Chapter 12 - “Planting A Seedling”

Opportunities are usually disguised as hard work, so many people don’t recognize them. In this section, we're finally going to talk about the process of actually planting a seedling. We'll look at microsite preparation, handling a seedling from bag to hole, the motions of planting the tree, then closing the hole and moving on to your next spot. For the purposes of this tutorial, we're intentionally going to ignore spacing and density. Those topics are important, but they’ll be covered in later chapters. For now, let's assume that you know roughly where your tree needs to go, within an area of approximately a couple feet.

Selecting the Best Microsite

The microsite is the spot where you plant a tree. In order to maximize the survival potential of the seedling, you need to select the best possible microsite. Each tree has already undergone physiological stresses in the process of transporting it to the moment of planting. It is your job to minimize future stresses through careful microsite selection. So long as you're spacing correctly, you can choose from many different microsites, such as on a mound, in a depression, beside a stump, under a bush, or in a rotten log. Each of these spots provides different growing conditions for the seedling, and you need to understand what the seedling needs in order to choose the best one. Some of those spots that I just mentioned might not be acceptable as microsites on certain contracts.

Some factors to consider when selecting the best microsite include:

- Utilize any existing preparation, if the area has been site prepped for planting.
- Only plant in an acceptable planting medium. Some contracts will have very specific criteria for what you're allowed to plant in.
- You may be asked to utilize existing stumps to provide some protection for the planted seedlings, as they're often slightly raised and usually offer protected, undamaged soil pockets right beside the stump. This is called obstacle planting, because you're planting beside an obstacle. Even if you aren't asked specifically to do obstacle planting, targeting spots that are six to twelve inches away from existing stumps is generally a good practice on most contracts.
- Learn to recognize which specific vegetation indicates suitable pockets for planting.

Think wisely. Don't choose a spot where it's hard to plant a tree if there's an easier acceptable microsite just a foot away. This will come into play when we talk about spacing.

Microsite Preparation

Before planting an area, you'll be briefed on the expectations for microsite preparation. This often varies from contract to contract, and sometimes even from block to block.

Screefing is the removal of unwanted material from the planting spot, and may or may not be required. In some instances, the size of the screef is specified in the planting prescription, perhaps something like 10cm x 10cm. You may use your boot for a minor screef, or you may also need to use your shovel for a larger or deeper one, depending on the ground conditions on the block. Screefing is extra work, and can create musculoskeletal strain, so you want to be careful in the methods that you use to screef. Smart planters can often reduce or eliminate some screefing entirely by using careful microsite selection. Smart foresters have minimal screefing requirements, because it means lower bid prices from contractors. Don't make the classic first-year planter mistake of spending a full minute screefing through heavy grass mat if there's exposed soil in a spot only a foot away!

Figure 12.01
Shovel Screefing.

Here, a planter is using the shovel screefing technique to create a proper microsite for a tree on a contract where the forester requires all of the competition removed from immediately around the seedling.

The correct techniques for foot screefing and for shovel screefing will be shown to you in the field by your instructor or your crew leader. The technique may vary slightly depending on site conditions. Shovel screefing will feel very awkward when you first start planting, but after ten or twenty thousand shovel screefs, it starts to feel very normal, comfortable, and efficient.

Opening the Hole, Grabbing the Seedling

Let's assume that you've already picked the best spot for the tree. The goal here is to have a hole of sufficient depth. The hole needs to be sufficiently straight and vertical. The roots of the seedling must be straight up and down, and the plug will be covered with dirt or organics to just over the top of the root collar. The root collar of the seedling is the space between the top of the plug, and the bottom of the needles or laterals. The laterals are the small branches on the seedling.

Assuming that you've picked your spot, and depending on the rockiness of the ground, you may want to probe gently with your shovel to make sure you won't be driving your shovel into a rock, root, or other hard ground, which could increase the risk of long-term injuries. If most of the ground on the block is soft, this may not be necessary. Taking the time to choose a microsite carefully will usually make planting easier for you, and better for the tree.

Push your shovel in. There are different techniques depending on the terrain. If the ground is soft, you should be able to drive it in with one strong thrust of your arm. You might want to lift the shovel first, and use gravity and the weight of the shovel to help your arm out. If the ground is rocky, many planters prefer to wiggle the blade of the shovel to help it find a path around the rocks. Use your kicker when added pressure is required. Try alternating your feet on the kickers. If possible, try to always kick on the outside of the shovel, ie. on the right kicker plate if you're holding the shovel in your right hand and kicking with your right foot, or on the left kicker plate if you're holding the shovel in your left hand and kicking with your left foot. Being ambidextrous when you're planting prevents some stress on your body. However, kicking on the "inside" kicker plate is usually more awkward for your body, so try not to get into that habit. Experiment with different ways to handle the shovel as some methods may suit your body type better than others. Also, it will be to your benefit to have a few different styles that you're comfortable with, so you're more able to adapt to changes in terrain.

Next, you need to open the hole. There are different techniques for doing this in order to open a hole that's deep and wide enough to fit your hand, and able to accommodate the roots or plug. The plug is the part of the tree that has the dirt surrounding the roots. No matter what eventual technique you become familiar with for opening a hole, start off by pushing FORWARD. Almost all first-year planters put their shovel into the ground and pull back. I think this must be a natural movement that roughly mimics digging in a pile of dirt with a garden shovel. Don't do this. You don't want to pull backwards first. Make a conscious effort to push forward first. As you get faster, you'll learn to turn this into a fluid motion where, as you're moving to your next spot, you'll be throwing the shovel forward and into the ground, then pushing further forward. As you continue to move closer to the hole, the shovel ends up naturally pushing forward with your body motion. It wouldn't be possible to be moving towards a new hole and pulling backwards on a shovel simultaneously.

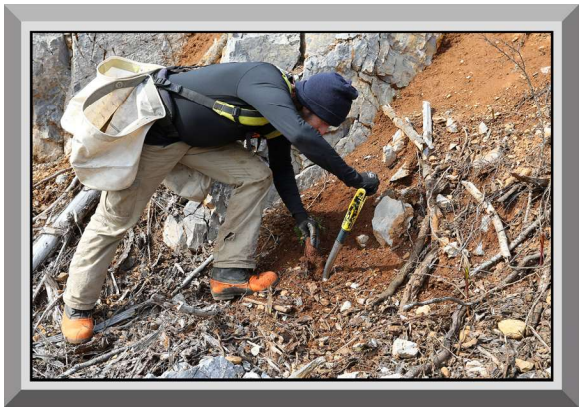

Figure 12.02
Start Pushing Forward When Opening a Hole.

The first motion of your shovel when opening a hole should not be a pull back toward your body, even though many first-time planters assume this.
Photo Credit: Andrew Ulmer.

As you're moving toward the hole that you're about to make, take your non-shovel hand and reach into your drawbag to pull out the next tree that you're about to plant. For efficiency, you need to be doing several things simultaneously whenever possible. That means getting the tree ready for the hole at the same time that you're making the hole. This step is an important one in terms of stock-handling too. You want to grab the entire seedling at once, including the roots. Don't just grab the top of the tree. If you grab it by the top, you're going to end up pulling needles or the leader bud off of a lot of your trees. This is terrible for the seedling, as it basically knocks back a year of growth, or even kills the tree.

Figure 12.03
Grab Seedling While Moving Toward Microsite.

Having a tree ready as you're moving towards the next microsite improves your efficiency.

Figure 12.04
Correct Way to Hold a Tree.

The proper way to hold a tree is by the plug, with the tips of your fingers all the way down to the bottom of the plug. This helps to ensure that you're not planting j-roots when you plant the tree. J-roots are the worst fault there is, because they're so hard to fix.

Now this is a tricky part that a lot of foresters don't understand. Some foresters ask you to stand the trees up so they are perfectly vertical in your planting bags, rather than have them all lying on their sides. The rationale is that they don't want you to be bending the stems and harming the seedlings. But it isn't good for the seedlings if you're pulling the tops off the trees as you're pulling them out of your bags! The best approach that I've found, and a lot of foresters understand this when you explain it to them, is to lay the trees in your bags at an angle. If they're angled, it's easy to grab them by both the main stem of the seedling and the plug simultaneously. Ultimately, that's the best treatment for the seedlings. For now though, be aware that some foresters may still tell you that they want the trees completely vertical in your bags.

Planting the Tree, Closing the Hole

The best way to put the seedling into the hole is to slide it across the front of your shovel, especially if you have a tight or narrow hole, because the shovel is smooth enough to protect the plug from ripping. Since the tree is cupped in your fingers, your knuckles also help to protect the plug from getting shredded as it goes into the hole. Make sure your fingers extend all the way down to the bottom of the plug. Put the tree in the hole, THEN pull out your shovel.

Some planters prefer to make a larger hole, which is easier to work with. This is one of those counter-intuitive steps about efficiency. You'd think that making a larger hole would take more time and slow you down. Yes, it may take an extra second or two, but sometimes you more than make up for that time if you can get the tree into the hole really quickly. I often see inexperienced planters spending too much time fiddling with tucking the roots into a tight hole.

Either way, at this point you have to make sure that the roots are straight. You need to learn to do this by feel, because you won't always be able to look in and visually inspect the roots. This is probably the most important part of planting, in my opinion. I can't begin to emphasize how much long-term pain you'll cause for yourself if you don't make sure that your plugs are straight. Bent roots is a type of quality fault.

You may also have to adjust the seedling's depth at this point, to make sure it isn't too shallow or too deep. In general, you want just a small amount of dirt above the top of the plug, perhaps a centimeter or two. The forester (or your crew leader) will show you how deep the tree should be with respect to the plug or the root collar of the tree.

Figure 12.05
The Root Collar.

The root collar is the part of the seedling between the top of the plug and the part of the stem where the needles and/or bottom laterals begin. The laterals of the tree will eventually grow into full branches.

Now it's time to close the hole. No matter how you do this, three objectives must be met. The plug must be covered. There should be no air pockets around the roots. The tree should be snug enough in the ground to reduce moisture loss, but the soil should not be compacted so much that the roots are crushed.

There are three different general methods to close the hole: using your hand, your boot, or the shovel. For each of these, there can be multiple techniques, especially with the boot. Learn to use

them all. You'll sometimes be on blocks where you're constantly using different types of closure methods, depending on each specific microsite. Sometimes, when I plant a box of trees, I may use as many as eight or ten different methods for closing different holes.

Closing with your hand works best in soft ground, and it's fast, but it's hard on the hands. Ease into this, because it can cause tendonitis in your knuckles. However, it's efficient because you're already bent over. Another advantage of hand closing is more accuracy, plus you can sweep away loose debris from the tree at the same time as closing the hole.

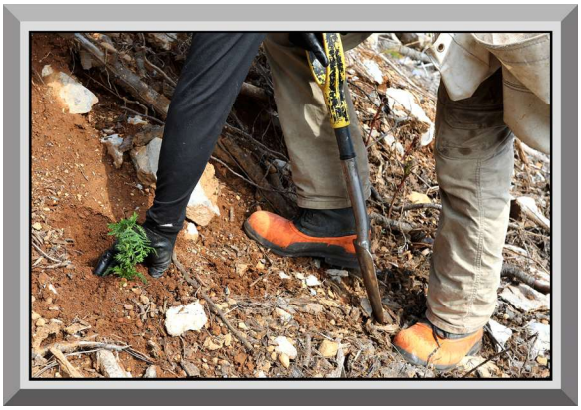

Figure 12.06
Hand-Closing a Hole.

For a hand close, you use the same hand that you used to hold the tree, which is referred to as your "tree hand." Your other hand is referred to as your "shovel hand." If you're ambidextrous, your tree hand and shovel hand will keep reversing throughout your bag-up.

Closing with your shovel is a good method where soils are too compact to close by hand. Care is required to avoid slashing the roots with a misplaced shovel blade. This method is slower, but if you're in hard ground or clay, this "double shovel" technique can do a good job.

Figure 12.07
Shovel Closing From the Front of the Tree.

One type of shovel closing is to put the shovel into the ground just a few inches in front of the tree, then push the shovel away from you so the top half of the shovel blade compresses dirt toward the tree.

Figure 12.08
Shovel Closing From the Back of the Tree.

The back closing method is just the opposite of the previous method. The shovel goes into the ground a few inches behind the tree, then you pull back so the top half of your shovel blade swivels toward you and compresses the soil toward the plug.

Some planters have also learned to do a fast "shovel twist" hole-close in soft ground, which can be extremely quick. It'll take quite a while for a first-year planter to catch on to this technique, so don't expect to be using it much when you're first learning to plant. Focus on other planting techniques, and save learning this trick until you're comfortable planting a couple thousand trees per day. At that point, your shovel control should be skilled enough to learn how to shovel-close in certain types of ground.

Closing with your boot is the most common approach. You can use the toe of your boot, or the heel, or a flat-footed stomp. You can come down from above, or move your foot at the tree in a sideway motion more like a bulldozer. By varying your kick, you can also vary the eventual depth of the tree, which is a technique that good planters gradually learn. Care must be used that you don't kick the tree itself and damage the seedling. When kicking a hole closed, it's also possible to make a tree lean over, or to compact the soil too much, so pay attention to your specific techniques and the results that they give.

Figure 12.09
Heel Closing.

By using the heel of your boot, you can exert a lot of pressure to really compact the dirt around the plug. A solid heel close ensures that you won't get faulted for "loose" trees.

Figure 12.10
Toe Tapping.

You can also use the toe of your boot to close the hole. The toe provides a bit more finesse and control, although it also exerts less pressure than the heel. This is why it's referred to as "tapping." Some foresters dislike soil compaction around the roots of the tree, and are ok with fairly loose trees.

If you're doing a boot close or a shovel close, it helps to hold the tree as you're closing the hole. This has the effect of making your trees much straighter than they would be otherwise. In many areas, leaning trees are considered a fault.

Figure 12.11
Hold the Tree While Kicking It Closed.

Holding the tree while closing the hole leads to much straighter trees. The appearance of the trees, with respect to being straight or leaning, is the first thing that a forester sees when coming into your piece. First impressions count.

Practicing Your Techniques

It is somewhat difficult to practice planting if you don't have any seedlings to work with. The cost of buying seedlings from a nursery is prohibitive for the purpose of practice. Therefore, if you want to practice before your season begins, you need to find a substitute.

It's possible to make a durable, simulated seedling, with just a few pieces of equipment from a local hardware store. In order to make some of these simulated seedlings (which we call "rookie sticks") you'll need some 1" diameter wood dowel, some orange or brown (preferably) duct tape, and some green duct tape. Wood dowel is usually sold in a 48" length (about ten dollars per piece, buy two or three). Cut your dowels into pieces approximately twelve to fourteen inches long. Wrap a thin strip of the orange or brown (or whatever colour) duct tape around the middle of the piece, and that will simulate the root collar of the seedling. Wrap green tape around one half of the rest of the piece, which will simulate the "upper" half of the tree, ie. the stem and needles.

Figure 12.12
Rookie Sticks.

If you don't have real trees available to work with, these "rookie sticks" are a great substitute. In fact, I find that they're better to work with than real trees for people who are just starting to practice planting, because the "depth" of the tree can be judged more easily.

Once you have a handful of rookie sticks to practice with, you can get to work. Plant them out in a line, then look back to see if they look fairly vertical. Straight trees impress foresters. Next, go back and measure your inter-tree distance with a tape measure. Make sure that you were close to your intended average spacing between trees (if you want a good number to aim for, use 2.7m spacing). Finally, check each "tree" individually, to ensure that the bottom of the root collar (ie. the top of the plug) is slightly below the level of the ground surface, but make sure that the bottom of the green area of your stick isn't underground (that would mean that your seedling is too deep). After you've done this, pull them out and try again.

Figure 12.13
Practice Planting with Rookie Sticks.

These sticks can be used over and over when you're first learning to plant. These sticks allow soon-to-be planters the chance to start practicing at home, before they leave for their first job as a tree planter.

This technique is a really good way to start mastering a dozen things at once. You'll get used to grabbing the tree out of your bags, opening the hole, putting the tree in the ground, closing the hole, moving on to the next tree (with proper spacing), and doing all that with good quality and straight trees. Trust me, this is all going to feel extremely awkward at the start. If you started with several lengths of dowel, and made yourself ten to twelve rookie sticks, go through the process of planting them and checking them two hundred times. Yeah, that sounds like a lot, and it will probably take you a couple of days. This is obviously a significant time investment, but it will pay off. By the time you've planted your "bundle" of rookie sticks two hundred times, it's the equivalent of planting two thousand trees. This practice time will give you a huge head start over the other first-year planters when you arrive for training. You'll feel (and look) far less awkward than when you started, and the whole process of planting a tree might actually start to feel somewhat natural. You'll start to develop some muscle memory, and your body will know exactly how and lean and bend. Believe me, after you've planted about a hundred thousand trees, the whole process will feel extremely fluid and

comfortable! Make sure you reverse your shovel hand and tree hand after every couple of "bundles," to get a feel for planting ambidextrously.

Your instructor or crew leader will go over all of the techniques covered in this chapter, and will hopefully spend a lot of time watching you plant so they can correct mistakes in your techniques.

Planting a tree quickly, with proper quality, is an art and a science. On your first few days of planting, you'll feel incredibly awkward, and you'll think that you'll never be able to plant several thousand trees in a day. After a week or so, it'll start to feel less awkward. By the end of four weeks, you'll be moving confidently across the block. After a couple years, planting will feel almost effortless to you. You'll feel almost like a dancer moving across the block, and your planting techniques will have become very refined and elegant. But first, you have to practice a lot and plant a couple hundred thousand trees.

For more photo and video resources associated with this chapter of the book, including a video demonstration of the techniques involved in planting a tree, visit:
www.replant.ca/training/plantingseedling