

Selecting a Method to Estimate Site Index

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1 DETERMINING A SUITABLE METHOD TO ESTIMATE SITE INDEX

Figure 1 will help Forests for Tomorrow surveyors select a recommended method to estimate site index for silviculture polygons and strata. Section 2 provides the background required to properly use this decision key.

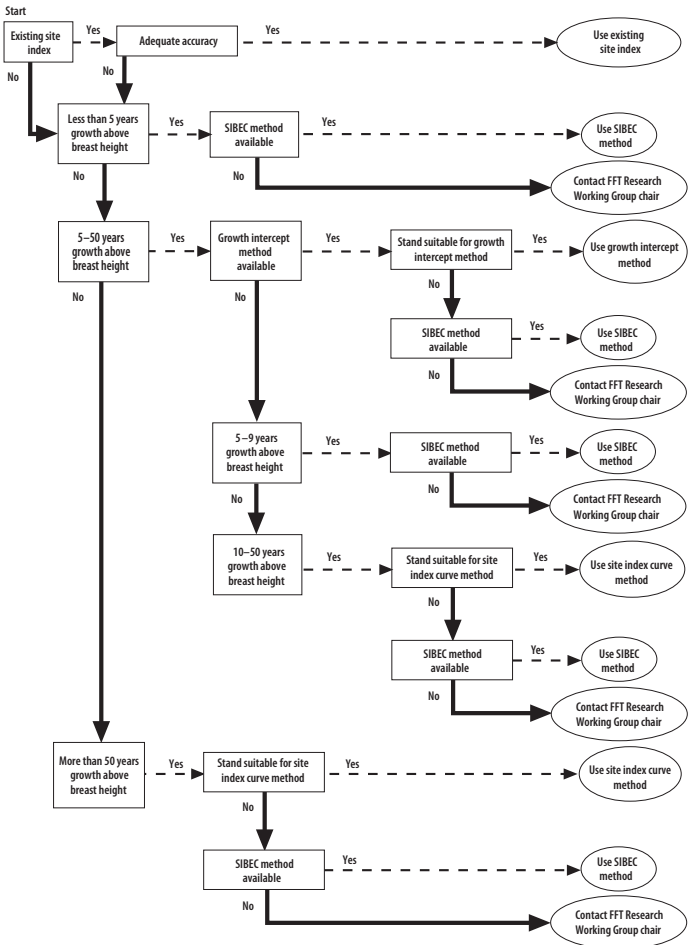


FIGURE 1 *Decision Key to select a method to estimate site index*

2 DECISION KEY BACKGROUND

1. Who Should Use This Key?

This decision key is for those who must determine site index for silviculture polygons (strata).

2. Cautions

This decision key will recommend a method to determine site index. However, operational concerns not addressed by the tool may override this recommendation. These additional concerns include:

- the cost of data collection and the available budget,
- the risk of damaging crop trees when determining age, and
- the possibility of combining the recommended method with other surveys planned for the block.

3. Methods to Estimate Site Index

For most silviculture polygons (strata), surveyors can use more than one method to obtain site index. These methods differ in their availability throughout the province, their suitability for different stand conditions, and their accuracy. This decision key assists in selecting from three methods:

- Site Index–Biogeoclimatic Ecosystem Classification (SIBEC) method,
- growth intercept method, and
- site index curve method.

SIBEC method

With the SIBEC method, site index is predicted from the Biogeoclimatic Ecosystem Classification (BEC) for the stratum. The surveyor determines the biogeoclimatic unit and site series and then obtains a site index estimate for the selected species using the site index–site unit look-up table available on the SIBEC web site.

Growth intercept method

With the growth intercept method, site index is predicted from the height and breast height age of sample trees measured on site. The surveyor measures the heights and breast height ages of sample trees in the stratum and obtains site index using a growth intercept look-up table.

Site index curve method

With the site index curve method, site index is predicted from the height and breast height age of sample trees measured on site. The surveyor measures

the heights and breast height ages of sample trees in the stratum and obtains site index using a site index look-up table.

4. Documents Required

To accurately estimate site index and to properly use the decision key, the following documents are required:

1. The SIBEC Guide <<http://www.for.gov.bc.ca/hre/sibec/>>.
2. Growth Intercept Tables, Surveyors' Format, found at: Lodgepole pine (interior): <<http://www.for.gov.bc.ca/isb/forms/lib/FS415A.pdf>>. Interior spruce: <<http://www.for.gov.bc.ca/isb/forms/lib/FS415B.pdf>>. Western hemlock (coast): <<http://www.for.gov.bc.ca/isb/forms/lib/FS415C.pdf>>. Western hemlock (interior): <<http://www.for.gov.bc.ca/isb/forms/lib/FS415H.pdf>>. Sitka spruce: <<http://www.for.gov.bc.ca/isb/forms/lib/FS415D.pdf>>. Douglas-fir (coast): <<http://www.for.gov.bc.ca/isb/forms/lib/FS415E.pdf>>. Douglas-fir (interior): <<http://www.for.gov.bc.ca/isb/forms/lib/FS415F.pdf>>. Subalpine fir: <<http://www.for.gov.bc.ca/isb/forms/lib/FS415G.pdf>>. Western larch: <<http://www.for.gov.bc.ca/isb/forms/lib/FS415J.pdf>>. Western redcedar (interior): <<http://www.for.gov.bc.ca/isb/forms/lib/FS415K.pdf>>.
3. A complete set of site index curves and tables or the SiteTools software <<http://www.for.gov.bc.ca/hre/sitetool/>>.

5. Description of Each Box in the Decision Key

Existing site index

This box questions whether there is a site index value already available for the stratum. Some strata have site index indicated on the forest cover map label, within the Reporting Silviculture Updates and Land Status Tracking System (RESULTS), within a licensee's silviculture information system, or on a note in the opening file.

Adequate accuracy

This box asks if the existing site index is accurate for the purpose of the survey. In general, an existing site index is accurate enough for silviculture use if it was obtained by a careful on-site application of any of the SIBEC, growth intercept, or site index curve methods. Usually, an existing site index is not accurate enough for silviculture purposes if it was:

- obtained by converting site class to site index,
- taken from an adjacent stand, or

- taken from the forest cover map label (since the site index in the label of most young stands was converted from site class, and the site index in the label of most old stands is inaccurate).

Use existing site index

To obtain a site index estimate for the stratum, use the existing site index value.

Less than 5 years growth above breast height

This box questions if dominant and codominant trees of the selected site index species have completed less than 5 years growth above breast height.

Biogeoclimatic (SIBEC) method available

This box asks if the SIBEC method of predicting site index is available. It is available if the species–site unit combination in the Site Index–Site Unit tables on the SIBEC web site <<http://www.for.gov.bc.ca/hre/sibec>> contains an estimate.

Use SIBEC method

To obtain a site index estimate for this stratum, use the SIBEC method.

5–50 years growth above breast height

This box asks if dominant and codominant trees of the selected site index species have completed 5–50 years growth above breast height.

Growth intercept method available

This box asks if the growth intercept method is available for the selected site index species.

Stand suitable for growth intercept method

This box questions whether the stand's condition is suitable for the growth intercept method. This method is suitable for a stratum if there are enough sample trees with growth that reflects site potential. Usually, a stand is not suitable if many of the dominant and codominant trees of the selected site index species have been:

- overtopped by other trees or brush,
- seriously damaged or diseased,
- removed for spacing, or
- affected in height growth by treatment (e.g., fertilization that temporarily accelerates height growth, or thinning shock that temporarily reduces height growth).

Use growth intercept method

To obtain site index for this stratum, use the growth intercept method.

5–9 years growth above breast height

This box asks if dominant and codominant trees of the selected site index species have completed 5–9 years growth above breast height.

10–50 years growth above breast height

This box asks if dominant and codominant trees of the selected site index species have completed 10–50 years growth above breast height.

More than 50 years growth above breast height

This box asks if dominant and codominant trees of the selected site index species have completed more than 50 years growth above breast height.

Stand suitable for site index curve method

This box questions if the stand's condition is suitable for the site index curve method. This method is suitable for a stratum if there are enough sample trees with growth that reflects site potential. Usually, a stand is not suitable if it:

- is uneven aged,
- has sample trees that have been overtopped by other trees,
- has been partially cut, so the larger trees are removed,
- has many sample trees that are seriously damaged (e.g., broken or dead tops) or diseased,
- has sample trees that are very old (age class 8 and 9),
- has sample trees that are very large or rotten at breast height,
- has dense regeneration, particularly if it is lodgepole pine.

Use site index curve method

To obtain site index for this stratum, use the site index curve method.

Contact FFT Research Working Group chair

The Research Working Group chair can be found through the FFT Research Working Group web site <<http://www.for.gov.bc.ca/hfp/fft/committees/rwg/rwg.htm>>.

