



PLANTING PART I:

Sowing the Seeds of Success



Part I: How to plan for planting with nursery timelines in mind.

What does it take to bring a tiny seed all the way to becoming a ready-to-plant tree seedling? To learn more about how seedlings make their journey to reclamation sites, as well as the most important things for restoration practitioners to plan for, the COSIA blog team sat down with experienced nursery and reclamation professionals working in Alberta. These conversations revealed a number of key insights to guide the planning of your next planting program. Tips for planning your ordering timeline are presented here in part one of a two-part blog series, Sowing the Seeds of Success.

Preparing plants means more than just growing

There are several key elements to a nursery's process. Before the nurseries can even start growing plants, four key preparatory steps must take place:

1. Placing the order: deciding what stock type and species are needed and in what quantities (note that this depends on site information gathered during the [project planning phase](#)).

2. Allocating space in the nursery: space can become limited (and expensive) if orders come in late.
3. Seed procurement/seed withdrawal: figuring out where the seed is going to come from and submitting a withdrawal request to the provincial government. Did you know COSIA has a [vegetation co-op that keeps its own seedbank?](#)
4. "Waking up the seeds": seeds are dormant when they first arrive at the nursery. To break this dormancy (called [seed stratification](#)), nursery staff need to treat the seeds in a way that mimics natural germination conditions. For example, some species need cold, wet conditions while others need it warm and dry.

All together, these essential steps typically take 3-4 months, so the best advice is to start planning early.

Order early to avoid missing out on nursery space

Jeff Renton, reclamation coordinator for [Tree Time Services](#), explained that he and his colleagues design reclamation timelines with two key considerations in mind: **nursery demand** - the physical space required in greenhouses for stock to be grown - and **biological timelines** - the time required by the plant to proceed through its lifecycle. Since the plants decide the biological timelines, managers can get the most out of planning by being savvy to the nursery demands.

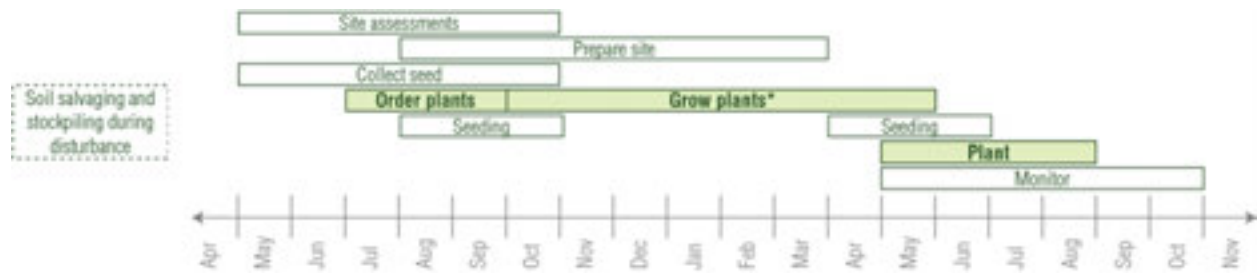
"If we don't have space it doesn't matter what the biological timelines are," Renton commented. **"The best [scenario] is that the ordering happens in September and October."**

Dan McCurdy, manager of [Bonnyville Forest Nursery](#), echoed this need to take nursery space into account.

"Here in Bonnyville, we grow 3 million trees per year, but still 75% of that space is used by forestry. There's only so much greenhouse space," explained McCurdy. "Space becomes limiting."

While early ordering is ideal, at a certain point, the biological timeline cannot be ignored.

"We can't change these timelines. If [ordering] doesn't happen near the end of the calendar year, we just can't physically produce what people are looking for. It's difficult to meet biological timelines after November," explained Renton.



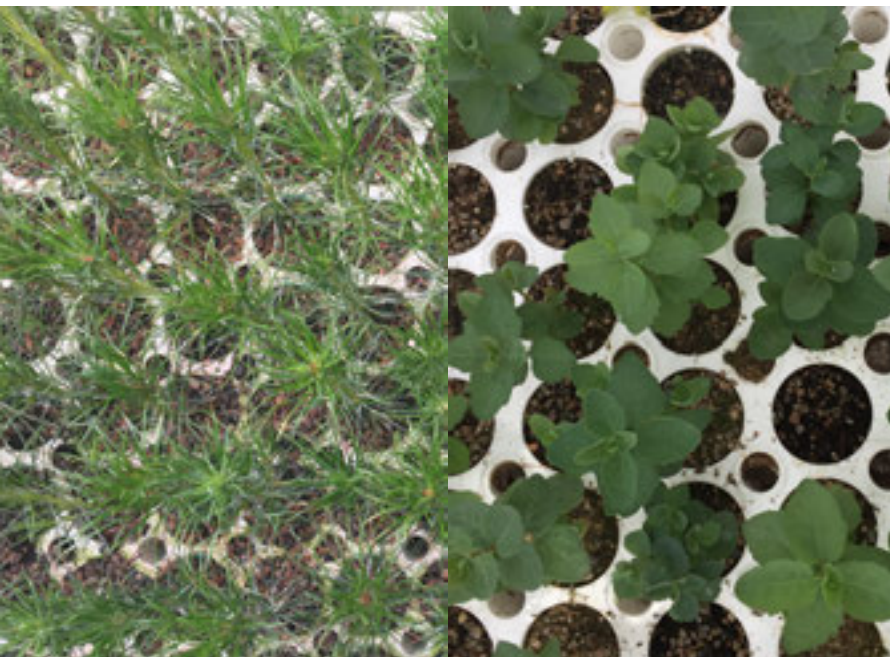
* Note: Plants should be ordered at least a year prior to planting, but some stock types and non-commercial tree species take longer to grow (up to three years).

Summer planting timeline. Between ordering and planting, seeds must be treated to break dormancy ('stratify seed'), sown and grown. These steps represent the **biological timeline** that is not flexible and takes a minimum of eight months to complete.

For deciduous species, order even earlier

There are two main scheduling options when it comes to ordering plants for oil sands reclamation: planting in summer or in spring. While there are more detailed [pros and cons to consider for each of these options](#), one key thing to keep in mind is whether you are ordering coniferous or deciduous species.

Deciduous species should be planted in the spring because summer conditions can be too hot and dry for them to successfully establish.



Coniferous species like lodgepole pine (left) are hardier to warm conditions and can be planted in the summer. Deciduous species like snowberry (right) need to be planted in the spring: “[Deciduous species] have a much greater leaf area and so a much greater evaporative demand,” Renton explained. “It is typically warmer in the summer so[...]they are more likely to dry out.” Photos courtesy of Tree Time Services.

With spring ordering, it's important to know that spring stock are grown over the summer the year before planting, then go through a cold storage period in the winter. These longer timelines mean that managers need to order deciduous stock over a year in advance.



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Spring planting timeline. Plants go into a cold storage period during the fall and winter so that they can be “woken up” early for a May-June planting window. Because of this step, orders have to be made over a year in advance.

“In the greenhouse at any time, we have summer stock for the current year and spring stock for the following year,” McCurdy explained. “Spring stock has a much longer timing horizon than summer stock. For example, you would order spring 2020 stock in the fall of 2018.”

Want to learn more about how to choose stock for planting? Check out Part II: How to choose stock for your reclamation plan.

The quotes and viewpoints presented in this article represent the diverse perspectives of the professionals interviewed. COSIA does not endorse any one nursery or supplier of reclamation services.

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