



A Guide to Site Preparation

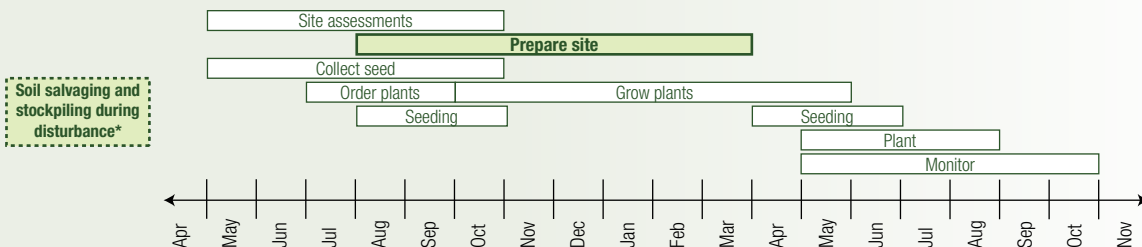


Deciding which technique
is appropriate for your site

Reclaiming industrial sites in Alberta's boreal forest is not always a straightforward process. The footprints left by infrastructure and equipment are often characterized by compacted mineral soils, loss of micro-topography, too much or too little water and competition. In addition, some natural site characteristics such as thick layers of moss can present constraints to tree establishment. These conditions often slow and may even prevent tree growth.

Site preparation can improve growing conditions by addressing factors that limit plant growth. Site preparation is conducted after site reconstruction and before revegetation, and begins with an assessment of site limiting factors (Fig. 1).

Figure 1. Generalized timeline of activities related to site preparation.



*Note: Not all sites require salvaging (e.g., exploration sites). Where soil has been salvaged, it is assumed to have been replaced prior to site preparation activities.

When is site preparation appropriate?

Site preparation is appropriate when the site conditions are likely to limit or prevent the establishment of target vegetation. While there are several kinds of site limiting factors, many of them relate to compacted soils, competition and soil nutrients, and temperature (Fig. 2).

The need for site preparation also depends on the forest type, target vegetation and end land use. Some forest types such as aspen or pine stands on dry sites may regenerate naturally if managed carefully. On more challenging sites where the objective is a commercial forest, site preparation can increase the reliability and speed of tree regeneration. If the objective is wildlife habitat, site preparation can speed the return to forest cover and increase species diversity by providing a range of microsites and reducing competing vegetation.

Figure 2. Typical factors that can limit plant growth on reclaimed sites.



What is the best site preparation method?

The best technique is selected based on the forest type, site limiting factors and the soil moisture regime (Fig. 3). Each site preparation method has the potential to improve local growing conditions, but success depends on how well each method matches site conditions.

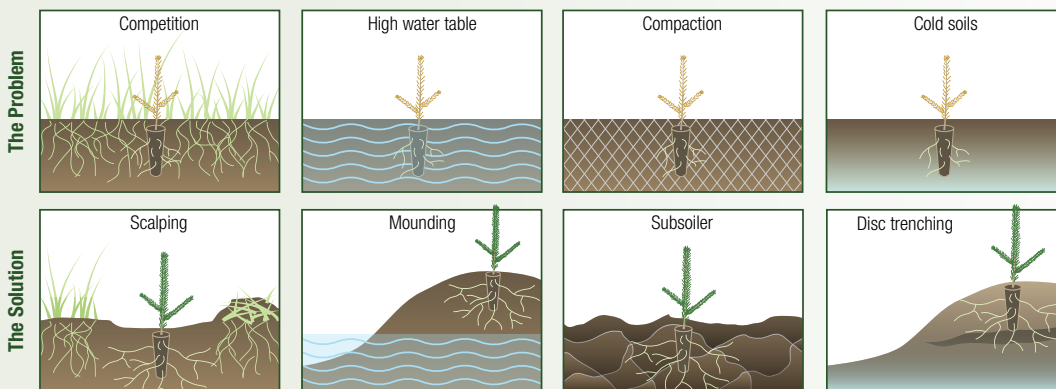
Figure 3. Site preparation techniques and the limiting factors they address.

Limiting Factor	SOIL MOISTURE	COMPETITION	COMPACTED SOILS	NUTRIENT-POOR	COLD SOILS
Wet sites	Mounding	Mounding Plowing*	Mounding Plowing	Mounding	Mounding Plowing
Dry sites	Scalping Scarification Disc trenching (wide trench)	Scalping Scarification Mixing* Disc trenching*	Mixing Winged subsoiler Straight ripper	Mixing Disc trenching (small trench)	Scalping Scarification Mixing Disc trenching

*Note: the indicated techniques may alleviate competition by exposing microsities, but these microsities may lead to increased competition if a vegetation management plan is not in place.

For example, most conifer trees planted directly on a very wet site will die from root saturation (Fig. 4). Mounding can create elevated planting sites and warmer microsites for trees to grow. On a dry site, scalping may be needed to physically separate seedlings from competing vegetation. Site preparation techniques can also be used to improve the success of seeding and/or natural regeneration efforts.

Figure 4. Examples of limiting factors and site preparation solutions.



What happens after a site has been prepared?

Operator training is critical for successful site preparation treatments, and immediate post-treatment quality control assessments are critical, especially at project start-up, to ensure that treatments are delivered as planned. For example, if mounds were not created high enough on a very wet site, planted seedlings may not establish in the long term. Timing is also critical. Site preparation creates desirable microsites, and competing vegetation may quickly occupy a site unless target species are planted or able to naturally seed into these microsites. To ensure success, managers should plant or seed sites shortly after treatment and have a vegetation management plan in place (see Factsheet *A Guide to Regeneration Planning*).

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Also available under the title : Guide sur la préparation de site – Choisir la technique appropriée pour son site

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