



Land & Forests

Trends in Silviculture in B.C. (1987-2023)

Managing and conserving Crown forest resources provides environmental, social, and economic benefits to all British Columbians. Silviculture is a forest management tool used to control the establishment, growth, composition, and health of forests at different scales. Silviculture is used to enhance the social and economic benefits from forests to meet the diverse needs and values of B.C. citizens in a sustainable way. This indicator investigates the trends in four silviculture measures from 1987 to 2023.

- **What silvicultural systems are used?** The three general categories of silvicultural systems used in B.C. are clearcutting, partial cutting, and clearcutting with reserves. Over the last 15 years, the area of Crown forest harvested annually averages 180,000 hectares. Clearcutting with reserves was the most common silvicultural system applied over this period.
- **How much is reforested after disturbance?** The area of Crown land reforested annually is approximately the same as the area harvested two to five years earlier. Additional natural disturbance areas are reforested through government funded programs. Collectively, the Forest Investment Program (FIP) and its precursors (Forests for Tomorrow and Forest Carbon Initiative) have funded 282,000 hectares of rehabilitation planting since 2005.
- **What incremental silvicultural treatments have been done?** Investments in incremental silviculture to improve the growth and quality of future crop trees included fertilizing, pruning, spacing and using select seed (usually from seed orchards) for planting. Since 1987, incremental silvicultural treatments totaled approximately 4 million hectares.

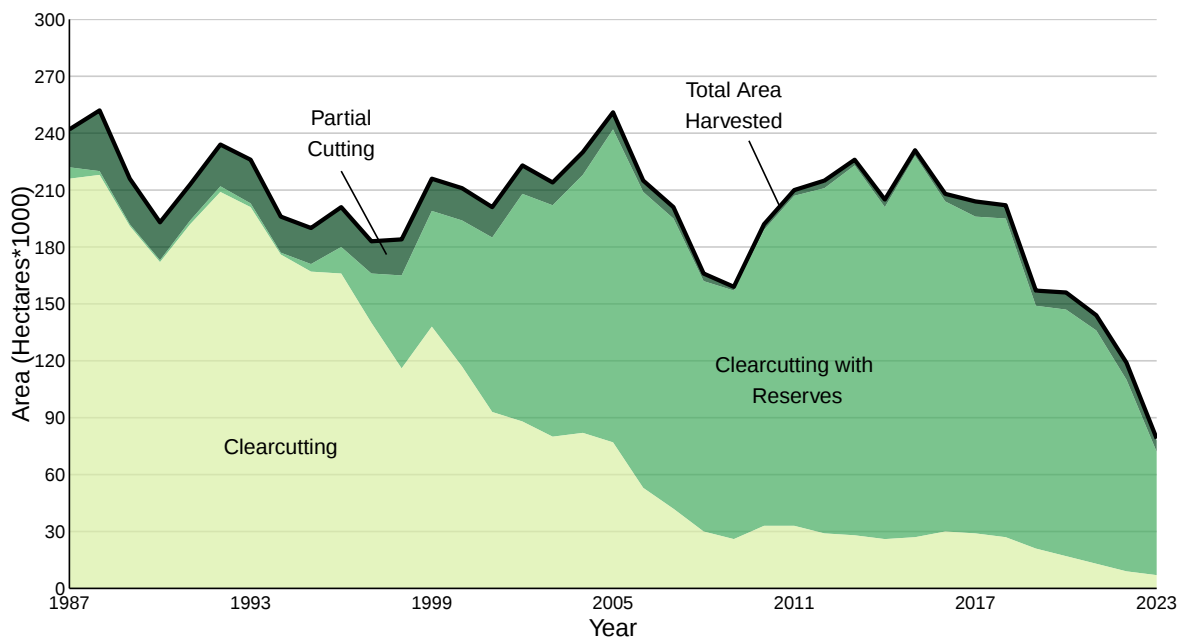
What is Silviculture?

Silviculture is the art and science of controlling the establishment, growth, composition, health and quality of forest vegetation.

Visit the [Silviculture Program Page](#) to learn more about silviculture strategies in British Columbia.

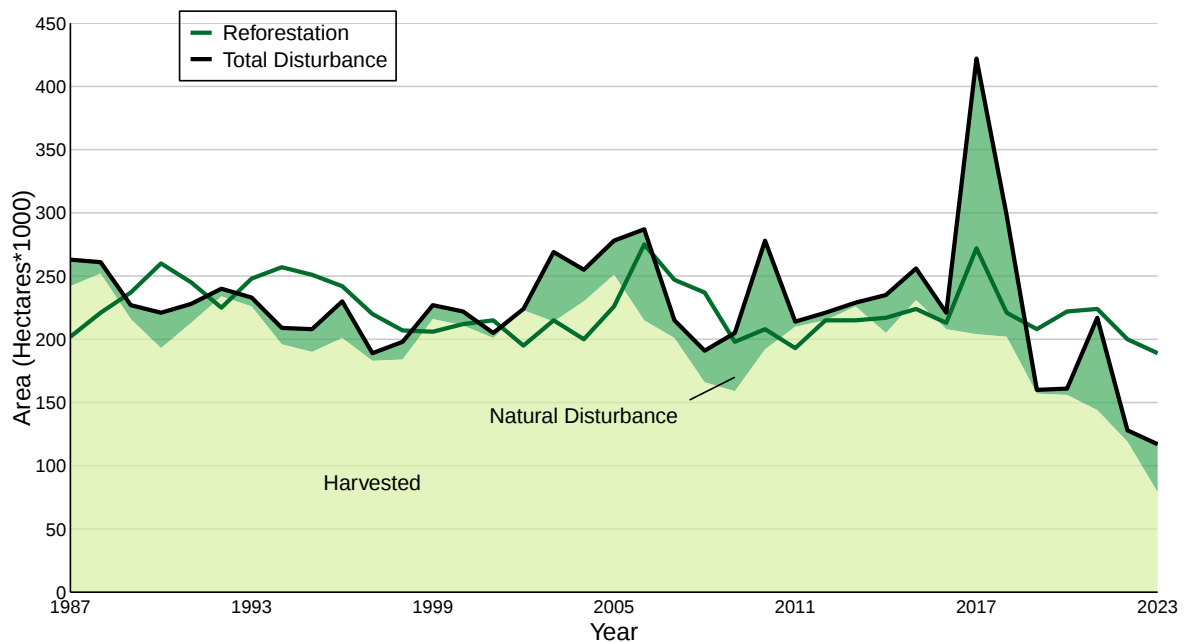
What Silvicultural Systems Are Used?

- A silvicultural system is a planned program of treatments during the whole life of a stand designed to achieve specific stand structural objectives. The three general categories of silvicultural systems used in B.C. are clearcutting, partial cutting, and clearcutting with reserves. Selection of a silvicultural system depends on the forest stand and site characteristics (e.g., tree species, forest health, terrain), and resource management objectives (e.g., timber, visual landscapes, wildlife habitat, social).
- From 1987-1996, a clearcutting silvicultural system was applied on 88% of the area harvested. By 2012, clearcutting with reserves accounted for 85% of the area harvested on public forest land. While both systems remove the majority of the trees, clearcutting with reserves saves some trees within or outside the cutting boundary for the purpose of managing for other values such as wildlife habitat, water quality or visual landscapes.
- Since 1987, the area of Crown forest harvested annually has ranged from 125,000 hectares to 256,000 hectares, with an average of approximately 207,000 hectares.



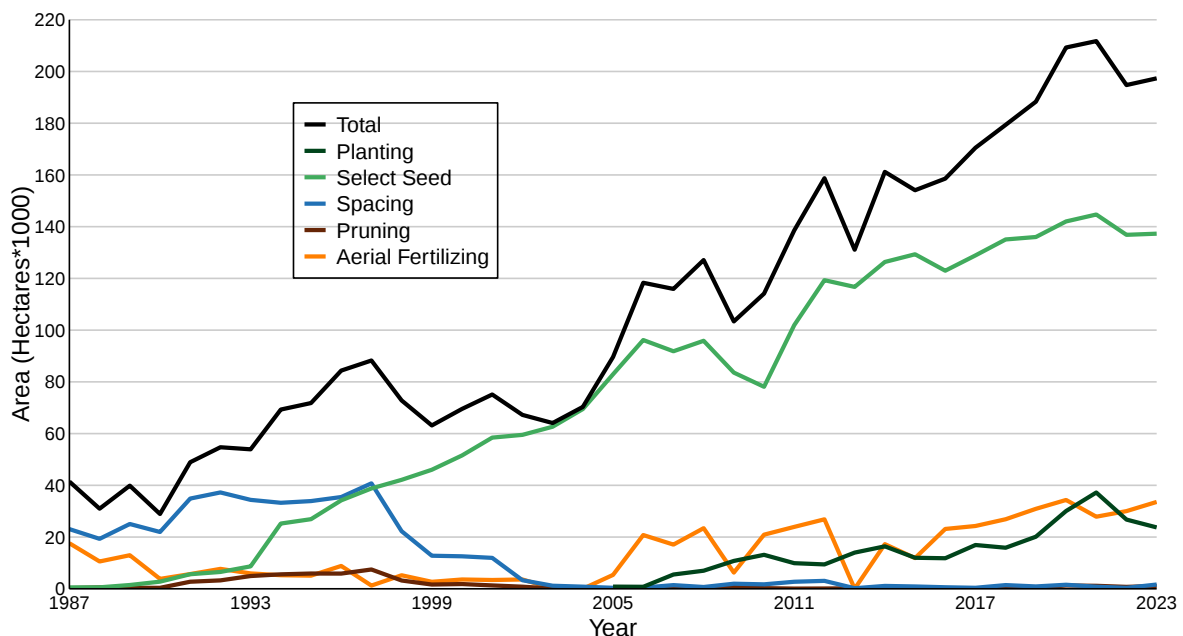
How Much is Reforested After Disturbance?

- Forests disturbed by timber harvests and other natural causes reforest naturally over time. Silviculture investments accelerate reforestation, increase timber supplies and restore ecological services sooner.
- Forests disturbed by timber harvest can take 7 years or more to regenerate. The average is 1.9 years when planted and 5.5 years when left to reforest naturally. This is referred to as regeneration delay and accounts for a large amount of the gap between disturbance and reforestation area in the last 7 years.
- In 1987, requirements were introduced for rights holders to reforest public lands they harvest. This led to planting a greater proportion of harvested areas. In the early 1990's, increased investment in planning and research improved the rate and success of replanting efforts.
- Recent catastrophic wildfires and the mountain pine beetle epidemic have added large areas with below acceptable stocking. Since 2005, the province has funded reforestation and rehabilitation of mountain pine beetle and wildfire impacted land not currently under legal reforestation obligations.



What Incremental Silvicultural Treatments Have Been Done?

- Incremental silviculture is an investment in future timber production and environmental benefits from forests. Incremental silviculture only includes treatments that are not part of basic silviculture, where natural unimproved seed sources are used. Incremental silviculture can increase timber quantity and landscapes, manage forest health and fire risks, and improve specific habitats, water quality and visual landscapes. Incremental silviculture also creates employment opportunities for communities.
- Since 1987, investments in incremental silviculture in B.C. included using select seed for planting (2,747,000 hectares), aerial fertilizing (508,000 hectares), spacing (427,000 hectares), and pruning (53,000 hectares). Over this period, incremental silvicultural treatments totaled approximately 4 million hectares.
- The use of select seed increases the rate of tree growth, increasing future timber volume, reducing constraints on harvesting adjacent areas and reducing the need for costly brushing treatments.
- In 2021, the province committed to a consolidated [Forest Investment Program \(FIP\)](#) that combines incremental government-led forest investments previously managed by the Forest Carbon Initiative and the Forests for Tomorrow program. Under FIP, the province and its partners currently invest around \$95 million a year to keep B.C. forests healthy and resilient. Every year since its inception, more than 40 million trees have been planted and over 30,000 hectares of forest have received a forest nutrient application.



References and other useful links

- [Reporting Silviculture Updates and Land Status Tracking System \(RESULTS\)](#)
- [Silviculture Program Page](#)
- [Seed Planning and Registry Application \(SPAR\)](#)
- [Forest Investment Program \(FIP\)](#)
- [Forest Carbon Initiative](#)

Data

*By accessing these datasets, you agree to the license associated with each file, as indicated below.

- [Indicator Summary Data: Change in Silviculture Systems \(1987-2023\)](#) (Licence: [Open Government Licence - British Columbia](#))
- [Indicator Summary Data: Change in Disturbances and Reforestation \(1987-2023\)](#) (Licence: [Open Government Licence - British Columbia](#))
- [Indicator Summary Data: Change in Silvicultural Treatments \(1987-2023\)](#) (Licence: [Open Government Licence - British Columbia](#))

For more information on this indicator or on Silviculture in British Columbia contact the Resource Practices Branch at Forests.ForestPracticesBranchOffice@gov.bc.ca.

Published and Available On-Line at Environmental Reporting BC (May 2023): <http://www.env.gov.bc.ca/soe/indicators/land/silviculture.html>

Email correspondence to: envreportbc@gov.bc.ca

Methods

The [detailed methods](#) are available here.

Glossary

Basic silviculture Harvesting methods and silviculture operations including seed collecting, site preparation, artificial and natural regeneration, fertilization at the time of planting, brushing, spacing and stand tending and other operations as are prescribed to be required for the purpose of establishing a free growing crop of trees of a commercially valuable species.

Below acceptable stocking Productive forest land that has been denuded and has failed, partially or completely, to regenerate either naturally or by planting or seeding to the specified or desired free growing standards for the site.

Brushing A silvicultural activity done by chemical, manual, grazing, or mechanical means to control competing forest vegetation and reduce competition for space, light, moisture, and nutrients with crop trees or seedlings.

Clearcutting The process of removing all trees, large and small, in a stand in one cutting operation.

Clearcutting with reserves The removal of the majority of the trees saving some within or outside the cut boundary for other purposes such as wildlife habitat, water quality and visual landscapes.

Fertilizing The addition of fertilizer to promote tree growth on sites deficient in one or more soil nutrients. Also used to improve the vigor of crop trees following juvenile spacing or commercial thinning.

Forests for Tomorrow A silviculture program, established by the B.C. Provincial Government in March 2005 to respond to catastrophic wildfires and the mountain pine beetle epidemic.

Incremental Silviculture Silviculture other than basic silviculture.

Mid-term timber supply A term that refers to that portion of the timber inventory that would be available for harvest within the middle of the normal management cycle.

Natural regeneration A change in forest structure and composition caused by fire, insects, wind, landslides and other natural processes.

Partial cutting A variety of silvicultural system in which a stand may be cut to ensure regeneration. In a partial cutting system, only some of the trees are felled during the harvesting phase. The selection method may specify 'removal' or 'leave' trees. Some examples of selection criteria are diameter, species, volume, age, height, disease, or other damage.

Planting Establishing a forest by setting out seedlings, transplants or cuttings in an area.

Pruning The manual removal, close to or flush with the stem, of side branches, live or dead, and of multiple leaders from standing, generally plantation-grown trees. Pruning is carried out to improve the market value of the final wood product by producing knot-free wood for the improvement of the tree or its timber.

Rehabilitation planting Where planting occurs on areas disturbed by a natural event such as fire or insects which has not been salvaged in a manner that would generate a legal reforestation obligation.

Select seed Seed collected from either orchards or natural stand superior provenances. Select seed exhibits a higher level of improvement in one or more desired genetic traits (such as growth, form, wood density, and resistance to insects and disease) than wild seed collected from an average natural stand.

Site preparation Any action, related to reforestation, to create an environment favourable for survival of suitable trees during the first growing season. It may alter the ground cover, soil or microsite conditions, using biological, mechanical, or manual clearing, prescribed burns, herbicides, or a combination of methods. Both natural regeneration and planting may be improved through site preparation.

Spacing The removal of undesirable trees within a young stand to control stocking, to maintain or improve growth, to increase wood quality and value, or to achieve other resource management objectives.