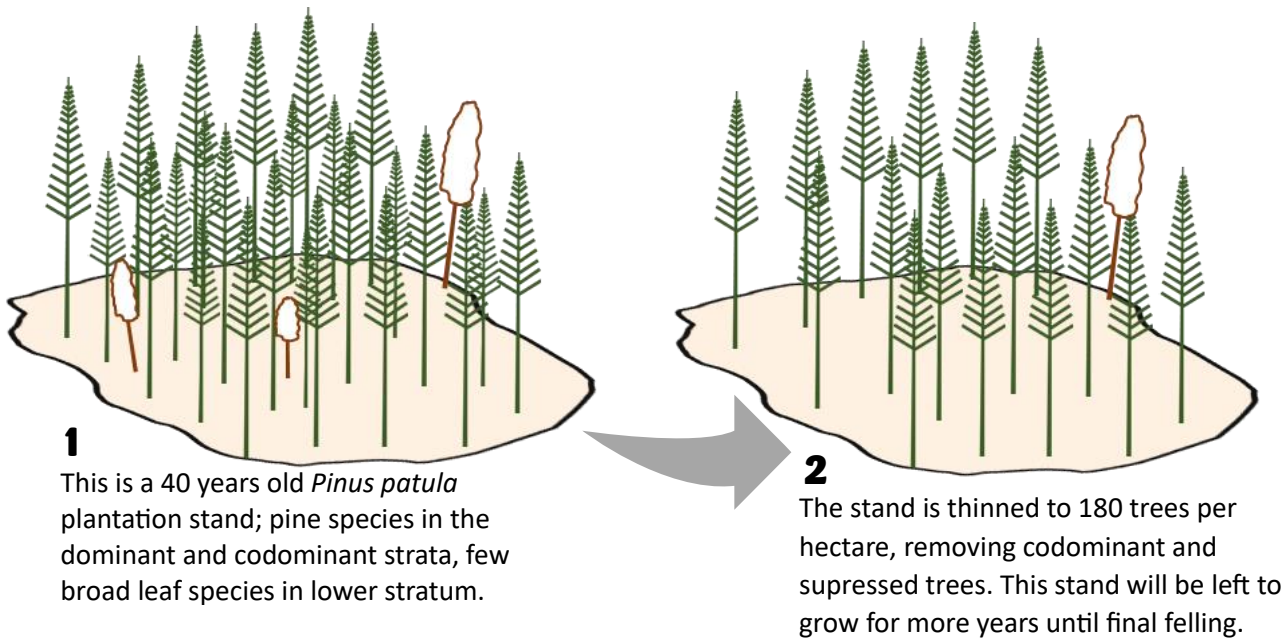


# THINNING

### SYSTEM OVERVIEW

Thinning is one of the silviculture regimes recommended for pine plantations in the midhills of Nepal. The Government of Nepal through the Department of Forest Research now Forest Research and Training Center issued in 2007 the Thinning Guideline for *Pinus patula* and *Pinus roxburghii* plantations in Nepal. There are different thinning schedules for young and established stand for each of the pine species to improve stand yield and health of residual trees. Thinning is also expected to generate revenue for the forest user groups and to promote natural regeneration of pine.

### Schematic Stand Diagram



### Best Practice Guide

#### MEASURE AND MARK TREES.

Measure all the trees in the coupe and prepare harvesting plan. Trees to be retained were selected based on vigour and form. Residual trees are spaced at least 7.5m by 7.5m. Trees to be removed are marked by hammer punch by DFO staff and then obtain harvesting permit from DFO.

#### TREES HARVESTING

Trees marked by hammer punch are harvested using power chainsaw. Tree felling is carefully undertaken to avoid damage to residual trees. Logging, log marking and log measurements are done in the felling site. After marking the logs, they are hauled manually to and piled at road head.

#### REGENERATION MANAGEMENT

After felling, residues from logging are collected and made into charcoal. Weeds are also slashed to ground to prepare the ground for natural regeneration.

# THINNING

### EXAMPLES OF PRACTICE

In 2022, EnLiFT2 Project assisted the Lakuri Bulbhule CF in Ward 4 (Chaubas), Bhumlu Rural Municipality to undertake silviculture operations in their forest in response to the CFUG request for assistance. EnLiFT helped in conducting the processes required for revising the operational plan, stem mapping and preparation of harvesting plan. The general assembly of the CFUG agreed to implement thinning as silviculture regime for their harvestable coupes mainly to generate revenue.

The silviculture regime in Lakuri Bhulbule employed thinning from below as per the Thinning Guidelines 2007 where suppressed and codominant trees were removed. The expectation from this regime is that in addition to revenue generation; growth, health and quality of residual trees will be improved. The number of residual trees is 180 trees per hectare (tph); harvesting 142 tph (Table 1). The thinning operation of 3.02 hectares generated 293 cubic meters of sawlogs and a revenue of about NRs 2.4million.

The regeneration in the harvested coupe was surveyed in Feb 2023 and was found that it has a mainly pine regeneration at approximately 13, 759 seedlings per hectare (sph) (Table 1). In comparison, the unthinned plot has a regeneration rate of 2,251 seedlings per hectare. The proportion of *P. patula* seedlings is 92% while broadleaf is 8%. The seedlings of broadleaf species include Chilaune, Kafal, Lakuri, Lampate, Utis, Mauwa, Angeri. Chilaune and Kafal are likely to thrive under shade but others, which are shade intolerant are unlikely to survive.

It is also notable that the rate of regeneration in the thinned plot is generally low compared to selection harvesting and shelterwood system tried in the nearby Chapani CF which has more than 100,000 sph after two years from harvesting.

Table 1. Stand profile of CF's thinning demonstration plot

CFUG Name	Lakuri Bhulbule
Plot size (ha)	3.02
Thinning Year	2022
Main species	<i>P. patula</i>
Stand strata	Dominant (Pine)
Tree density before thinning (tph)	322
Tree density after thinning (tph)	180
Basal area (m <sup>2</sup> /ha)	29.13
Stumpage volume (m <sup>3</sup> /ha)	291.61
Volume harvested (m <sup>3</sup> /ha)	97.75
Seedling density 2 years after 1 <sup>st</sup> cutting (sph)	13,759
Tree seedling species (%)	
	Pine 91.8
	Broadleaf 8.2

**Citation:** Bashyal M, Cedamon E, Karki P, Paudel NS, Karki R, Nuberg I, 2024, Thinning, SILVICULTURE PRACTICE GUIDE: Synthesis of ACIAR-funded EnLiFT Project Silviculture Demonstrations.

**Acknowledgement:** The EnLiFT Project is thankful to the Australian Centre for International Research (ACIAR) for funding the Silviculture Trials presented in this practice guide. The author is thankful for the support of University of Adelaide, University of New South Wales, ForestAction Nepal, Nepal's Department of Forest, RECOFTC and the various Division Forest Officers in Kavrepalanchowk and Sindhupalchowk Districts.

### KEY LESSONS

- Thinning did not create large canopy opening resulting to low and less vigorous regeneration.
- Forest users are concerned that the resulting mix of regeneration which is dominated by pine seedlings will be damaged in the next major harvest which they plan in within the next 5-10 years.
- Thinning, as practiced in Lakuri Bhulbule CF, is a preparatory felling, requiring operational plan revision and harvesting permits. Therefore, if a major harvest is planned within 5 years after thinning, the transaction cost incurred for operational plan revisions and obtaining harvesting permits is doubled for potentially the same timber resource.
- Based on the resulting regeneration, thinning as a tending operation is therefore not an appropriate regime for mature pine stand if the aim is to generate higher revenue and promote healthy regeneration.



**EnLiFT Project Contact Details**  
 ForestAction Nepal  
 Dr. Naya Sharma Paudel  
 Phone: +9779851015388  
 Email: [naya@forestaction.org](mailto:naya@forestaction.org)