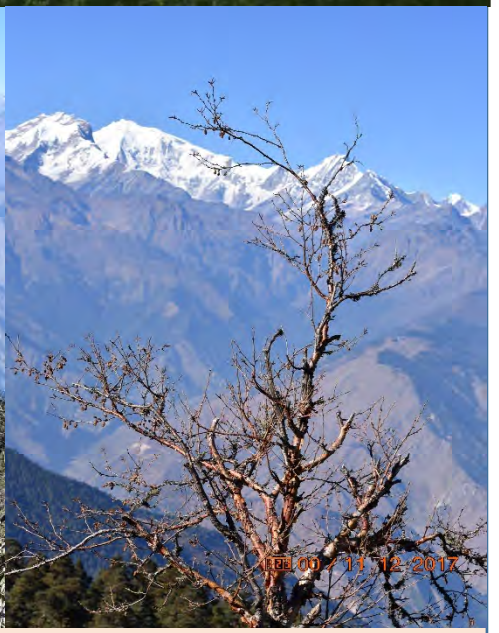
Mainstreaming Landscape Thinking for Restoration NRM Education in South East Asia

October, 2022,



ir. Dhakal BP

A. Research Officer, FRTC

dhakalbp.shorea@gmail.com

9849266431

Presentation Outlines

- **Brief about the FRTC**
- **Research conducted by FRTC related to ecological restoration**
- **Future plan for ecological restoration**

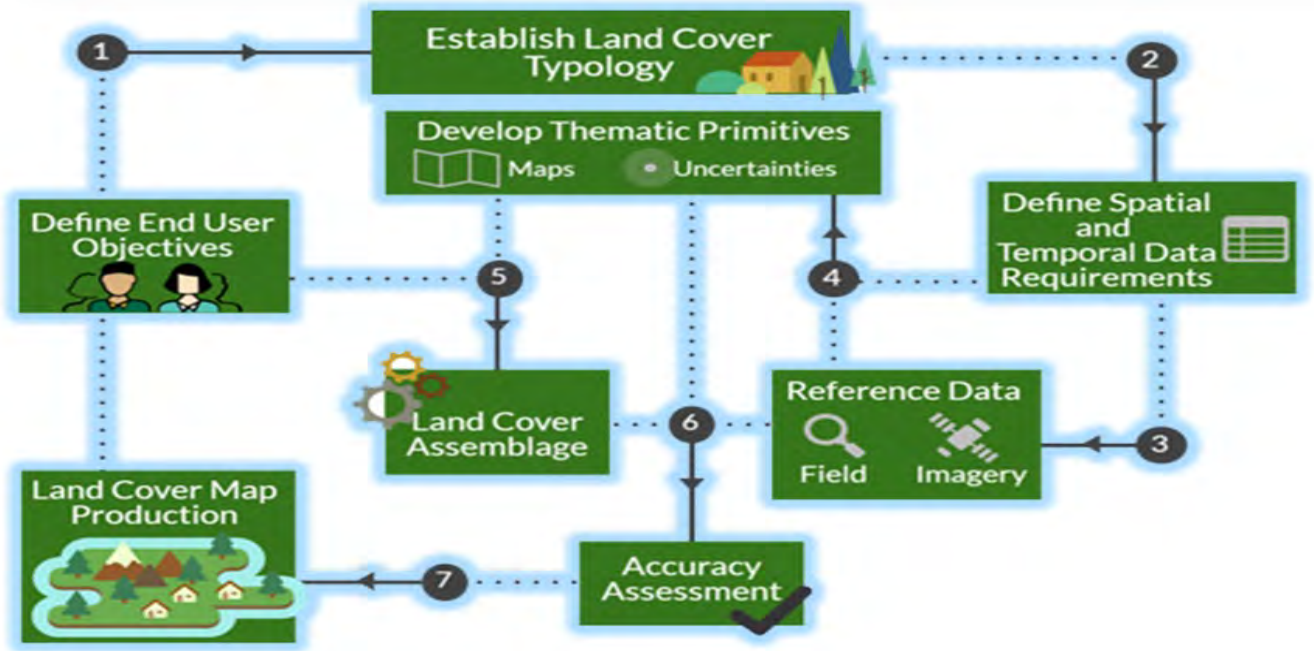
Forest Research and Training Center

❖ An Organization under Ministry of Forest and Environment (MoFE)

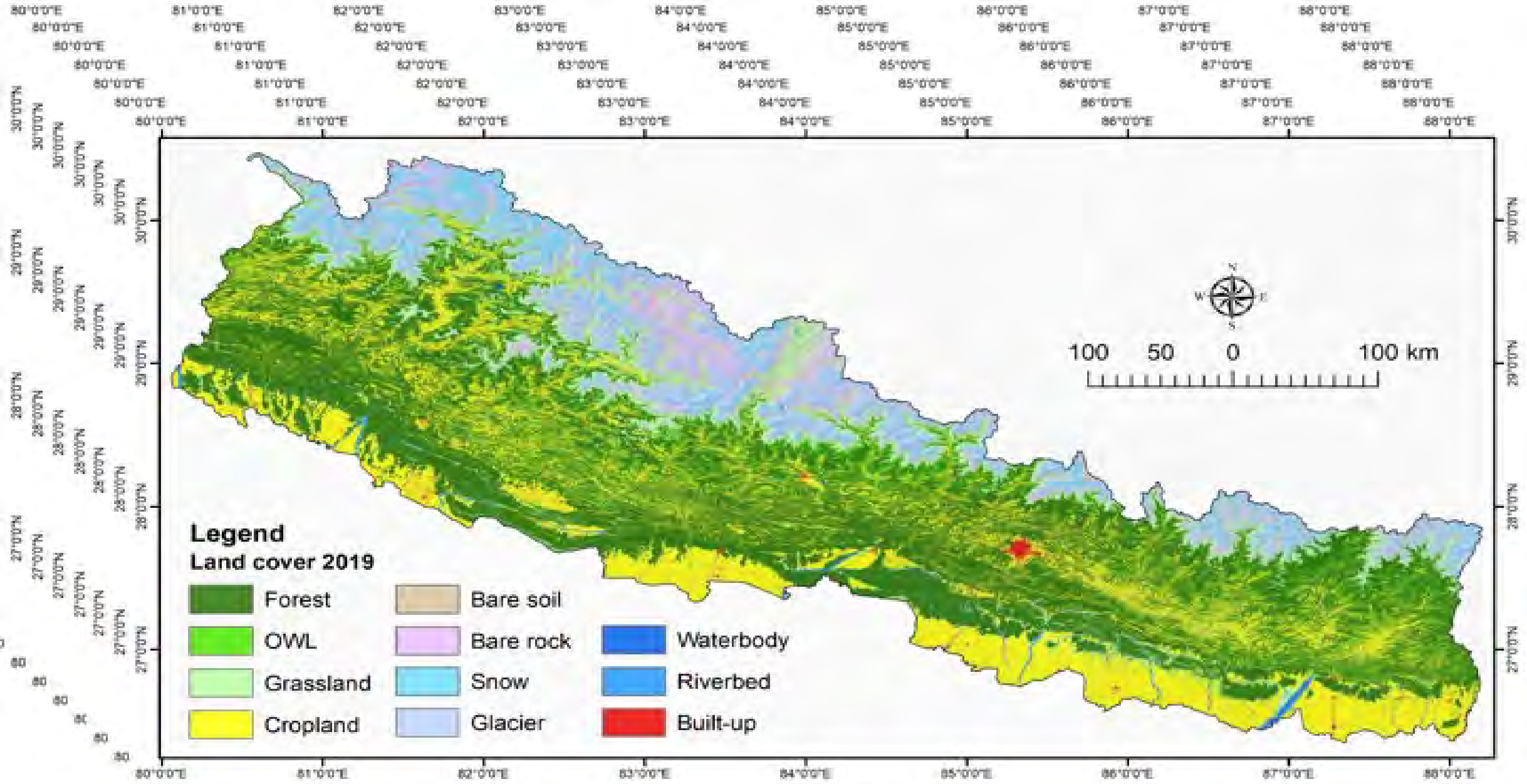
TRAINING

National Land Cover Monitoring System Methodology

- Machine learning technique for land cover mapping;
- Powerful web-platform for cloud-based processing free historical archive data;
- No high configure computer infrastructure needed;
- Developed data consistency across the country
- Co-development and sustainably



Land Cover Nepal (2000-2019)



Scopus Preview

Author Search Sources Create account Sign in

Source details

Feedback > Compare sources >

Banko Janakari

Scopus coverage years: 2021

Publisher: Forest Research and Training Centre (FRTC)

ISSN: 1016-0582 E-ISSN: 2631-2301

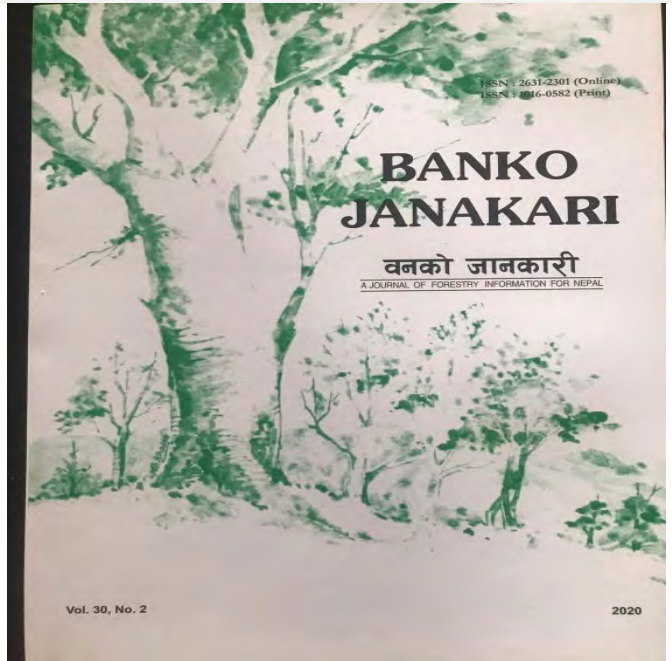
Subject area: Agricultural and Biological Sciences: Forestry | Environmental Science: Nature and Landscape Conservation | Environmental Science: Ecology | Environmental Science: Ecological Modeling

Source type: Journal

View all documents > Set document alert Save to source list Source Homepage

CiteScore 2021
0.1

SNIP



https://doi.org/10.3126/banko.v31i1.37338 Banko Janakari, Vol 31 No. 1, 2021 Pp 12–22

Impact of training on different observers in forest inventory

P. Paudel[1]*, P. Beckschäfer[1] and C. Kleinn[1]

Received : 24, March, 2021 Revised : 25 April, 2021 Accepted : 26, May, 2021 Published : 30, May, 2021

Observers with different experience levels are involved in the measurement of large number of sample plots during forest inventories, particularly in national forest inventories. However, limited information exist on the quality of data produced by different observers in forest inventory after certain levels of training. This study tries to evaluate the measurement error in forest inventory associated with observers' experience after initial and field-based training for measuring the most fundamental variables- DBH (cm), total tree height (m), and horizontal distance (m) together with bearing (azimuth) to tree from the plot-centre. On completing the second level of training, the mean of the differences in DBH measurement decreased for both the 'experienced' and 'inexperienced' groups. The mean of the differences in height measurement in the case of the experienced observers was very low as compared to the inexperienced ones. However, the mean of the differences in azimuth measurement showed that the experienced groups were overestimating by at least 1 degree. There was no trend in deviation of measurement for all four variables regardless of tree size. The decrease in the mean and error of differences in measurements after second training showed that field-based training with supervision and training on the use of instruments at laboratories were required for inexperienced surveyors whereas update in working and measurement procedure would be sufficient for the experienced ones.

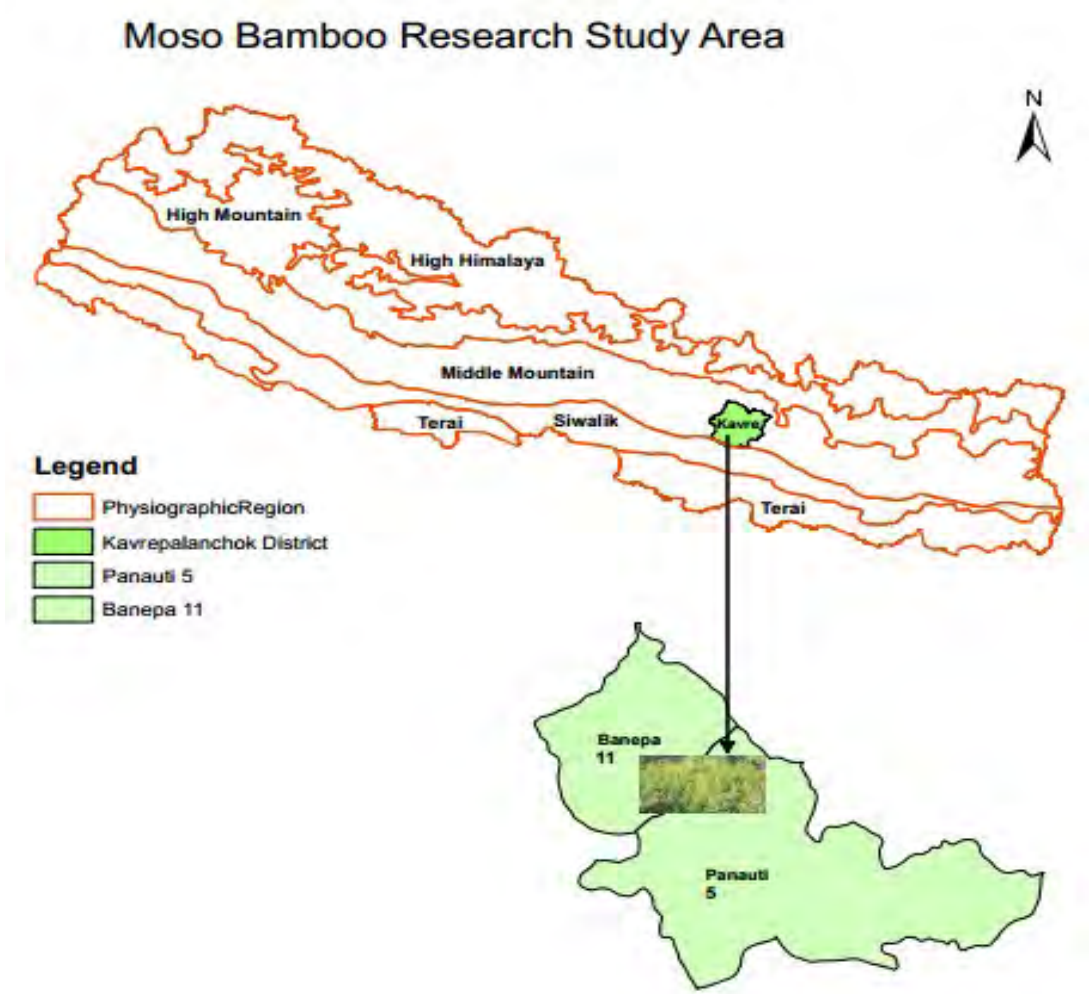
Ecological Restoration of degraded land through the plantation of *Phyllostachys pubescens* in Nepal

Restoration through plantation of Moso Bamboo (*Phyllostachys pubescens*)

- Fast growing
- Light demander
- Able to grow on harsh climate
- Able to rapidly clonize in degraded land (Fu et al. 2000)
- Silviculture characteristics are suitable for mid-hill regions of Nepal.

Study Area

- Dahaneshwor Baikiwa Community Forest User Group, Dhaneshwor, Kavreplanchowk
- About 25 km east from Kathmandu



Source: Gautam et al 2018

Result

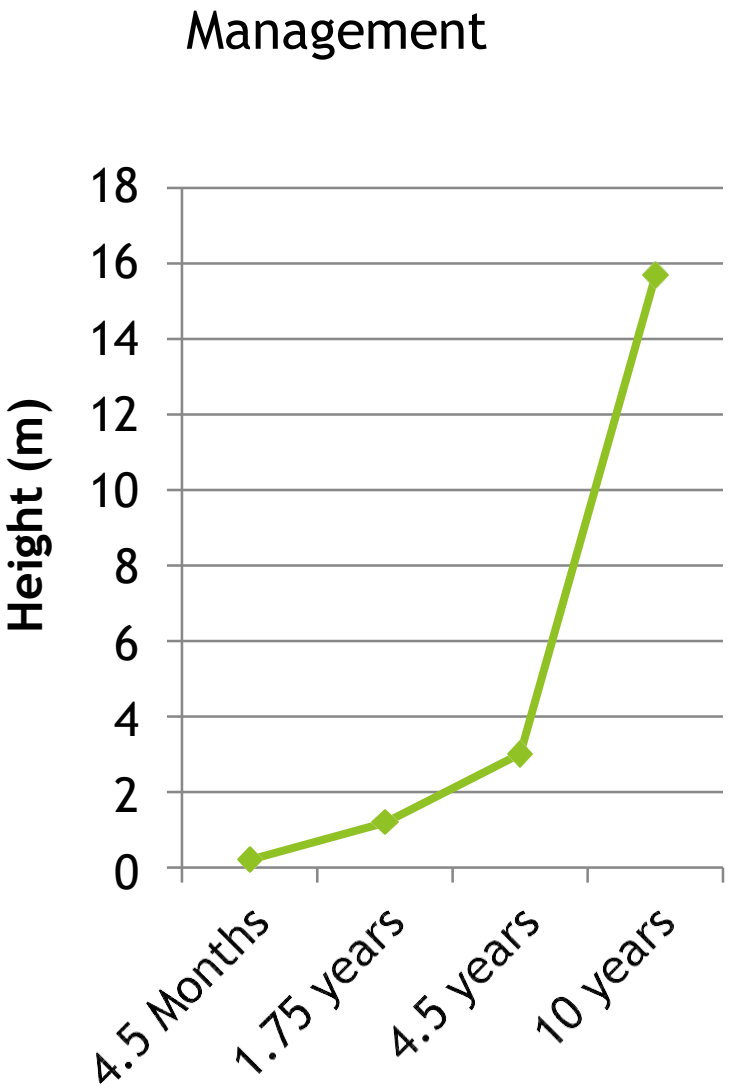
Nursery research from Seed

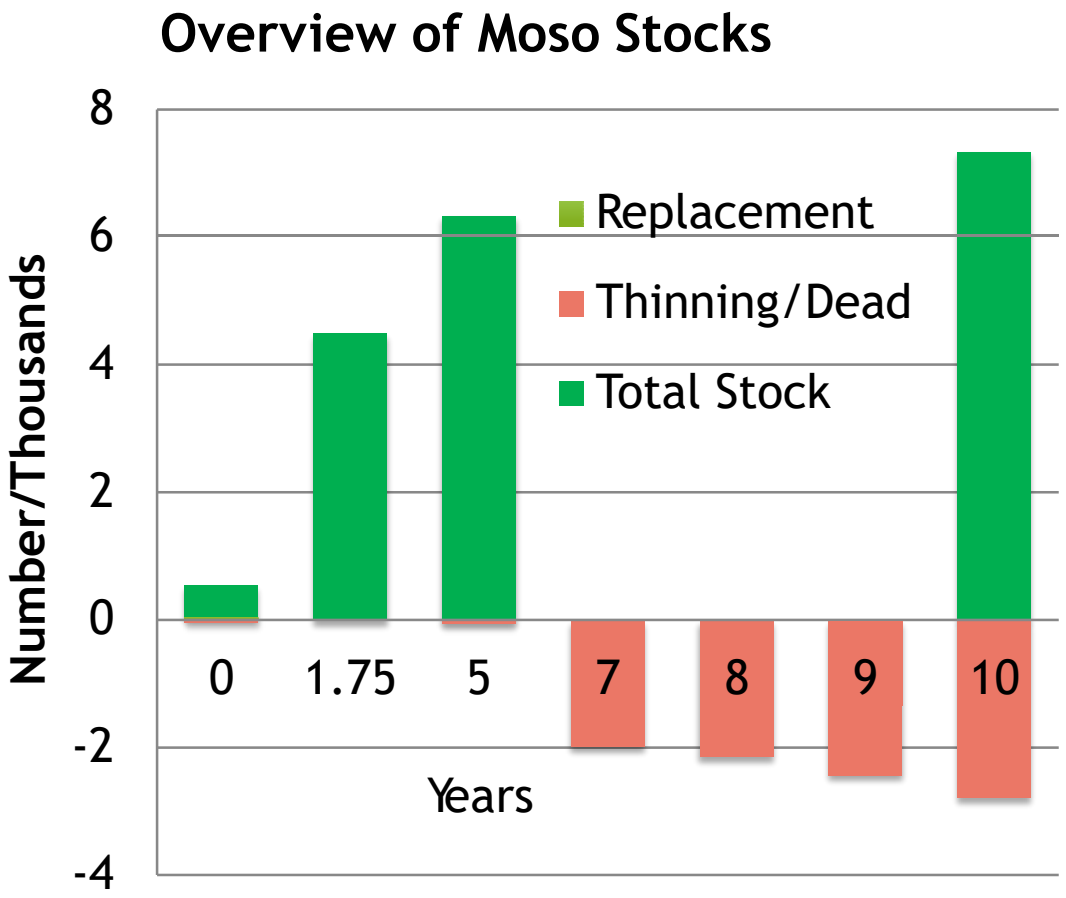
- Best propagation result obtained from seed
- 62% seed germinated within a 20 to 50 days
- Seedlings gained 15-20 cm height in 80 days

Plantation research

- Survival was 96% and 92% after 4.5 months and 1.75 years respectively
- Mean height was 21 cm and 1.2 m after 4.5 months and 1.75 years, respectively

Results


Management
Height (m)
18
16
14
12
10
8
6
4
2
0
4.5 Months
1.75 years
4.5 years
10 years


Overview of Moso Stocks
Number/Thousands
8
6
4
2
0
-2
-4
Replacement
Thinning/Dead
Total Stock
0
1.75
5
7
8
9
10
Years

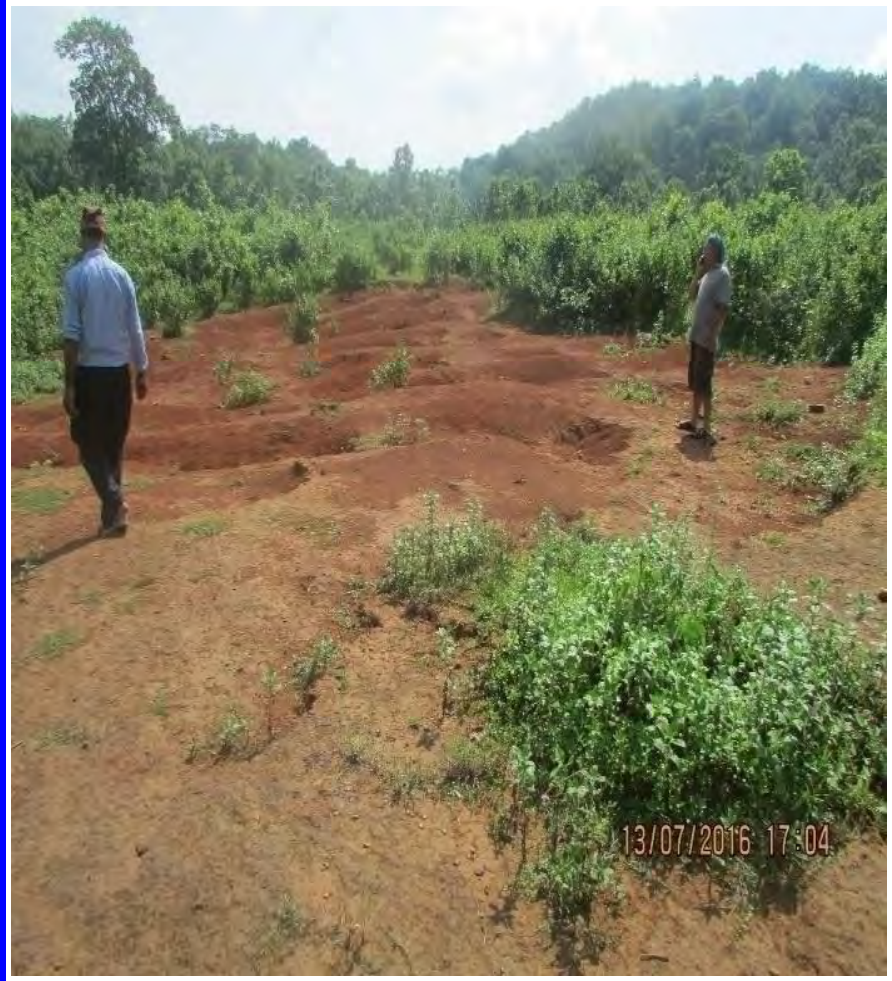
Conclusion Implication of the results

- Vigorous growth in terms of stand density.
- Thick layer of litter maintains a microclimate in the understory for soil moisture retention.
- Dense rhizome network ----- High soil binding possibility
- It also restore the water sources near the study area
- No problem in management observed except poor germination from rhizome cutting
- Detailed study regarding the side effect of exotic species is needed
- High possibility for degraded land rehabilitation in mid-hills of Nepal
- More intensive research, investment and up scaling is recommended in other parts of Nepal

This site is one of the successful ecological restoration demonstration site for academic students and other visitors and every year students and international delegates visit such forest

Rehabilitation of degraded Sites in the Siwalik/Churia and Mid-hills region of Nepal

Siwalik/Churia region



Nawalparasi

Mid hill region

Palpa

Objectives

- To identify the suitable tree species for the rehabilitation of degraded site in curia and mid-hills region of Nepal
- To ameliorate the condition of studied sites
- To recommend the rehabilitation techniques for similar areas

Methodology

- Plot established date : 2015
- Area of block : 1 hectare at each site
- Number of Block : 8/8 in each block
- Plot design : RCBD
- 10 species were planted

Major Field Activities

Nursery

Plantation

Management

Monitoring

Data collection

Composting

Results

2015 (Nawalparasi Plot)

2018 (Nawalparasi Plot)

2019 (Nawalparasi Plot)

Results

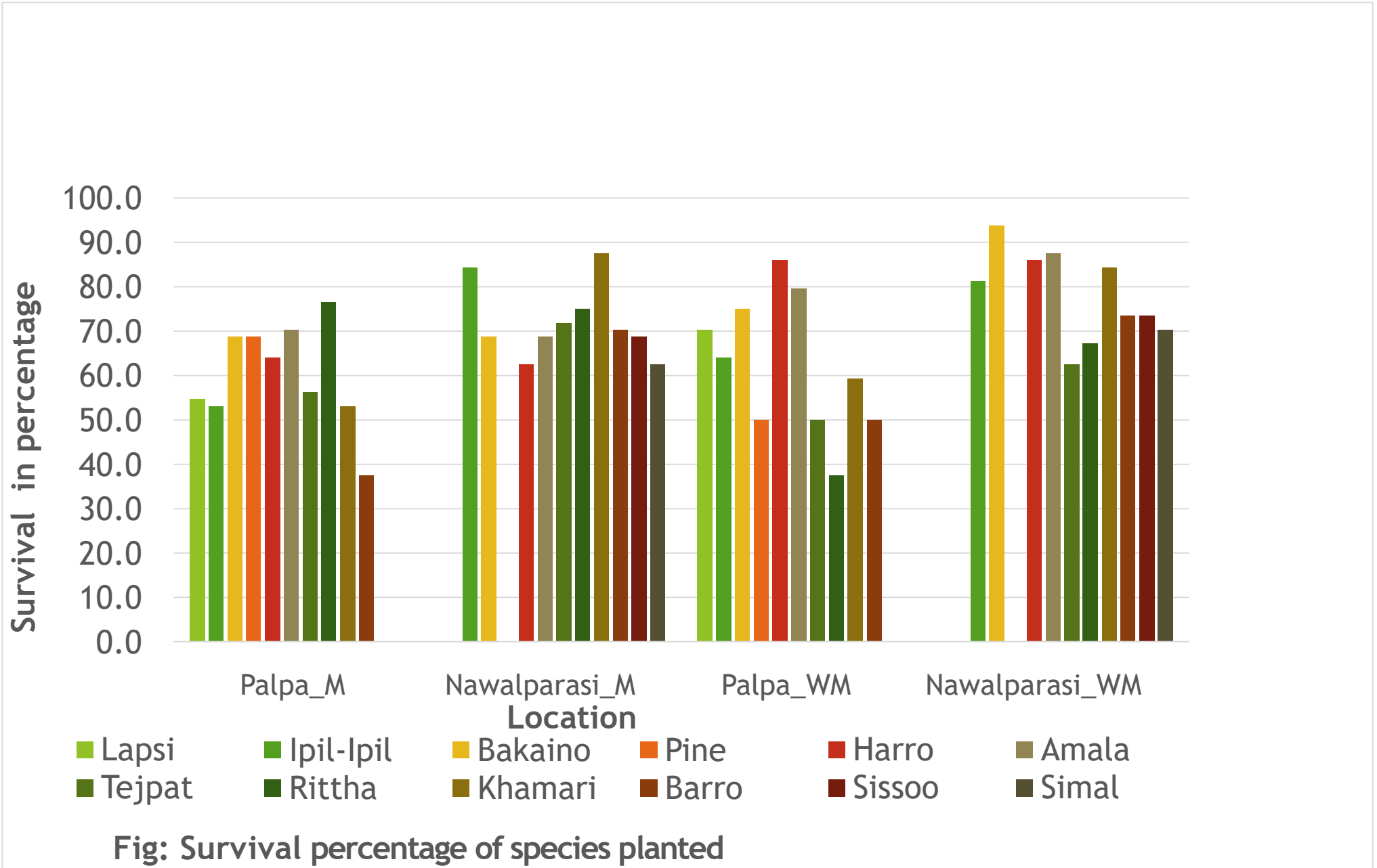


Fig: Survival percentage of species planted

Conclusion

- Growth and survival of planted species show better results in Nawalparasi (Siwalik region) than other sites
- Manure application showed the positive impact on the growth and survival of tree species in degraded sites
- High natural regeneration of *Shorea robusta* followed by other species in Nawalparasi (based on field observation) after the plantation due to the protection of forest fire, grazing and retention of moisture.

Future plan and collaboration for ecological restoration research in Nepal

Future plan for restoration research

- *Shorea robusta* is on of the major commercial timber species and it covers southern parts (Tarai region) of Nepal.
- It constitutes about 19% (highest) stem volume.
- Due to climate change, anthropogenic activities and passive forest management favor to invade by Liana and consequently, vegetation structure of such forest might be changed in future.

Future plan for restoration research

- Research on cause and consequence of Liana invasion
- Restoration of *Shorea robusta* forest.
- Collaboration with Educational institutes (National and international) and other agencies.


UNITED NATIONS DECADE ON
ECOSYSTEM
RESTORATION
2021-2030
Thank you !!!