

Planting Tree and Shrub Seedlings

Planting trees and shrubs may seem like a daunting task, both in terms of the labour involved and the importance of getting it right. Yet when done with appropriate technique and tools, it can be an enjoyable form of exercise, the results of which will be visible for decades to come.

Planting projects commonly involve the use of **container plugs** (Figure 1) and/or **bare root stock** (Figure 2) due to their versatility, low cost, and availability (for an up-to-date list of native plant nurseries in Alberta, visit <http://anpc.ab.ca/>). Relatively high survival rates can be achieved if best practices are followed in terms of stock handling and planting timing, location, and technique. The following factsheet provides some background on container plugs and bare root stock, and then outlines these practices.



Figure 1. A container plug.
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Stock Characteristics



Figure 2. Bare root stock.
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Container plugs are seedlings grown in small containers for 1-2 years that are planted with the roots contained in soil. They are typically 15-50cm (6-20") tall, cost \$1-5 apiece, and come plastic-wrapped in bundles of 5-20 that are fit into cardboard boxes (Figure 3). Plug quality can be highly variable, and is important to assess when you receive your order. Check that the roots are moist and not tightly packed or "root bound" (ie. forming a solid mass that encircles the outside of the plug), as this will decrease root growth. Ideally, seedling roots will bind the soil or peat of the plug just enough to facilitate extraction from the wrapped bundle, and handling without soil falling off the roots.

Bare root stock are seedlings typically grown in a nursery bed for 2 years and then dug up and sold when dormant. They are typically 20-60cm (8-24") tall, cost \$1-5 apiece, and come in small bundles bound together with an elastic band and laid horizontally in cardboard boxes. Check to see if roots are moist when you receive them, as this will greatly affect seedling success.

Note that although container plugs and bare root stock can both be successfully used in planting projects, bare root stock is more vulnerable to drying out and thus can have reduced survival rates particularly in drought conditions (Kiiskila, 2004).

When to Plant

To complicate matters somewhat, there are two types of container plugs with different planting windows and storage requirements. "**Overwintered container plugs**" (spring stock) are in winter dormancy and should be planted after last frost (typically after mid- May in Alberta) but before mid-June. If planting immediately is not feasible, they can be stored for up to one week in a cool, dark place (between 2–4°C), such as a refrigerator or root cellar (Scianna et al., 2005). Watering every few days may be necessary if the seedlings begin to dry out. Ensure that seedlings are thawed out completely before planting.



Figure 3. Overwintered container plug bundles (left) and an open box of plugs (right). Photos by AWES.

"**Hot-lifted container plugs**" (summer stock) are actively growing and should be planted between mid-June and late August within a few days of receipt. They can be temporarily stored for up to one week in partial shade between 4 and 21°C (Dunroese and Barnett, 2004). Watering every 1–2 days may be necessary to prevent them from drying out.

Like overwintered container plugs, **bare root stock** are dormant and thus have similar planting window and storage requirements. They should be planted between mid-May and mid-June, and can be stored for up to one week in a cool, dark place (between 2–4°C), if roots are kept moist.

Regardless of the stock type, planting should be avoided on days that are windy, dry, or warmer than 30°C. Instead, plant when soil conditions are favourable – that is, drained of any standing water, thawed, and moist.

Where to plant

Seedlings should be planted in an area where they will have adequate room to grow – for example, not too close to buildings, buried service lines, pipelines, or overhead powerlines. Also **avoid** planting in areas that have:

- Excessive competition from existing vegetation, either aboveground (i.e. thick shading grasses or weeds taller than knee high) or belowground (i.e. a thick and dense sod mat made by rhizomatous grasses)
- Highly compacted soils, where it is difficult for a shovel to pierce soil without being stepped on and rocked.
- Saturated soils and/or patches of standing water

If one or more of these conditions exist at your site, it may be necessary to prepare the site prior to planting using tillage, herbicides, mulching, or other methods (refer to AWES' Manual for Riparian Buffer Establishment in Alberta for more information).



Figure 4. Tree planting shovel (left) and generic spade (right). Photo by AWES.

How to plant

Tool

Tree planting shovels (Figure 4) are small spades designed to efficiently plant container plugs and bare root stock by creating "slits" in the ground rather than "holes" for the seedlings. Most landowners have basic shovels and spades (Figure 4) that will do the job, but at a far slower rate than tree planting shovels.

Technique

Proper planting technique is outlined in Figure 5, while common planting faults are shown in Figure 6. For large scale projects (i.e. >500 seedlings), consider contracting professional tree planters (Figure 7). A single professional tree planter can plant 1,000 to 3,500+ seedlings per day depending on the site. Another option is to rent a mechanical tree planter, which are available through certain counties in Alberta. These tractor attachments make a trench as they go along, into which trees are placed. However, they are unwieldy in challenging topographies, tight spaces, or wet areas.

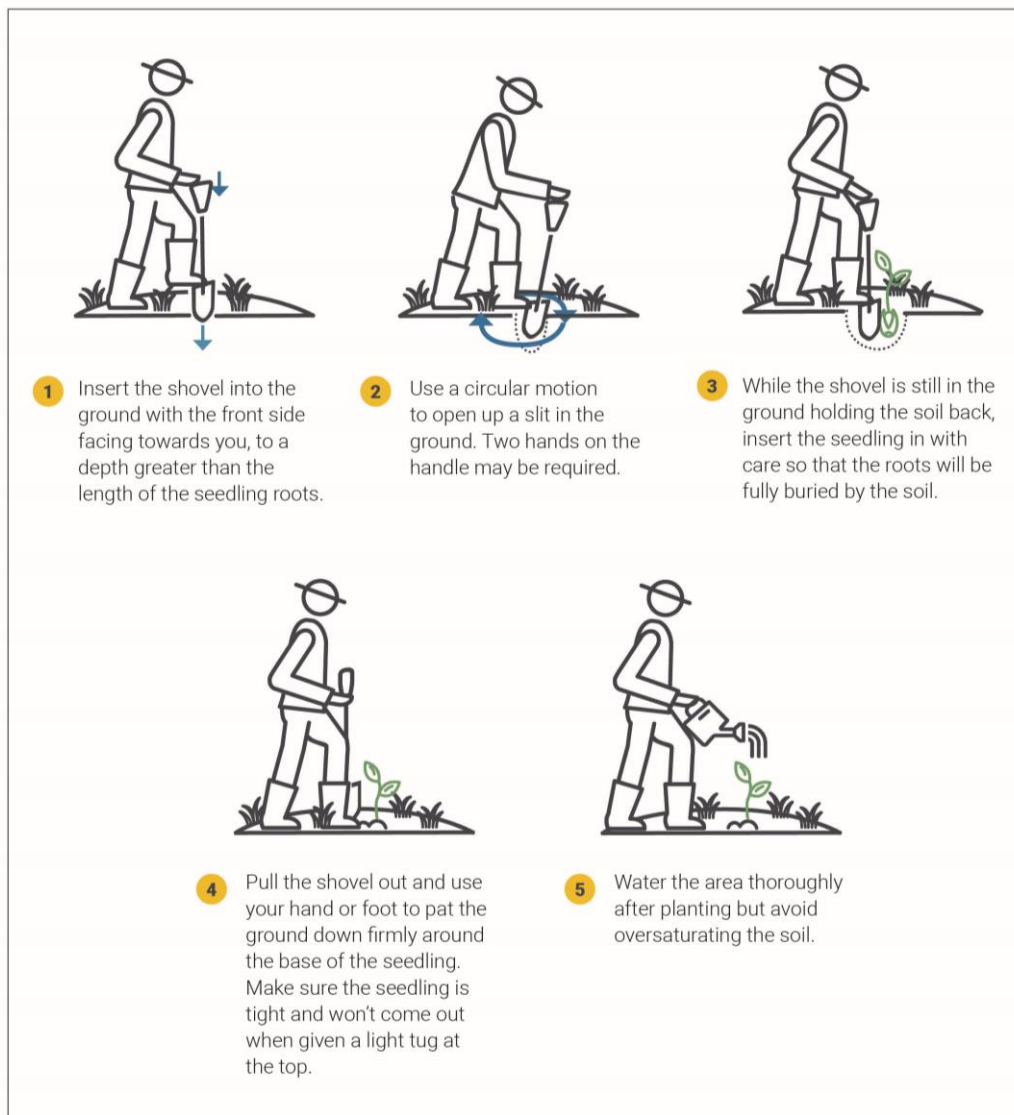


Figure 5. Proper planting technique. Graphic by AWES.

Preventing injury

Planting seedlings is a repetitive task – similar to shoveling snow – that can lead to strain injuries if proper care is not taken to prevent them. Injuries commonly occur to the muscles, tendons and ligaments of the wrists, shoulders, back and knees. The best defense is to wear appropriate Personal Protective Equipment (i.e. steel toe boots, work gloves, and a sun hat), stay well hydrated, and take regular breaks. Selecting a shovel of the appropriate length allows you to maintain a healthy posture. Be sure not to grip the shovel handle too hard, as you run the risk of vibrations in the wrist when contacting hard ground or rock.

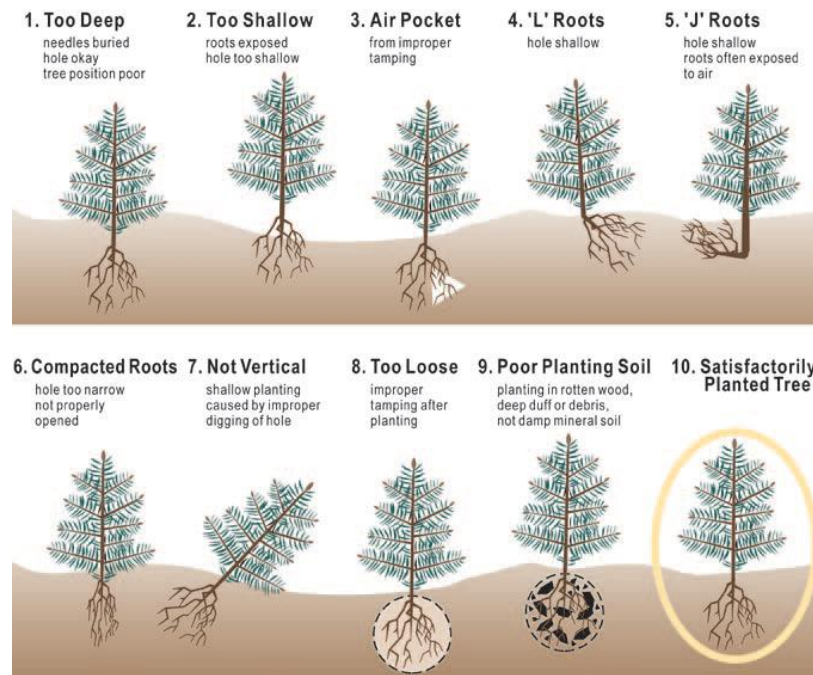


Figure 6. Common tree planting faults. Source: Rose and Morgan, 1992.

For more information on planting tree and shrub seedlings, please contact:



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References

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