



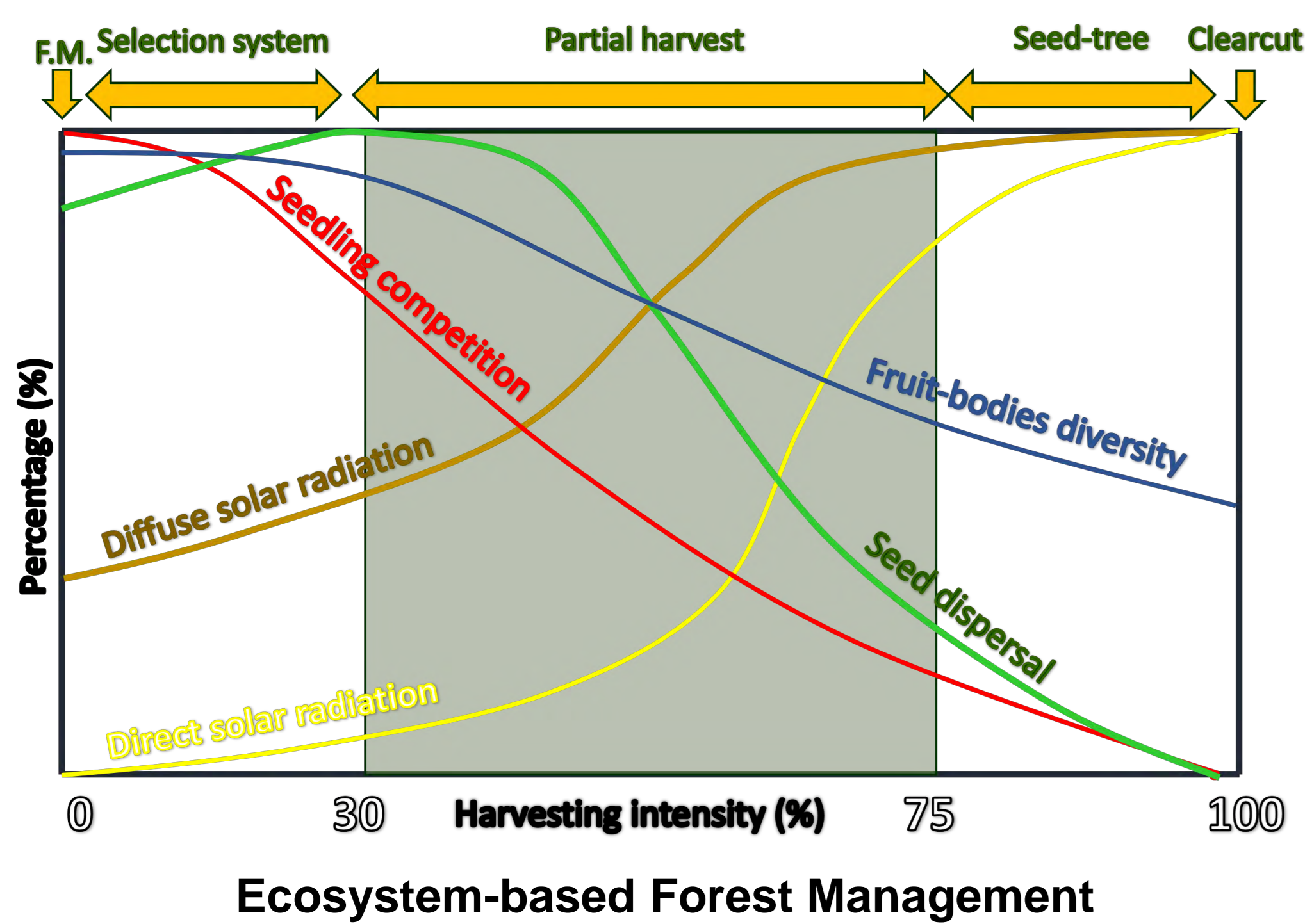
Can Partial Harvest Promote Conifer Regeneration and Soil Microbiome in Black Spruce Stands?

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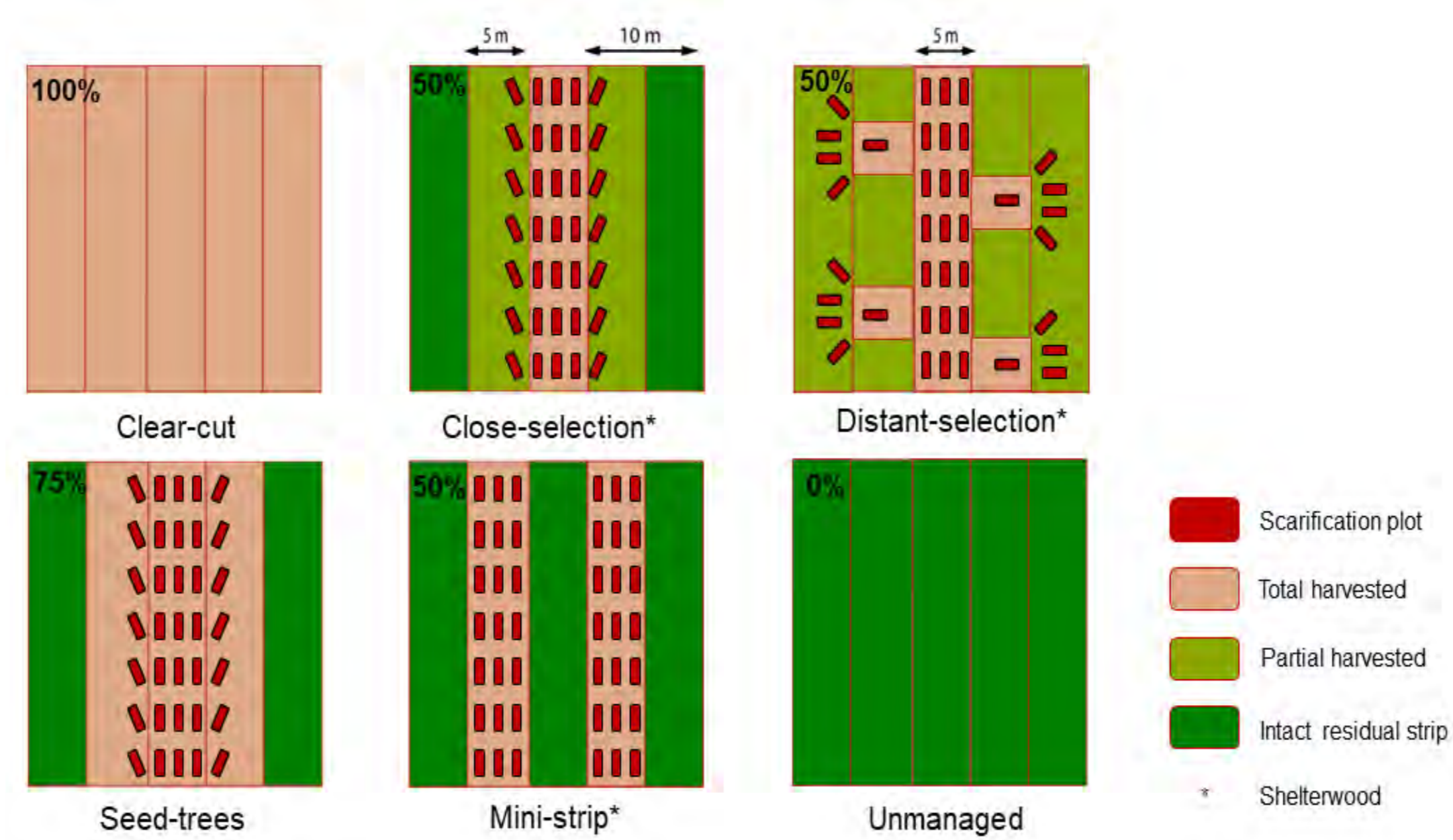


CONTEXT

- Intensive forest management results in decline of old-growth forest area, simplification of stand structure, loss of biodiversity, vulnerability of regeneration to natural disturbances, depletion of forest resources.
- Ecosystem-based management proposes partial harvest as a silvicultural alternative to clearcutting regimes to integrate ecological, economic and social objectives into silvicultural planning and narrow the gaps between natural and managed forests.

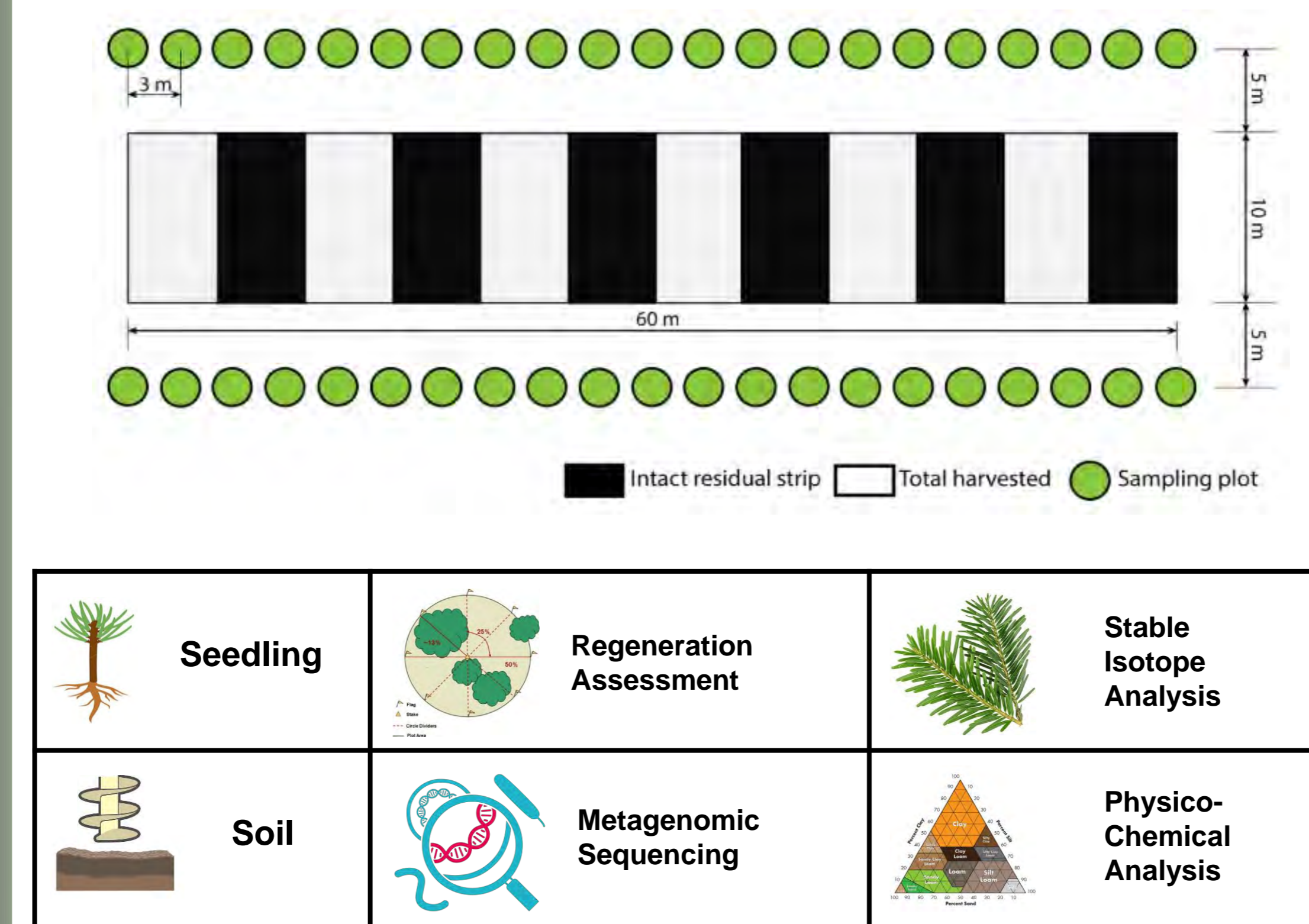


SILVICULTURAL TREATMENTS



- Harvesting (2003), Spot scarification (2004)
- Regeneration Sampling (2002, 2004, 2013, 2021)

METHODS



CONTRIBUTIONS

- Resolve the lack of ecological knowledge between partial- and clear-cut systems.
- Understand black spruce regeneration dynamics in post-harvest stands.
- Determine microbial indicators to contribute to dissimilarities between silvicultural treatments.

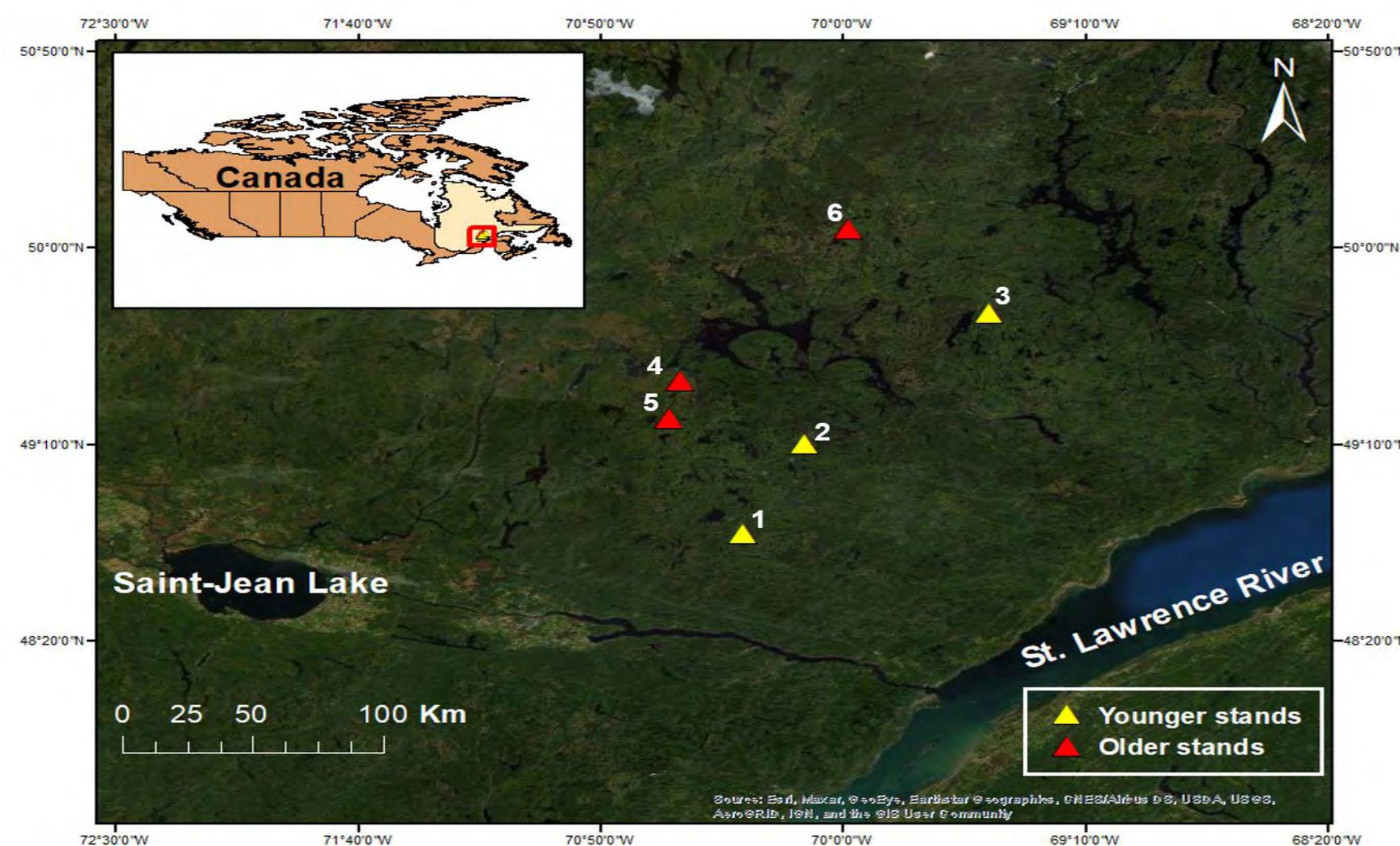
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OBJECTIVES

- Evaluate the impacts of experimental silvicultural treatments on seedling growth, density and their driving factors.
- Determine which soil microbial communities contribute to the seedling growth and density.

STUDY AREA



Regeneration

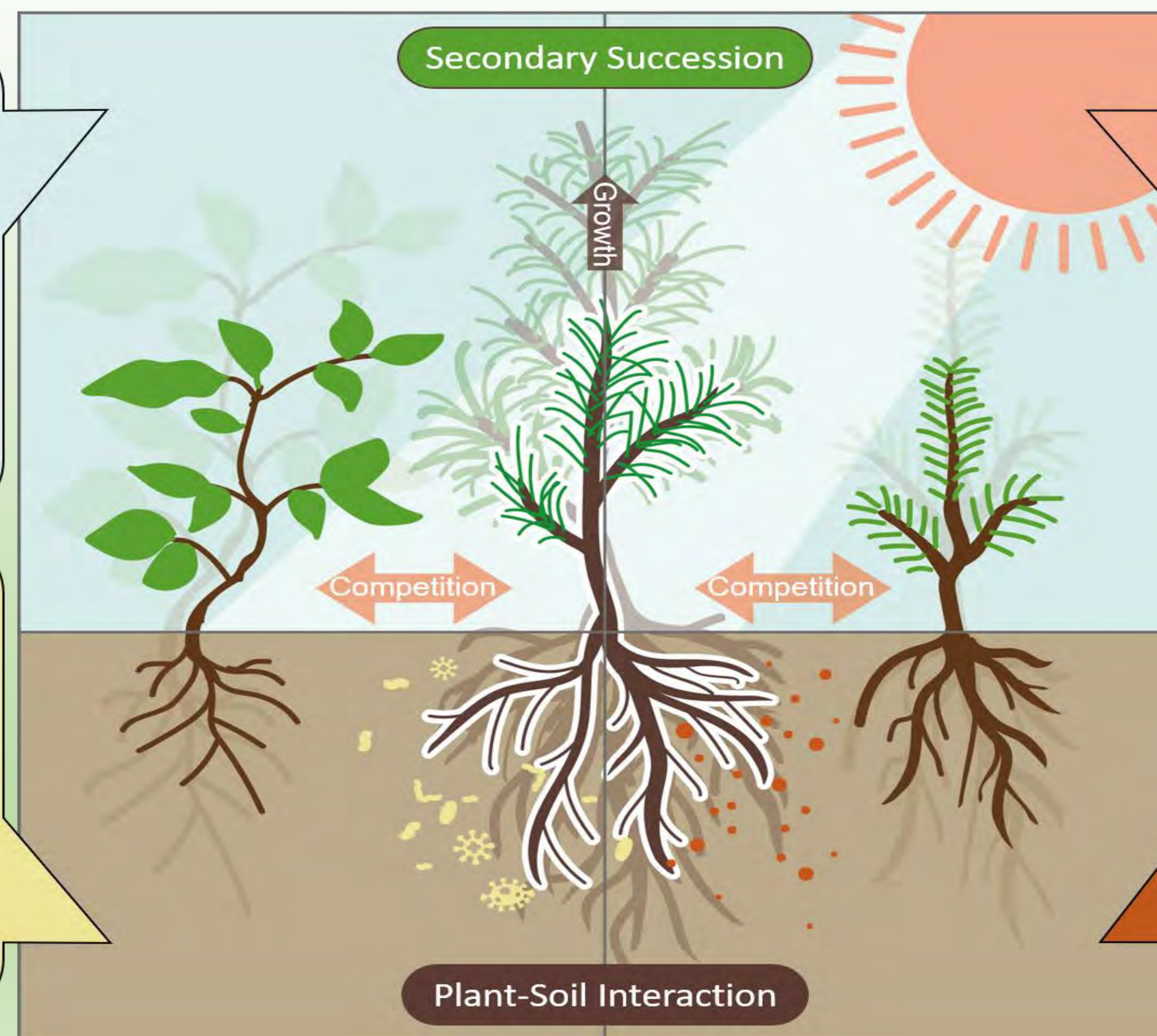
How do black spruce seedlings respond to silvicultural treatments?

- Seedling growth
- Seedling density
- Competition
- Conifers, shrubs and deciduous plants

Soil Microbiome

How do microbial communities respond to silvicultural treatments?

- Soil fungi
- Mycorrhiza
- Pathogens
- Soil bacteria
- Actinomyces & PGPB



Water Stress

Seedlings in harvesting trail will be exposed to high level of water stress.

- Solar radiation
- PAR; 400-700nm
- Water efficiency
- 5 cm branch cuttings of spruce, fir and birch

Soil Properties

How do soil properties influence regeneration and microbiome?

- Physical
- Soil texture
- Chemical
- Plant nutrients
- pH & CEC