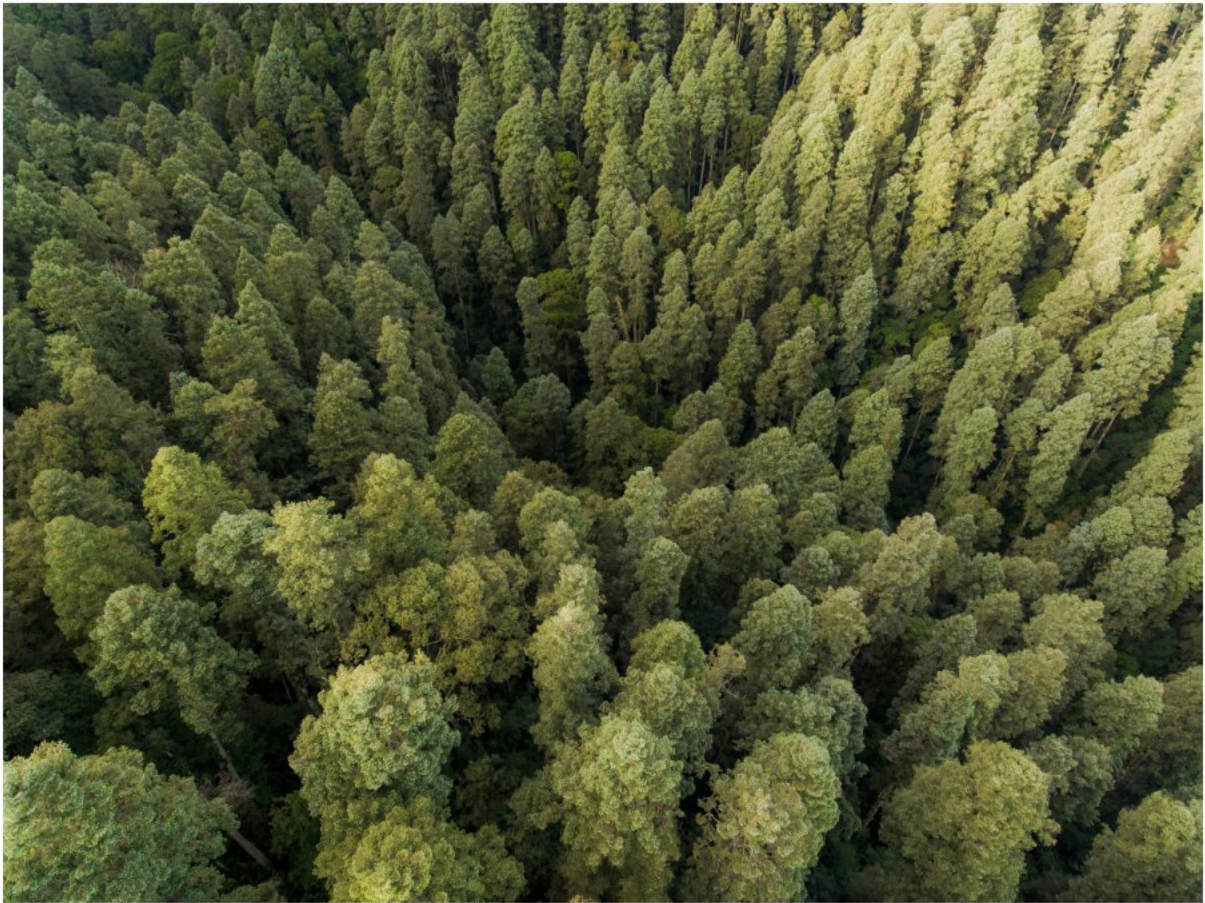


Project Profile

A1



Project Overview

Partnered with a Northern Alberta forest products partner. The area is mostly flat with smaller areas of slight south exposure. The site consisted of burned, white spruce-dominant upland forest with impressive tree sizes in parts.

Site Details

Species: White Spruce, Jack Pine

Size: 20.08 Hectares

Target Seedlings: 28,112

Burn Age: 2021

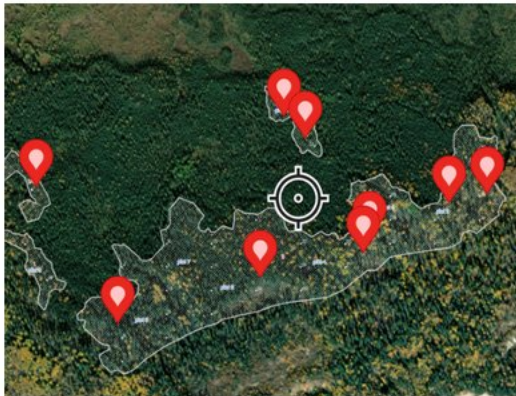
Planted: June, 2022

Biogeoclimatic Zone: Central Mixedwood

Land Preparation: None

Flagged Transect Summary (Permanent Plot)

In the first year, ten plots of flagged rows were distributed across A1 with pods planted directly adjacent to flags. These permanent plots allowed us to assess early germination rates and ratios of White Spruce and Jack Pine before circular plots could be established. The flagged plots consisted of rows of embedded pods and dropped pods, plus new recipes and two different species. We used a sampling density of 1 plot / 2 hectares for this site.



Permanent (flagged) plot distribution across the block.



A flagged permanent plot under assessment.

Circular Plot Summary (Temporary Plot)

In the second year, nine circular plots were distributed at A1. These circular plots have an area of 55 m² with seedlings counted within the circle area. Before planting, the silviculture team also assessed natural regeneration and excluded sites with high regen from planting efforts to eliminate naturals from our seedling count. The only species assessed were White Spruce and Jack Pine, as those are what the company planted. No assessment of deciduous trees was conducted.



Circular plot distribution across the block.



Flagged seedlings in the regenerating understory.

Findings: Temporary Plot Assessments at Year 2

Site	A1
Size (ha)	20.08
Target Seedlings Per Hectare (SPH)	1,400
Target Seedlings per Circular Plot	8
Plot #	Seedlings Counted
1	15+
2	15+
3	6
4	1
5	0
6	15+
7	3
8	11
9	15+
Seedling Count for Entire Site	>31,769
Average Stems Per Hectare	>1,582

Species Mix (Year 1 permanent plots)	
Jack Pine	12%
White Spruce	88%



Seedling assessed at 3 months



Seedling assessed at 15 months

Counts shown as "15+" were capped at 15 seedlings per plot; site totals are therefore reported as minimums (>).

Takeaways

1. Permanent plots showed high germination rates in the first 3 months. If these were used to predict average germinants across the entire site it would amount to roughly 2,950 per hectare.
2. Cool conditions at the site helped prevent significant germinant mortality. Between the mid-summer and late fall assessment in year 1, only 21% of germinants died (record low).
3. Fortunately, there was no additional mortality between fall 2022 and fall 2023. In fact, permanent plots showed many Jack Pine seedlings germinate in year 2.
4. The temporary plots indicated that the site was sufficiently stocked by the end of year 2. This is due to Flash Forest's pods and likely some natural regeneration.
5. Additionally, we have observed the growth of deciduous trees at this site, which will convert the stand to a mixed-wood forest. This is likely due to a low burn severity.
6. There was variability between the temporary plots, ranging from 0 to more than 15 seedlings per plot, partially attributable to microsite differences in shade, sunlight, slope direction, soil type, and water table.
7. Microsite differences have been accounted for in our machine learning model, which will be used to adjust planting densities within a block to ensure more even distribution in future planting.