	high
213	451611	3189781	52	8	medium
214	451612	3189777	68	15	high
215	451613	3189774	60	9	medium
216	451617	3189774	72	13	high
217	451620	3189776	56	8	medium
218	451623	3189772	65	12	high
219	451624	3189773	70	13	high
220	451625	3189759	50	8	low
221	451617	3189763	80	15	high
222	451618	3189760	55	8	m
223	451626	3189758	60	10	medium
224	451628	3189774	45	7	low
225	451625	3189777	50	8	low
226	451629	3189776	55	10	medium
227	451631	3189782	52	12	medium
228	451641	3189785	40	5	low
229	451644	3189783	53	10	medium
230	451646	3189778	59	11	medium
231	451647	3189782	44	9	medium

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
232	451648	3189777	82	15	high
233	451646	3189775	77	14	high
234	451637	3189779	53	12	medium
235	451639	3189772	55	8	low
236	451638	3189771	81	13	high
237	451631	3189763	56	12	high
238	451642	3189757	69	10	medium
239	451654	3189760	53	8	medium
240	451652	3189770	59	10	medium
241	451654	3189774	78	16	high
242	451654	3189776	68	15	high
243	451654	3189771	45	6	low
244	451662	3189775	53	9	medium
245	451663	3189771	79	15	high
246	451664	3189770	90	15	high
247	451667	3189779	38	7	low
248	451671	3189773	74	14	high
249	451673	3189775	35	6	low
250	451674	3189773	56	11	medium
251	451670	3189768	82	16	high
252	451663	3189760	80	15	high
253	451670	3189757	61	10	medium
254	451669	3189754	57	8	medium
255	451668	3189751	53	7	medium
256	451675	3189750	58	7	low
257	451672	3189754	61	8	medium
258	451676	3189753	67	9	medium
259	451680	3189756	63	12	high
260	451678	3189763	53	8	medium
261	451680	3189769	74	16	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
262	451681	3189764	40	6	low
263	451686	3189756	61	11	medium
264	451698	3189757	53	8	medium
265	451693	3189750	63	10	medium
266	451701	3189745	90	9	medium
267	451716	3189748	64	12	high
268	451717	3189749	53	8	medium
269	451724	3189742	102	18	g
270	451729	3189741	142	20	g
271	451740	3189739	102	12	4D
272	451741	3189753	60	7	low
273	451729	3189758	50	10	medium
274	451726	3189761	44	8	4D
275	451742	3189760	63	10	medium
276	451744	3189767	65	10	low
277	451740	3189770	79	11	low
278	451738	3189769	84	12	medium
279	451747	3189773	73	14	high
280	451751	3189775	47	8	low
281	451749	3189778	77	14	high
282	451744	3189776	74	14	high
283	451748	3189785	61	6	4D
284	451745	3189788	67	11	low
285	451740	3189785	46	7	4D
286	451752	3189788	47	9	4D
287	451756	3189785	64	12	medium
288	451757	3189791	63	11	4D
289	451767	3189820	58	10	medium
290	451762	3189830	79	14	g
291	451760	3189826	57	10	medium

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
292	451752	3189815	52	7	4D
293	451746	3189809	73	13	medium
294	451746	3189807	71	11	medium
295	451738	3189815	60	10	4D
296	451737	3189817	86	18	high
297	451738	3189821	79	15	high
298	451743	3189826	44	9	4D
299	451740	3189830	55	8	4D
300	451742	3189831	45	7	low
301	451742	3189834	44	7	low
302	451739	3189836	47	5	low
303	451735	3189830	53	10	medium
304	451731	3189834	54	10	medium
305	451727	3189831	51	9	medium
306	451730	3189828	49	9	low
307	451732	3189823	50	12	medium
308	451726	3189820	72	14	high
309	451721	3189822	71	14	high
310	451723	3189833	46	8	low
311	451717	3189830	47	8	low
312	451711	3189825	51	9	low
313	451728	3189816	68	14	g
314	451731	3189810	76	15	g
315	451734	3189805	55	13	medium
316	451727	3189804	48	7	4D
317	451726	3189807	90	11	4D
318	451719	3189813	40	9	low
319	451717	3189808	40	7	low
320	451711	3189807	47	5	4D
321	451708	3189805	40	5	4D

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
322	451711	3189802	56	10	medium
323	451722	3189795	46	10	medium
324	451724	3189795	61	14	high
325	451712	3189793	63	13	medium
326	451724	3189785	60	13	medium
327	451722	3189782	62	12	4D
328	451718	3189782	45	10	low
329	451713	3189773	50	8	low
330	451714	3189774	49	7	low
331	451705	3189775	52	11	medium
332	451700	3189770	40	6	4D
333	451698	3189767	62	12	g
334	451701	3189765	60	11	g
335	451696	3189772	47	11	medium
336	451702	3189781	55	10	medium
337	451698	3189786	36	6	low
338	451692	3189785	42	9	low
339	451691	3189783	41	9	low
340	451693	3189780	50	9	low
341	451689	3189779	53	12	medium
342	451688	3189777	40	7	low
343	451684	3189778	32	5	low
344	451682	3189775	50	10	medium
345	451683	3189780	61	12	medium
346	451695	3189788	45	7	low
347	451688	3189789	50	11	low
348	451684	3189790	46	7	4D
349	451686	3189791	65	11	low
350	451691	3189792	47	9	low
351	451688	3189794	65	12	medium

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
352	451692	3189794	54	11	medium
353	451695	3189794	62	12	medium
354	451703	3189797	66	14	high
355	451704	3189798	69	15	high
356	451707	3189802	54	7	medium
357	451701	3189801	75	14	high
358	451705	3189805	67	12	high
359	451704	3189809	60	10	medium
360	451698	3189804	47	8	medium
361	451694	3189799	69	12	g
362	451697	3189798	58	11	g
363	451690	3189798	56	9	medium
364	451691	3189800	59	11	g
365	451681	3189795	40	8	medium
366	451679	3189786	59	9	medium
367	451674	3189785	44	8	low
368	451677	3189791	42	8	low
369	451681	3189810	46	8	low
370	451683	3189812	58	12	medium
371	451686	3189812	68	13	medium
372	451688	3189809	53	12	4D
373	451692	3189814	53	9	low
374	451683	3189815	65	12	medium
375	451679	3189816	63	12	g
376	451680	3189820	62	10	medium
377	451680	3189819	36	8	low
378	451687	3189823	38	7	4D
379	451697	3189830	53	9	medium
380	451700	3189836	64	10	medium
381	451714	3189837	59	13	medium

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
382	451695	3189841	54	9	4D
383	451693	3189844	58	10	low
384	451690	3189845	48	8	low
385	451686	3189843	55	8	medium
386	451682	3189835	53	8	medium
387	451675	3189849	41	5	low
388	451659	3189852	54	10	low
389	451653	3189851	47	8	low
390	451668	3189848	52	6	4D
391	451616	3189845	47	10	low
392	451661	3189842	40	8	low
393	451660	3189840	45	8	4D
394	451666	3189839	52	9	low
395	451673	3189831	71	13	high
396	451671	3189824	59	11	high
397	451659	3189827	63	11	medium
398	451658	3189828	42	11	medium
399	451657	3189833	52	12	medium
400	451653	3189838	52	11	high
401	451655	3189841	72	13	high
402	451650	3189841	69	14	high
403	451646	3189837	36	9	medium
404	451646	3189838	46	9	low
405	451644	3189844	58	12	medium
406	451643	3189847	47	9	4D
407	451641	3189849	47	10	low
408	451641	3189854	45	8	low
409	451632	3189850	61	12	medium
410	451623	3189855	51	10	low
411	451630	3189850	59	13	medium

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
412	451635	3189846	47	10	medium
413	451639	3189845	56	12	medium
414	451642	3189844	35	5	4D
415	451633	3189842	64	13	high
416	451630	3189840	62	12	high
417	451632	3189838	53	11	high
418	451628	3189841	85	18	high
419	451627	3189839	40	6	low
420	451621	3189842	31	4	low
421	451620	3189836	48	7	low
422	451616	3189834	40	8	low
423	451614	3189831	35	7	low
424	451612	3189825	45	8	low
425	451618	3189831	58	9	medium
426	451619	3189832	56	9	medium
427	451623	3189828	76	13	high
428	451629	3189830	62	11	medium
429	451618	3189823	47	10	medium
430	451615	3189820	47	9	medium
431	451618	3189817	54	11	high
432	451623	3189816	43	10	high
433	451626	3189815	71	14	high
434	451627	3189811	68	13	high
435	451625	3189807	51	8	medium
436	451625	3189804	73	12	high
437	451627	3189799	72	11	high
438	451628	3189796	71	10	medium
439	451631	3189794	46	8	low
440	451639	3189798	68	11	medium
441	451648	3189789	47	9	medium

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
442	451653	3189781	62	11	medium
443	451654	3189784	76	13	high
444	451656	3189780	51	11	medium
445	451660	3189782	53	10	medium
446	451667	3189783	46	13	medium
447	451672	3189785	67	14	high
448	451670	3189787	38	7	low
449	451674	3189788	67	13	low
450	451670	3189792	60	14	medium
451	451669	3189793	32	4	low
452	451653	3189789	43	4	4D
453	451653	3189787	57	10	medium
454	451674	3189798	55	10	medium
455	451668	3189800	51	9	medium
456	451665	3189796	63	12	high
457	451664	3189793	75	14	high
458	451661	3189795	61	10	medium
459	451660	3189795	33	4	low
460	451656	3189796	53	10	medium
461	451655	3189800	71	15	high
462	451661	3189801	51	10	medium
463	451665	3189801	55	10	medium
464	451659	3189803	48	9	4D
465	451654	3189802	80	15	high
466	451659	3189809	43	8	low
467	451664	3189807	43	7	low
468	451670	3189809	38	6	low
469	451673	3189808	45	8	low
470	451677	3189816	40	8	low
471	451669	3189818	32	6	low

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
472	451662	3189819	41	6	low
473	451661	3189816	40	7	low
474	451660	3189816	80	14	high
475	451660	3189814	66	13	high
476	451662	3189810	35	6	low
477	451654	3189815	71	14	high
478	451657	3189822	52	9	low
479	451657	3189824	40	8	low
480	451654	3189823	49	9	medium
481	451650	3189831	55	9	medium
482	451649	3189836	70	11	high
483	451645	3189837	55	13	high
484	451637	3189836	63	12	high
485	451638	3189838	57	10	medium
486	451631	3189835	39	7	medium
487	451633	3189831	47	9	medium
488	451639	3189832	90	16	high
489	451644	3189830	39	7	medium
490	451636	3189826	44	7	low
491	451633	3189827	31	5	low
492	451626	3189825	48	9	medium
493	451631	3189825	71	13	high
494	451631	3189819	69	13	high
495	451629	3189811	51	11	high
496	451632	3189809	54	10	medium
497	451631	3189807	54	12	medium
498	451632	3189804	32	4	low
499	451636	3189804	53	9	medium
500	451634	3189809	57	10	medium
501	451638	3189807	65	13	high

S.N.	X_ coordinate	Y_ coordinate	Circumference (cm) at breast height	Height (m)	Possibility of seed production
502	451639	3189804	38	6	low
503	451640	3189798	67	10	high
504	451644	3189801	67	12	high
505	451647	3189801	42	9	medium
506	451650	3189799	42	8	low
507	451650	3189801	43	8	low
508	451647	3189804	75	14	high
509	451647	3189806	61	13	high
510	451650	3189807	48	11	high
511	451643	3189813	47	8	medium
512	451641	3189815	67	13	high
513	451637	3189816	48	9	medium
514	451635	3189824	44	9	medium
515	451647	3189826	50	8	4D
516	451653	3189827	73	14	high
517	451655	3189823	70	14	high
518	451656	3189820	62	14	high
519	451650	3189816	55	9	medium
520	451654	3189815	38	6	low

Findings and observation

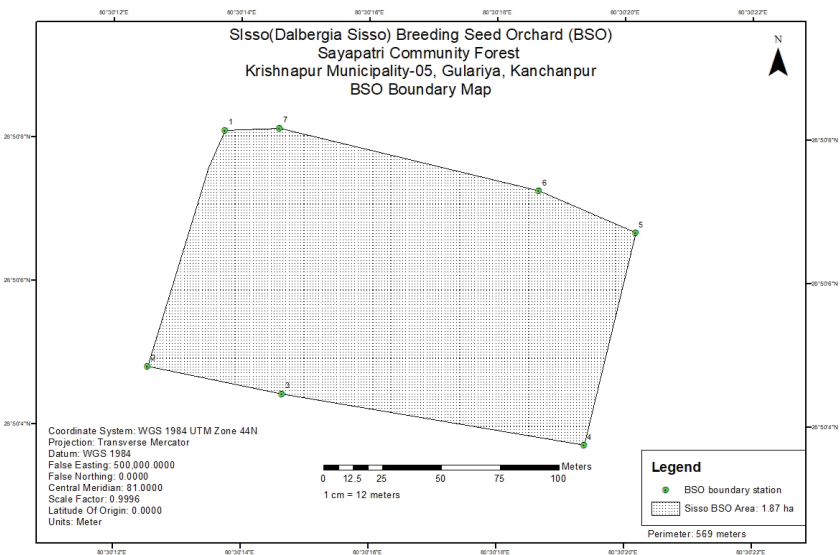
- This breeding seed orchard was established in 2061 B.S designing Randomized Complete Block design (RCBD) with 4 replications, each family is represented in each rectangular block of 84 trees plot planted in 1.5m×1.5m. (Intermediate level BSO).
- BSO had established adjoining to the Kadam BSO have a natural occurrence of other sisso rather than plantation so there is some chance of cross pollination from other source nearby BSO.
- According to the present assessment, 520 total pole and tree size of sisso are enumerated.
- 473 pole size sisso and 47 tree size sisso are numbered of which 30 pole and 2 of tree are dead, dying, decayed and diseased (4D).

- The top circumference at breast height in the BSO is 142 centimetre and top height is 20 metre and the least circumference at breast height in the BSO is 28 centimetre and height is 3 metre.
- About 38.46% (200 pole and tree) have possibility to produce good seed in future according to the phenotype observation of tree species.
- Invasive plant have covered ground surface and different rodent insects and animals has made the soil surface lose and holes.
- Uprooting and branches broken by wind and dying of tree from tip are some problems in the BSO.
- Boundary trees has a better growth in comparison to other location. Few management practices and thinning were conducted in the past and there was no clear data of the management activities.

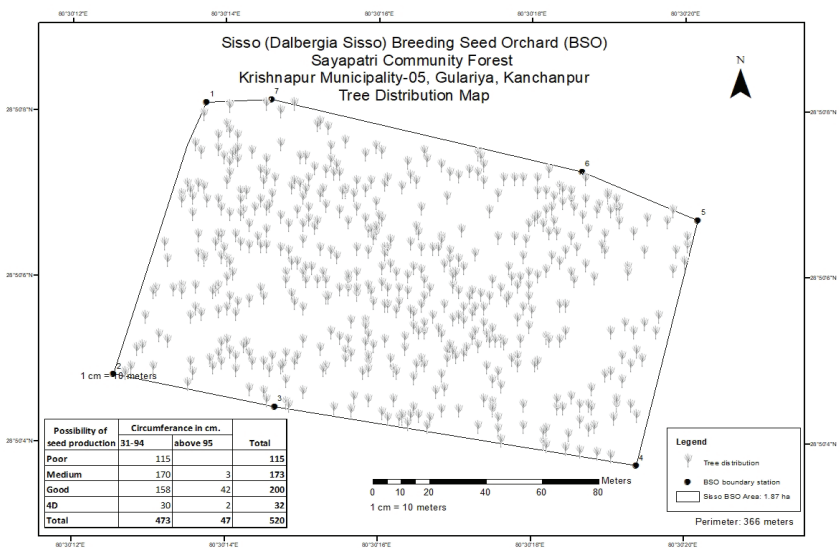
Remarks (Challenges/opportunities):

- Thinning, cleaning and climber cutting required.
- Thinning of diseased, dead, decay and dying trees is too recommended.
- Limited management activities has resulted in growth of other competitive species namely (Banmara) *Lantana camara*, (*Aula Banmara*) *Eupatorium odoratum*, other parasitic plants from orchideacea family.
- Risk of encroachment from southern boundary due to lack of proper fencing although fencing is done around the BSO.
- Holes are made by rodents due to low management activities in ground surface such as cleaning, due to dense weeds etc.
- The death of the Sisso (*Dalbergia Sisso*) has too been noticed due to fungal infection.
- Removal of fungal infected and dead tree should be done according to approved operational plan.

Map of BSO



Stem map



Google location map



3.2.5 Simal SPA, Basgadi, Bardiya

Name/Species of Plot : *Bombex ceiba* (Simal) *In-situ* conservation of rare and threatened species

Area

Total Conservation Area : 2.085 ha

Address

Districts : Bardiya

Local Level : Basgadhi Municipality

Ward No. : 09

Tole : Mohanpur tole and Hajari tole

Contact person/CFUG/Watcher

Name of CFUG : Hajari Community Forest User Group

CFUG Chairperson : Phularam Chaudhary

Contact No : 9868953099

Watcher Name : NA

Contact no : NA

Specific Information

Topics	Description
Establishment year	Fiscal year 2068/69
Origin of parent Material	Natural occurred Simal tree
No. of Family	
Establishment Report	NA
Design and BSO type	Natural occurrence
Thinning Reports	NA
Management/ other Reports	NA
Land Ownership	Government of Nepal (GoN)
Established by	DoF, Tree Improvement and Silviculture Unit, Babarmahal, Kathmandu.
Accessibility	Mahendra highway, Machagard Bardiya.
GPS location	X-Co-ordinate: 0544537 and Y-Co-ordinate: 3127539

Topics	Description
Total no. of plant planted	Naturally regenerated
Tending and Cultural Operation	Cleaning
Thinning status & requirements	Not Thinned till now. Thinning required
Status of disease and pests	NA
Fruiting/seed production status	NA
Seed production/Collection records	NA
Income via seed, Thinned materials	No
Protection by	CFUG
Protection Measures	CFUG
Recent no of trees/plants	233
Fencing condition	Not fenced
Information board	Not available. Immediate necessary.
Block separation pillars & Family Tags (in case of intermediate level)	Not applicable
Awareness/Involvement of Division/sub-division forest offices/CFUGs/Local residents	Good

Boundary of BSO

Station No.	Longitude (X-Coordinate)	Latitude (Y-Coordinate)	Remarks
1	544537	3127539	Jamun tree
2	544519	3127581	Jamun tree
3	544575	3127610	Jamun tree
4	544603	3127640	Barro tree
5	544645	3127734	Jamun tree
6	544670	3127749	Veller Tree

Station No.	Longitude (X-Coordinate)	Latitude (Y-Coordinate)	Remarks
7	544743	3127767	Veller Tree
8	544764	3127760	Khayar tree, Mohanpur tol to Patharbaba deuthan foot trail
9	544754	3127711	Barro tree east boundary
10	544625	3127572	Barro tree
11	544540	3127533	Barro tree

Stem mapping of *Bombox cieba* (Simal)

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
1	544537	3127540	126	25
2	544530	3127563	123	25
3	544527	3127568	75	20
4	544533	3127560	105	23
5	544549	3127551	123	22
6	544551	3127551	144	25
7	544545	3127552	56	15
8	544540	3127557	103	20
9	544544	3127560	128	26
10	544542	3127565	78	20
11	544546	3127568	77	15
12	544538	3127574	62	12
13	544539	3127575	108	25
14	544545	3127572	111	26
15	544549	3127572	117	22
16	544550	3127570	113	20
17	544554	3127571	56	10

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
18	544556	3127570	23	18
19	544559	3127565	124	25
20	544561	3127564	94	20
21	544563	3127564	114	24
22	544564	3127564	118	22
23	544565	3127566	74	20
24	544566	3127574	66	15
25	544574	3127572	149	25
26	544582	3127578	87	20
27	544583	3127579	113	24
28	544585	3127579	103	20
29	544588	3127579	129	25
30	544589	3127581	97	23
31	544581	3127589	92	20
32	544583	3127594	95	18
33	544578	3127595	90	15
34	544575	3127598	69	13
35	544571	3127595	74	15
36	544593	3127618	100	20
37	544601	3127611	123	25
38	544603	3127600	97	22
39	544603	3127601	71	10
40	544605	3127603	148	25
41	544607	3127604	119	25
42	544607	3127611	71	20
43	544605	3127611	125	20
44	544596	3127613	99	15
45	544604	3127619	67	15

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
46	544603	3127620	102	18
47	544598	3127623	59	15
48	544600	3127635	110	20
49	544602	3127632	90	18
50	544609	3127626	127	20
51	544614	3127624	75	15
52	544616	3127622	122	25
53	544617	3127614	132	25
54	544626	3127634	69	15
55	544623	3127631	80	20
56	544619	3127634	149	30
57	544623	3127638	68	15
58	544618	3127639	100	20
59	544616	3127640	55	15
60	544610	3127639	56	15
61	544614	3127648	61	18
62	544618	3127649	72	18
63	544622	3127648	46	10
64	544623	3127647	75	15
65	544623	3127648	90	18
66	544630	3127647	122	20
67	544643	3127648	62	15
68	544644	3127644	71	16
69	544645	3127647	83	19
70	544635	3127650	84	20
71	544633	3127650	62	15
72	544628	3127650	140	22
73	544627	3127653	104	19
74	544625	3127655	79	18

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
75	544656	3127684	64	15
76	544642	3127685	52	10
77	544658	3127686	58	15
78	544644	3127696	57	15
79	544632	3127688	55	12
80	544629	3127697	115	19
81	544630	3127697	86	12
82	544629	3127698	62	15
83	544634	3127701	80	18
84	544638	3127705	127	20
85	544639	3127720	84	18
86	544660	3127723	63	12
87	544662	3127708	54	10
88	544662	3127707	68	15
89	544663	3127698	118	20
90	544659	3127692	102	20
91	544659	3127688	122	22
92	544660	3127688	46	12
93	544661	3127679	65	15
94	544663	3127690	103	22
95	544663	3127694	66	19
96	544665	3127694	117	22
97	544667	3127696	90	20
98	544667	3127698	63	15
99	544673	3127699	77	18
100	544676	3127703	87	20
101	544675	3127706	72	18
102	544671	3127709	124	20
103	544669	3127712	129	20

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
104	544672	3127717	66	15
105	544674	3127718	93	18
106	544678	3127719	87	20
107	544681	3127717	129	20
108	544682	3127715	136	20
109	544681	3127715	45	8
110	544681	3127718	103	20
111	544682	3127719	90	19
112	544679	3127725	58	15
113	544680	3127725	82	18
114	544684	3127731	86	19
115	544684	3127732	65	14
116	544684	3127731	65	14
117	544682	3127735	133	20
118	544680	3127736	62	15
119	544676	3127748	120	22
120	544687	3127742	105	20
121	544688	3127741	97	20
122	544692	3127737	86	16
123	544696	3127735	59	15
124	544696	3127730	86	19
125	544698	3127737	110	21
126	544697	3127742	108	22
127	544755	3127758	99	20
128	544739	3127762	54	10
129	544741	3127762	104	20
130	544754	3127743	67	10
131	544749	3127735	111	20
132	544745	3127734	63	10

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
133	544745	3127735	88	20
134	544742	3127736	97	20
135	544738	3127739	107	22
136	544735	3127737	109	20
137	544733	3127738	78	18
138	544733	3127739	74	15
139	544729	3127746	96	20
140	544730	3127746	78	15
141	544733	3127753	64	15
142	544727	3127747	78	18
143	544728	3127748	63	15
144	544727	3127747	96	20
145	544724	3127745	147	22
146	544722	3127746	41	10
147	544718	3127739	53	10
148	544710	3127733	115	22
149	544709	3127732	99	20
150	544725	3127726	48	10
151	544727	3127726	57	12
152	544729	3127728	48	10
153	544739	3127727	129	22
154	544740	3127728	67	15
155	544737	3127728	95	20
156	544737	3127726	93	20
157	544745	3127723	105	20
158	544747	3127724	98	18
159	544746	3127725	54	15
160	544747	3127724	123	20
161	544743	3127723	124	22

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
162	544742	3127723	123	22
163	544741	3127717	44	10
164	544743	3127714	70	18
165	544743	3127708	114	22
166	544736	3127705	52	10
167	544736	3127704	128	22
168	544734	3127707	71	18
169	544733	3127710	104	20
170	544731	3127716	79	10
171	544733	3127714	103	18
172	544733	3127715	59	12
173	544720	3127715	66	11
174	544723	3127713	80	18
175	544722	3127714	95	20
176	544713	3127720	58	10
177	544711	3127719	92	18
178	544709	3127720	60	14
179	544710	3127718	110	20
180	544713	3127715	134	22
181	544712	3127712	86	20
182	544711	3127711	62	11
183	544711	3127710	57	12
184	544711	3127709	80	20
185	544710	3127706	95	22
186	544701	3127714	49	12
187	544699	3127713	131	25
188	544698	3127710	75	18
189	544697	3127700	73	20
190	544694	3127703	126	22

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
191	544694	3127704	46	8
192	544703	3127696	105	22
193	544705	3127697	93	20
194	544706	3127696	104	20
195	544707	3127696	83	20
196	544713	3127695	78	20
197	544717	3127699	96	20
198	544723	3127698	91	18
199	544723	3127700	113	20
200	544722	3127699	69	20
201	544723	3127698	79	20
202	544723	3127699	90	18
203	544724	3127688	112	22
204	544732	3127689	106	20
205	544730	3127688	70	18
206	544723	3127693	63	15
207	544709	3127693	69	15
208	544702	3127696	100	20
209	544701	3127697	96	20
210	544697	3127696	81	20
211	544697	3127695	60	18
212	544698	3127691	122	22
213	544702	3127684	69	15
214	544704	3127680	60	15
215	544705	3127678	130	20
216	544669	3127663	417	30
217	544651	3127631	555	35
218	544618	3127579	164	22
219	544616	3127572	107	22

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
220	544618	3127572	138	23
221	544617	3127569	125	20
222	544617	3127594	124	22
223	544618	3127591	126	22
224	544617	3127589	69	15
225	544599	3127580	125	22
226	544589	3127569	71	12
227	544583	3127553	175	22
228	544571	3127555	96	18
229	544567	3127556	78	18
230	544562	3127554	106	18
231	544559	3127557	144	20
232	544557	3127557	123	20
233	544559	3127550	100	18

Findings and observation

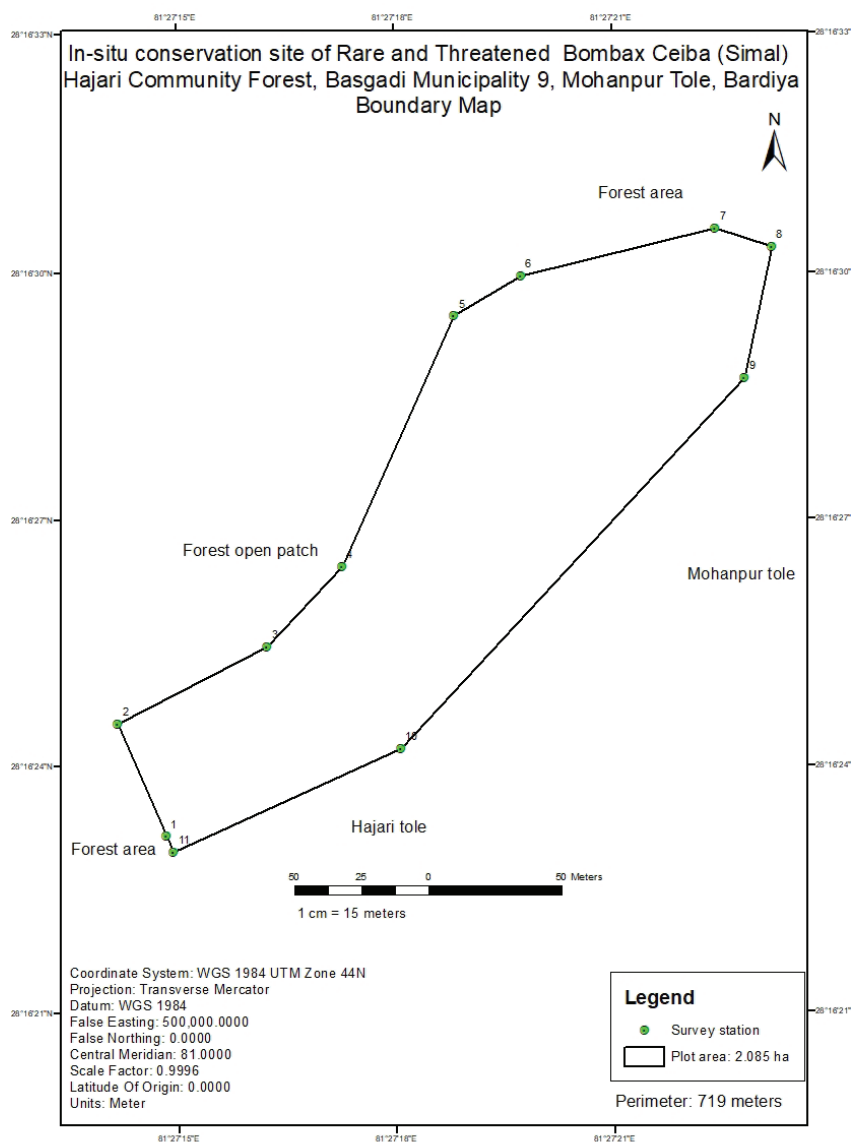
- This Simal (*Bombox ceiba*) species conservation plot (In-situ conservation of rare and threatened species) was established in 2068/69 B.S. with prime objectives of conserving naturally available rare and threatened Simal tree species and its natural habitat.
- SCP has established in a Hajari community forest area near hajari tole. There is a abundant natural occurrence of Simal associate with other species such khair, sisso, barro, harro, jamun etc.
- According to the present assessment, 233 total pole and tree size of simal are enumerated inside the SCP.
- 1 sapling, 124 pole and 108 tree size simal are numbered. The top circumference at breast height in the SCP is 555 centimetre and top height is 35 metre and the least circumference at breast height in the SCP is 23 centimetre and height is 8 metre.
- About 64.80% (151 tree and pole) have possibility to produce good seed according to the phenotype observation of tree species.

- Invasive plant have covered ground surface and difficult to seed production as well. In the other hands there is few number of simal regeneration and gradually encroached by other species.
- Dense forest cover hindrance the proper growth of simal so management activities is essence measure to be taken as per approved forest operation plan.

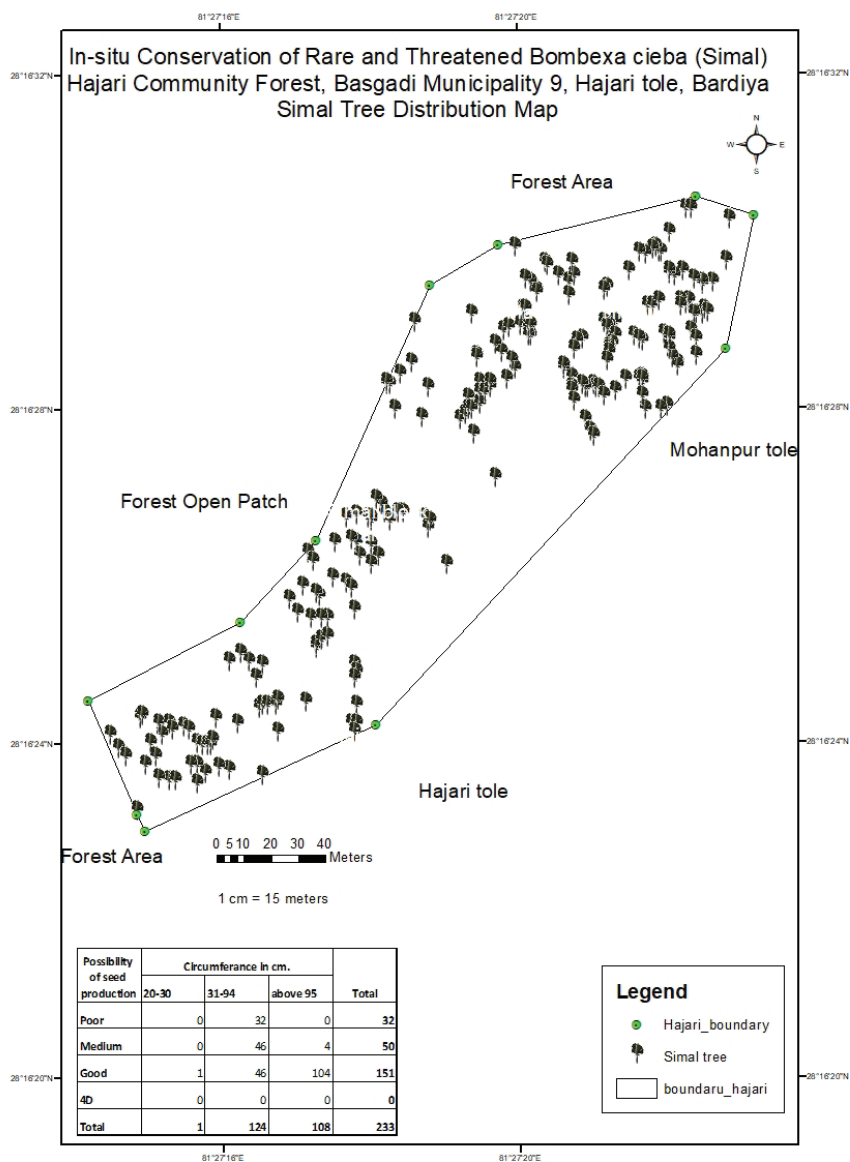
Remarks (Challenges/opportunities):

- Unnecessary growth of invasive species (Banmara and thorny weeds).
- Immediate thinning, cleaning and climber cutting required.
- Low growth in diameter in comparison to height due to dense. Lack of proper sunlight.
- Thinning of diseased, dead and dying trees is too recommended.
- Limited management activities has resulted in slow growth rate of Simal tree.
- As the SCA is inside the Community Forest, the management intervention need to be done as per the operational plan of CFUG. So detail action plan with management activities in plot is recommended to include in the operational plan of CF.
- Plantation of simal is recommended in barren and open area which is attached to the south west of the plot.

Map of BSO



Stem map



Google location map



3.2.6 Chatiwan SCP, Madhuban, Bardiya

Name/Species of Plot : *Alstonia scholaris* (Chatiwan) *In-situ* conservation of rare and threatened species

Area

Total conservation Area : 1.46 ha

Address

Districts : Bardiya

Local Level : Madhuban Municipality

Ward No. : 08

Tole : Ayodhiya phanta

Contact person/CFUG/Watcher

Name of CFUG Group : Shree Ganesh Shiva Durga Community Forest User Group

CFUG Chairperson : Lal Bahadur Khatri

Contact No : 9848267474

Office Secretary : Putali kumari Oli

Contact No : 9848145406

Watcher Name : Bhumi lal Acharya

Contact no : 9818364668

Specific Information

Topics	Description
Establishment year	Fiscal year 2067/68
Origin of parent Material	Natural
No. of Family	Not applicable
Establishment Report	NA
Management/ other Reports	NA
Land Ownership	Government of Nepal (GoN)
Established by	DoF, Tree Improvement and Silviculture Unit, Babarmahal, Kathmandu.
Accessibility	Hulaki Highway, Kusmaghat bridge, Madhuban, Bardiya.

Topics	Description
GPS location	X-Co-ordinate: 0529134 and Y-Co-ordinate: 3128548
Total no. of plant planted	Naturally regenerated
Tending and Cultural Operation	Cleaning
Thinning status & requirements	Not Thinned till now. Thinning required
Status of disease and pests	NA
Fruiting/seed production status	NA
Seed production/Collection records	NA
Income via seed, Thinned materials	No
Protection by	CFUG
Protection Measures	1 Forest watcher supported from FSLSC.
Recent no of trees/plants	126
Fencing condition	Not fenced
Information board	Available but Immediate necessary to replace.
Block separation pillars & Family Tags (in case of intermediate level)	Not applicable
Awareness/Involvement of Division/sub-division forest offices/ CFUGs/Local residents	Good

Boundary of BSO

Station No.	Longitude (X-Coordinate)	Latitude (Y-Coordinate)	Remarks
1	529147	3128456	Jamun Tree
2	529187	3128455	Asna Tree
3	529236	3128483	Kusum Tree
4	529292	3128559	Rohini Tree
5	529169	3128591	Sal Tree
6	529142	3128588	Kadam Tree
7	529134	3128548	Asna Tree
8	529134	3128502	Jamun Tree

Stem mapping of *Alstonia scholaris* (Chatiwan)

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
1	529157	3128459	39	5
2	529163	3128457	41	5
3	529165	3128466	57	6
4	529169	3128471	52	4
5	529180	3128473	68	5
6	529183	3128478	52	4
7	529185	3128480	55	5
8	529189	3128488	55	4
9	529194	3128488	32	4
10	529195	3128487	56	5
11	529199	3128494	30	3
12	529201	3128491	36	5
13	529205	3128490	28	3
14	529208	3128491	65	10
15	529209	3128493	60	11
16	529216	3128475	51	10
17	529228	3128494	51	10
18	529222	3128496	40	3
19	529208	3128493	53	10
20	529207	3128498	78	10
21	529202	3128502	48	5
22	529232	3128510	26	3
23	529243	3128514	70	12
24	529243	3128515	48	4
25	529249	3128520	25	3
26	529257	3128530	33	3
27	529258	3128532	31	3
28	529274	3128539	35	4
29	529268	3128538	108	12

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
30	529260	3128535	46	4
31	529277	3128552	30	3
32	529274	3128551	28	3
33	529258	3128556	38	5
34	529255	3128556	87	10
35	529245	3128559	74	15
36	529242	3128561	78	10
37	529240	3128553	73	8
38	529237	3128560	58	8
39	529235	3128570	65	10
40	529225	3128558	128	15
41	529235	3128543	107	15
42	529238	3128544	49	8
43	529254	3128537	58	3
44	529244	3128541	122	11
45	529235	3128534	130	15
46	529221	3128536	48	8
47	529229	3128544	70	8
48	529223	3128548	65	10
49	529219	3128540	28	3
50	529215	3128541	65	10
51	529211	3128540	54	5
52	529206	3128546	53	5
53	529205	3128551	46	5
54	529213	3128555	110	15
55	529213	3128558	78	10
56	529210	3128558	84	12
57	529203	3128566	113	12
58	529205	3128572	100	10
59	529203	3128575	40	3

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
60	529195	3128580	47	5
61	529193	3128577	124	11
62	529188	3128575	32	3
63	529184	3128573	64	4
64	529182	3128572	77	8
65	529168	3128581	80	10
66	529152	3128586	70	10
67	529150	3128573	49	10
68	529152	3128570	45	8
69	529150	3128564	74	12
70	529147	3128564	53	8
71	529147	3128562	40	4
72	529150	3128560	74	15
73	529138	3128530	80	8
74	529137	3128527	44	3
75	529152	3128535	46	7
76	529158	3128549	314	22
77	529166	3128530	30	4
78	529172	3128534	40	5
79	529185	3128533	70	10
80	529187	3128536	40	5
81	529190	3128548	30	4
82	529188	3128547	82	10
83	529197	3128535	30	3
84	529195	3128535	34	4
85	529195	3128528	60	6
86	529197	3128524	80	6
87	529199	3128520	40	4
88	529207	3128501	40	3
89	529206	3128502	54	5

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
90	529203	3128504	24	2
91	529203	3128505	56	5
92	529201	3128506	44	4
93	529197	3128513	100	10
94	529195	3128519	26	3
95	529196	3128522	37	4
96	529193	3128527	36	3
97	529195	3128525	60	5
98	529191	3128517	70	5
99	529188	3128519	60	5
100	529187	3128520	57	4
101	529188	3128523	38	5
102	529183	3128503	56	5
103	529181	3128507	45	4
104	529179	3128507	35	3
105	529172	3128509	57	5
106	529172	3128506	30	3
107	529162	3128510	38	3
108	529165	3128501	68	5
109	529165	3128506	28	3
110	529173	3128498	27	3
111	529179	3128489	28	3
112	529161	3128493	70	5
113	529151	3128491	60	5
114	529153	3128480	64	3
115	529147	3128489	70	6
116	529144	3128500	60	4
117	529147	3128502	42	3
118	529134	3128510	48	4
119	529140	3128515	60	5

S.N.	X	Y	Circumference (cm) at breast height	Height (m)
120	529142	3128517	69	8
121	529154	3128522	45	4
122	529159	3128519	40	3
123	529162	3128518	33	3
124	529163	3128518	36	3
125	529162	3128519	58	4
126	529161	3128520	84	6

Findings and observation

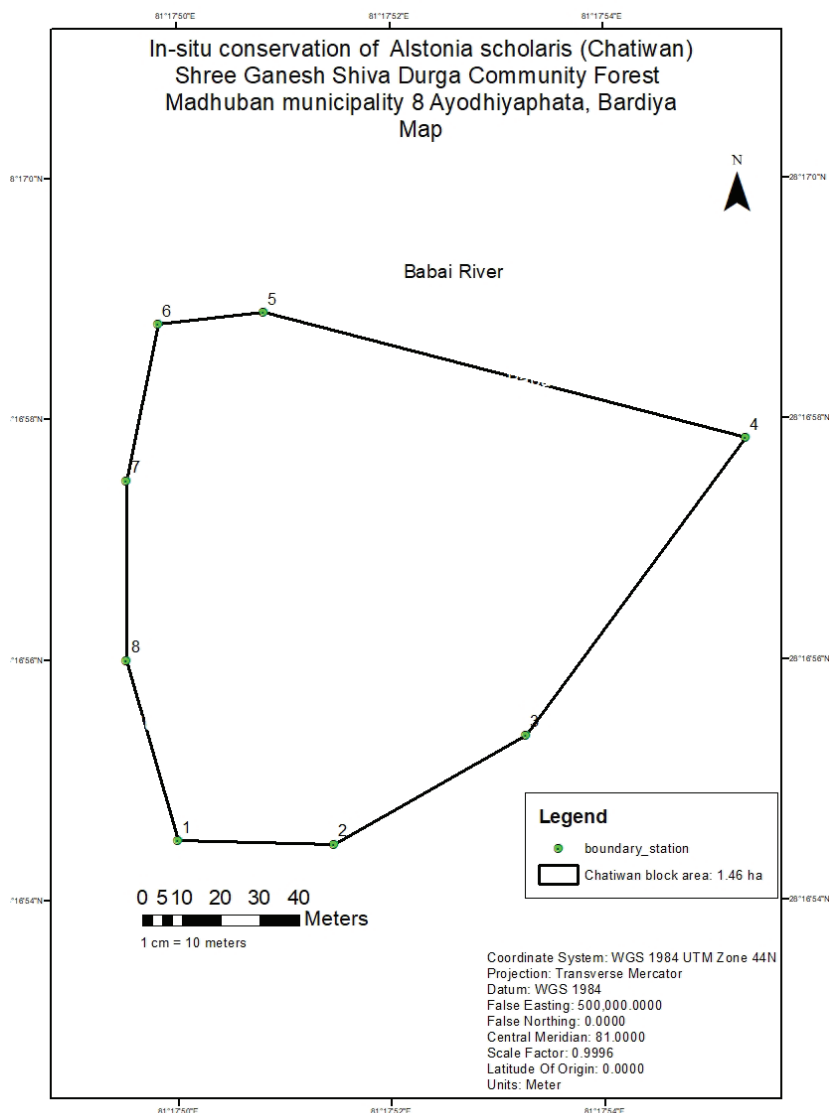
- This Chatiwan (*Alstonia scholaris*) species conservation plot (In-situ conservation of rare and threatened species) was established in 2067/68 B.S. with prime objectives of conserving naturally available rare and threatened Chatiwan tree species and its natural habitat.
- SCP has established in a Shree Ganesh Shiva Durga community forest area near Kusmaghat suspension bridge, Madhuban 8, ayodhiyaphata, Bardiya. There is a abundant natural occurrence of Chatiwan associate with other species such saj, rajbrikshiya, bel, amala, sal etc.
- According to the present assessment, 126 total sapling, pole and tree size of chitwan are enumerated inside the SCP.
- 16 sapling, 99 pole and 11 tree size chatiwan are numbered. The top circumference at breast height in the SCP is 314 centimetre and top height is 22 metre and the least circumference at breast height in the SCP is 24 centimetre and height is 2 metre.
- Few tree have possibility to produce seed according to the phenotype observation of tree species.
- Invasive plant have covered ground surface and difficult to seed production as well.
- Plantation of chatiwan is necessary in open area of the SCP.

Remarks (Challenges/opportunities):

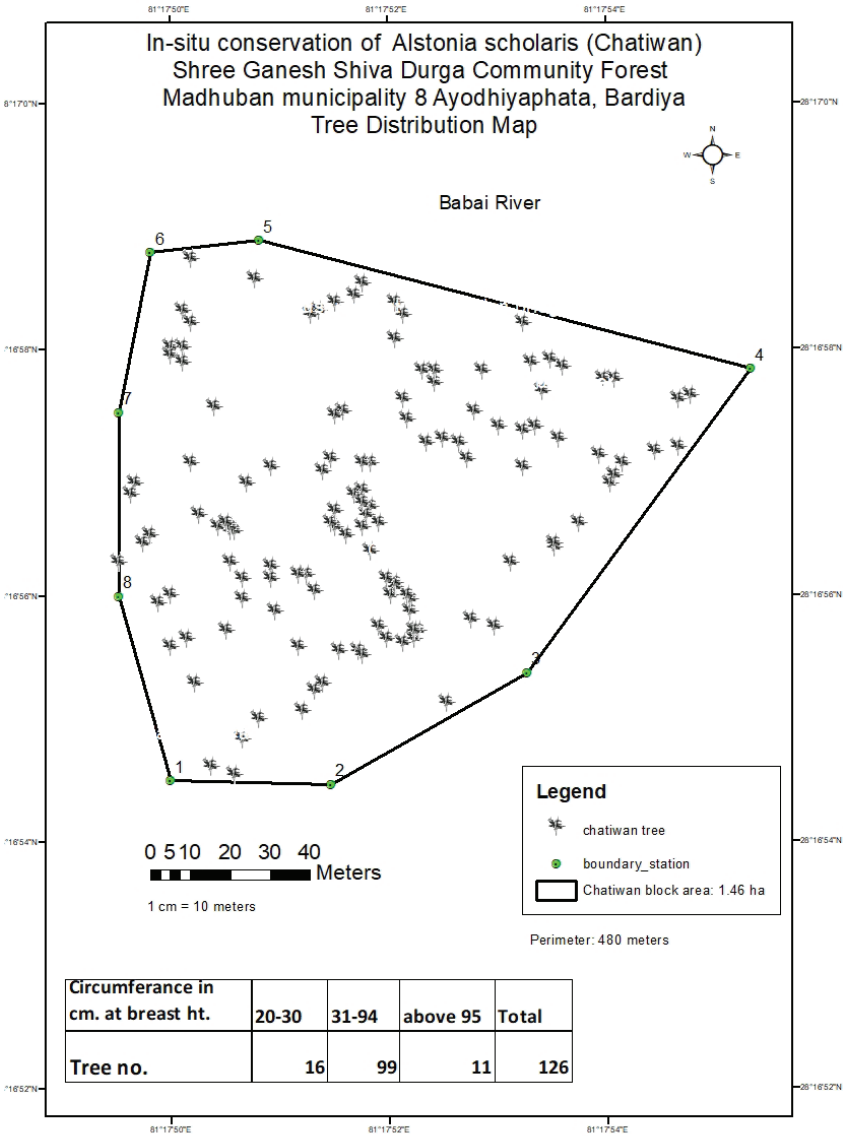
- Thinning, cleaning and climber cutting required.
- Plantation in open area is recommended.
- Fencing is necessary as Chatiwan is only available in this site only which is rare in wild.

- As the BSO is inside the Community Forest, the management intervention need to be done as per the operational plan of CFUG. So detail action plan with management activities in plot is recommended to include in the operational plan of CF.

Map of BSO



Stem map



Google Map



Conclusion and Recommendations

4.1 Conclusion

Assessment of current status of breeding seed orchard (BSO), seed production area (SPA) and Species conservation plot (SCP) in regular interval is an essential part of its management. It not only assess the condition of areas but also helps decision makers for need base planning and management activities. Four different level breeding seed orchards (BSOs) and two Species conservation plot (SCPs) are assess in this fiscal year. Although there are lack of proper details data about these area, boundary survey, stem mapping of the species with in the area (GPS location, tree circumference at breast height, height and possibility of seed production capacity) and present status with challenges and recommendation for individuals areas are identified and assess.

Assessed BSOs and SCPs have a significant improvement and some of them are producing good seeds. Some selective tree are capable to produce the genetically pure seeds that can be used for seed collection and distribution purposes. *Dalbergia sissoo* BSO kohalpur-12, Banke have some mature trees that can produce adequate genetically pure seed as the BSO is isolated. *Pterocarpus marsupium* (Bijayasal) BSO, Krishnapur-6, Kanchanpur can produce genetically pure seeds from the area. *Dalbergia sissoo* BSO, Krishnapur- 6 kanchanpur can also produce seeds although it have few desirable seed production trees. Beside this, thinning seems as a compulsory management activities on those BSOs.

In conclusion, Tree growth in the BSOs are satisfactory in spite of some disease and pest seems in the *dalbergia sissoo*. 15.51% (45 tree out of 290) *sissoo* in Kohalpur -12, Banke BSO are infected by disease, pest resulted dead, dying, decay, disease which need a quick management as per the Dalitheet buffer zone community forestry operational plan. Beside this other BSOs, and SCPs assess have some silvicultural management concern such as thinning and control of Invasive plants. A detail data base and information system for those BSOs and SCPs will be key guiding tools for future assessment and planning and conducting management activities.

4.2 Recommendation

Based on the overall assessment of BSO and SCPs following activities are recommended for the improvement of these areas in future,

- Regularly management enforcement is recommended.

- For Genetic diversity maintenance regular assessment should be conducted so details data of the BSO should be obtained from concern authorities.
- Assess soil quality in regular interval for proper management of BSO species and controlling invasive species.
- Monitor environmental conditions and manage pest and diseases effectively to optimize tree growth.
- Sharing information regularly between other Forest Seed Laboratory and Storage Centre about the breeding programs of the same species.
- Minimize probability of cross pollination with undesired genotypes and maintain genetic purity.
- Restore the fencing in BSOs where fencing is witnessed as defunct.
- Manage appropriate irrigation facilities after planting new seedling in open areas.
- Monitor flowering and seed production cycles for optimal timing of seed collection and start seed collection from BSOs selecting mother tree within BSOs.
- Maintain detailed records of orchard performance, including flowering patterns and seed yields, management activities and disease and pest management.
- Continuously evaluate and refine management practices based on feedback and research findings.
- Orient CFUGs and forest watcher about BSOs, SPAs, SCPs and its operation.
- As the BSOs are inside buffer zone community forest, the management intervention need to be done as per the operation plan of the forest. So amendment of the operation plan of the forest is recommended to include the management activities of the SPAs, BSOs and SCPs.

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Annex I:

Data collection Format

Description of Sites

Name/Species of BSO:

Area:

Gross area (fenced) :

Net area (planted) :

Address

Districts :

Local Level :

Ward No. :

Tole :

Name of CFUG :

Contact person/CFUG/Watcher

CFUG Chairperson :

Contact No :

Watcher No :

Contact no :

Specific Information

Topics	Description
Establishment year	
Origin of parent Material	
No. of Family	
Establishment Report	
Design and BSO type	
Thinning Reports	
Management/ other Reports	
Land Ownership	
Established by	

Topics	Description
Accessibility	
GPS location	
Total no. of plant planted	
Tending and Cultural Operation	
Thinning status & requirements	
Status of disease and pests	
Fruiting/seed production status	
Seed production/Collection records	
Income via seed, Thinned materials	
Protection by	
Protection Measures	
Recent no of trees/plants	
Fencing condition	
Information board	
Block separation pillars & Family Tags (in case of intermediate level)	
Awareness/Involvement of Division/ sub-division forest offices/CFUGs/ Local residents	

Findings and Observations:

Remarks (Challenges/opportunities):

Boundary survey details

station	X_coordinate	Y_coordinate	Altitude (m)	Remarks

