Chapter 21 - "Additional Planting Techniques"

Once you have a good understanding of basic planting techniques, you can start to learn about additional techniques that will be necessary to increase your versatility. This chapter will discuss the basics of flagging techniques, line planting vs. area planting, piece management, obstacle planting, and fill planting.

Flagging Techniques

Unless you're planting in clean brown site prep, or raw ground with a minimum of slash and vegetation, it may be difficult for you to quickly spot planted seedling s when you're first starting out. As the season progresses and the blocks green up, trees can actually become impossible to spot because they're completely hidden out of sight in competing vegetation. A planter who just guesses where existing seedlings are planted will run into major quality and density problems, due to double-plants and improper density. This will result in significant replanting, which is simply unsustainable if you want to maximize your earnings. However, if you take too much time poking around and trying to find existing trees that you're following, you'll also feel frustrated that your production is suffering. The simple solution is to use flagging ribbon, which is also called flagging tape or flagger.

There are two main types of flagging tape: summer weight and winter weight (also referred to as arctic tape). Winter weight is much stronger and more durable than summer tape. Winter weight is typically used by surveyors, timber cruisers, and foresters because it will last for several seasons. Planters don't want to use winter weight, because it's hard to rip. Summer weight is very thin, so it should be much easier to quickly rip pieces off the roll. Planters always prefer to use summer tape when flagging their trees. Regardless of which weight is being used, the ribbon is made of a type of polyethylene plastic. Ribbon that stretches significantly before coming apart is not desirable. Planters want flagger that rips quickly.

Figure 21.01
Winter Weight Flagging Tape.

Here are a bunch of boxes of heavy winter-weight flagging tape, for sale at IRL. The individual rolls come in groups (usually 10, 12, or 15 rolls) that are called logs or tubes.

The flagging tape that is typically used by planters is ¾" wide, and comes on rolls that usually have either 600' or 700' of flagger per roll. The 700' rolls are probably slightly better, because planters need to changes rolls slightly less frequently. Summer weight flagger comes in at least a dozen different colours, but blue is the colour preferred by over 95% of planters. If blue is not available, planters generally prefer pink or teal. Most companies will order 100% blue flagger, but it's sometimes beneficial to have two colours available to the crew. That way, if two planters are working together, each one can have a different colour and it's possible to know who planted each individual tree in the piece, which is especially useful when pairing up two first-year planters at the beginning of the season. It's also nice to have a second colour available when fill planting a block that was originally planted with blue ribbon (there's more info about fill planting later in this chapter).

Figure 21.02
Summer Weight Flagging Tape.

This flagging tape is all summer weight, which is lighter and easier to rip. You can't really distinguish winter weight from summer weight just from the photos, but if you tried to rip a piece off the roll, you'd quickly understand the difference. Blue is the best colour.

Most sets of planting bags come with a flagger pouch attached to the left side drawbag. Planters often have problems making this pouch work effectively. There's a hole in the side of the pouch which allows the flag to be threaded out, although I've seen very few planters who can make this work effectively. More often, they'll thread the flagger out the inside top corner of the Velcro flap. Many planters remove the flagger pouch, and replace it with a small Tupperwear container, then cut appropriate holes in the container to allow the ribbon to be threaded out. Still other planters simply throw the roll of flagger in their back bag, and thread the ribbon out under their shoulder straps. I've personally had success both with a flagging pouch and being a back-bagger flagger, but there's a lot of variety in what individual planters eventually pick as a preference.

In terms of the actual technique for ripping a piece of flagger off the roll, some people rip a piece then let it go, and have to grab the end of the ribbon again when ready to flag the next tree. Other planters never let go of the flagger, and just keep feeding it out constantly through their hands while planting. I'll try to film a video of this technique for a future edition of this book, since it's very hard to describe. No matter what your technique, try to use fairly short pieces of flagger. A piece of ribbon that is about a foot long should be sufficient to help you see your trees, except in very tall grass or on the coast, where your flagger pieces might need to be a bit longer. Ripping unnecessarily long pieces is discouraged, because it uses up the flagging supply more quickly, and also because it adds more pollution to the blocks.

When you're actually ripping the flagger, it separates more easily if you're holding your hands very close to each other as you do the rip, ie. less than an inch apart. If your hands are six or eight inches apart, the flagger between your hands is much more likely to stretch out significantly before it breaks.

Pollution/littering is a concern. Hardly anybody feels good about throwing tens of thousands of pieces of plastic onto a cutblock, especially knowing that it will take many centuries before that plastic breaks down completely. And does the polyethylene actually decompose, or just break down into tiny pieces of poly that we can't see? Luckily, there is an alternative: biodegradable ribbon. This type of ribbon is usually made of some corn or starch-based product. Unfortunately, biodegradable flagger is also very expensive. Currently, poly flagger is available for as little as 70 cents per roll for large bulk orders, whereas rolls of biodegradable flagger are around $2 apiece, even when buying in bulk. However, the biodegradable rolls are generally only 100-125' long, so the end cost for the same total length of ribbon works out to be about 8x to 10x more expensive when trying to buy biodegradable instead of plastic. This needs to come down, and a number of people are working on this issue.

Ideally, it would be great if corn starch flagger could become a cost-effective alternative to poly within the next couple of years. The industry has not gotten ahead of this issue quickly enough, even though there has been a lot of talk about the issue. And now, foresters have started to implement bans of plastic flagger on a wide scale. Plastic flagger is now banned in a number of regions where cattle grazing leases overlap with harvesting operations, because cattle can (and have) eaten too much poly and died. In the areas where foresters have suggested the use of corn starch flagger (versus not flagging at all), those foresters are no longer covering the cost of purchasing biodegradable ribbon.

A new product called "Tree Chalk" came to market in 2019. This was an environmentally-friendly biodegradable product designed to have the potential for replacing ribbon as a means of helping locate trees. Tree chalk came in pressurized canisters which were ostensibly intended to be environmentally friendly, pressured by a gas (ether?) that is not a greenhouse gas and therefore not a significant contributor to climate change, and the chalk itself is biodegradable. The concept was good, however, a few problems that were encountered included:

- Very expensive compared to traditional flagging tape. The cost worked out to several dollars per box of trees. At best, one canister could cover two boxes, and even then planters complained that there was not enough coating on the tops of the seedlings to make them easily visible.
- Washes off and is hard to handle in rain.
- More logistically challenging. If a crew is planting 120 boxes per day, then the crew leader has to think about bringing out 60+ canisters of tree chalk (which takes up more space than a few logs of ribbon).
- Not as readily visible as ribbon, since ribbon is a different non-natural shape and catches the eye more easily.

The most critical problem with chalk is that flagging is often used most heavily on blocks with a significant slash load. In those cases, planters are not flagging the trees themselves, but rather hanging ribbon on the slash close to the seedling. If the seedling is hidden by slash, it doesn't matter how brightly coloured it is.

Unfortunately, some Clients have banned the use of tree chalk. For example, the BCTS office in Williams Lake no longer allows chalk on their contracts as of 2024, as they are worried about the effect of the product on certain living organisms, and on the ecosystem as a whole.

Despite these drawbacks, tree chalk is an interesting product which may prove useful in certain limited circumstances. Ultimately though, the industry needs to find and use an inexpensive biodegradable ribbon as the holy grail of eliminating plastics.

Line Planting vs. Area Planting

Area planting involves the proper spacing of trees on one small portion of your assigned piece at a time. This approach works best for fragmented pieces or blocks where there's an abundance of slash, rock outcrops, large stumps, or other obstacles, since you can choose the most efficient path from tree to tree within your small area. Note where you are and what you have covered, then, after you've planted that area, mentally mark off another small patch to plant, with full coverage in mind.

Line planting is straightforward and requires less thought than area planting. As a first-year planter, this is the approach that you should take while you're learning to plant. It's best suited to clear ground and open areas. Don't automatically think that because you hear vets talking about area planting, that line planting is not always efficient. In clear, straightforward ground, line planting is usually more efficient than area planting, and this is why it's taught first. Area planting really only becomes quite useful when you're on difficult blocks with lots of slash. Of course, as a first-year planter, you'll think that all your blocks are difficult, but chances are high that you'll be working on fairly simple ground when you're a rookie.

Piece Management

Piece management refers to the approach that you take in covering the ground in the "piece" of the block that you're assigned to. There are almost always many different ways to approach your piece, and different patterns or paths that you can follow when covering the ground within it. Proper piece management can minimize the amount of time that you spend dead-walking (walking across your piece without planting trees), and can increase your overall productivity and earnings.

The first rule of piece management is "always plant the back first." In fact, after "always follow trees," planting the back first is probably the second most important fundamental rule of tree planting. However, this does not mean that you bag up, walk to the bag of the piece, and start working. That would mean that you're dead-walking into the back (and again when you come back out to the cache for more trees), and dead-walking is not efficient. Therefore, you should plant a single line of trees into the back, and then cover as much of the back as possible.

The "L" pattern is the most well-known basic pattern for good piece management. With an "L" pattern, you make a mental note of how many trees are in your bags, and plan to plant the first half of your bag-up while heading into the piece and along the back, then when you've planted half of your trees, you turn around and plant a second line back out to the cache. In theory, this means that you'll run out of trees approximately when you are arriving back at the cache at the front of your piece, which practically eliminates any dead-walking.

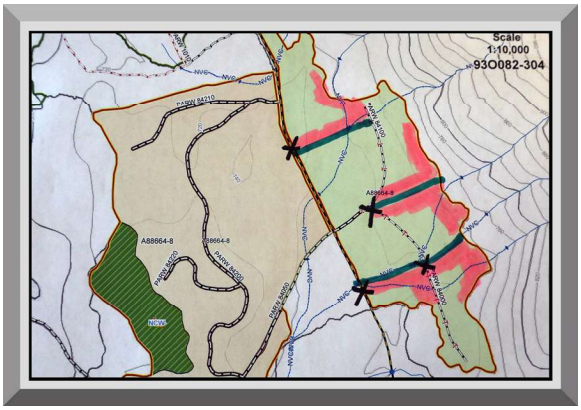

Figure 21.03
Planting an "L" Pattern.

A crew started the block on the right after lunch. Five planters each started their own pieces. The green lines indicate arbitrary flagged boundaries between pieces, to keep things organized. The black X's are cache locations. The pink highlighter shows some L patterns.

Often, you'll end up doing a modified "L" pattern. If you end up reaching your back woodline, and do a line of trees along the back of your piece, but you haven't yet reached the half-way point of your bag-up, you may end up planting a few lines back and forth along the back of your piece before you start running low on trees and need to head back out to the cache.

So long as the front of your piece is at least as wide as the back, you probably won't run into problems with cutting off your access. However, if the front of your piece is quite narrow and you have a big pocket in the back, each time that you start a fresh bag-up and plant a line in, you're making the open area at the front of your piece even narrower. In this situation, you may eventually

end up "pinching the front," and after that, you'll be forced to walk future bag-ups into the "hole" in the back of your piece, to find the open ground. This is never a great situation, as it can sometimes lead to unplanted holes remaining on the block after the crew has left, if the planters aren't communicating well with the crew leader. If you think you're going to end up pinching your front, and you know that you'll have to walk some bag-ups into the back eventually anyway, it's usually smart to walk those in before your front is cut off, so you never actually end up creating an isolated hole in your piece. This is especially applicable if there's a chance that your crew leader may need to throw an extra planter to help finish your piece at some point; it's good planter etiquette to ensure that if a planter has to help you finish a piece, they're not planting the shitty parts after you've already covered the easy ground.

If you look at the media page for this chapter, you'll find some useful videos that cover various types of piece management demonstrations. You'll see the link at the end of this chapter.

Obstacle Planting

Obstacle planting is a technique whereby a planter intentionally tries to plant all of his/her seedlings beside "obstacles." Depending on the contract, various things can count as obstacles. In most areas, stumps and logs are considered to be the best two types of obstacles, and sometimes rocks are also considered to be acceptable.

The reason for planting beside obstacles is because they provide protection of some sort for the tree. There are two general reasons why a tree might need protection, from weather or from cattle. If the forester is concerned about protecting a tree from weather, it can be further broken down into one of three main reasons: shade from direct heat, protection from chinooks, and protection from snow press.

Figure 21.04
Tree Planted Beside Obstacle.

This broken stump will act as a good obstacle to protect the tree from the elements (wind, direct sunlight during drought periods, and snowpress).

If a forester is asking for trees to be protected from direct heat (which can lead to desiccation mortality, if the trees' roots dry out), the forester will require the use of "directional" obstacles. The forester will want your seedlings to be planted on the north or northeast side of obstacles, to protect the tree during the hottest part of the day, when the afternoon sun is in the south or southwest.

Obstacle planting for chinooks is really only practiced in a few places in southern Alberta. In those locations, the foresters will probably want the tree planted on the northeast or east side of obstacles, to prevent the tree from chinook winds that can come down off the Rockies in the winter. Snow acts as an insulating blanket for trees during the winter, so if a chinook melts all the snow from around the tree, it becomes more susceptible to subsequent frost damage and desiccation in dry winter air.

When obstacles are intended to combat snow press, the direction of the obstacle doesn't matter. The theory is that a tree planted beside an obstacle is somewhat sheltered from swirling winds and snow during a storm, so the seedling is more likely to remain standing straight upright as the snow builds up around it, rather than the snow crushing the tree over sideways and giving it a crooked stem.

Finally, in many parts of BC, ranchers have grazing leases, which allow them to graze their cattle in areas where blocks have been harvested. In those areas, the presence of cattle on the blocks during and after planting means that a lot of the seedlings will get trampled. Cows are heavy, so they can cause a lot of mortality to a plantation. However, as dumb as cows appear, they often recognize large objects (obstacles) and try not to step on these objects, so they don't lose their footing. If a tree is planted close to an obstacle, it seems that it is less likely to be stepped on by a cow.

No matter what the reason is for obstacle planting, the typical requirement is for trees to be planted fairly close to the obstacles. If the tree is too far from the obstacle, it's as if there isn't an obstacle there in the first place. Therefore, most foresters will specify that seedlings must be planted within twelve inches of an obstacle, and in some cases, the requirement is as low as six inches. Of course, there is a usually a separate quality-related requirement that seedlings not be planted with their plugs pressed up against the roots of stumps, so you don't want to get too close to the obstacle if you're planting beside a stump.

Fill Planting & Replants

Fill planting doesn't refer to a type of site preparation. It refers to a type of block or a type of stocking, although some foresters will still list it as a type of site prep. When a block is first harvested, there may not be a lot of young crop trees evident. Before planting, there are two different types of crop trees that may be found on a block: naturals and residuals. Many people use the terms synonymously. However, they can be technically defined to have different meanings.

I would define a residual to be a young or suppressed or genetically inferior tree of an acceptable crop species (perhaps pine, spruce, Douglas fir, and other important species) which survived the harvesting process. Residuals can be mature, and are sometimes left standing intentionally in patches, for wildlife shelter/habitat, or for ecological diversity. Residuals can also be young trees that were maybe driven over during the harvesting process, but which didn't die, and which sprang back up and are starting to become juvenile trees. Often, these young residuals are in rough shape.

I would define a natural to be a newly spouted young tree, which started to grow up after the harvesting was complete. These young naturals usually turn into much healthier trees than the residuals which started to grow before the harvesting process. To further confuse matters, trees which were planted a few years prior will also sometimes be referred to as naturals when doing a fill plant.

Either way, when a block is a few years post-harvest, it often features a lot of naturals and/or residuals. If it has already been planted once, there will presumably also be a number of surviving planted seedlings. Sometimes, it is easy to tell the planted seedlings apart from the naturals & residuals, due to a number of varying factors: Form, vigour, age, colour, health, species, and spacing. At other times, it isn't easy to tell whether a given tree grew naturally or was planted.

Many of our plantations perform surprisingly well, with low seedling mortality. Unfortunately, at other times, quite a few of our planted trees don't survive, so the remaining natural and planted stock looks quite patchy. In such a case, a forester may determine that there aren't enough viable crop trees for a block to meet regen requirements, and additional trees should be planted. In such a situation, the block will either be planted as a fill plant or as a replant.

Figure 21.05
A Block that Requires Fill Planting.

Although this block does have quite a few trees on it, of various heights, you can see some patches where there are no trees growing yet. Planters will walk through this entire block, and anywhere that there are "voids" or "holes" without acceptable crop trees, new seedlings will be added.

For a fill plant, a planter will walk around the block, looking for "openings" among the growing crop trees (called voids) where additional trees can be planted. Of course, minimum and target spacing rules are still important. A planter isn't allowed to plant new trees just anywhere. The new trees can only go into microsites which are at least minimum spacing away from all other acceptable crop trees. If you remember the section talking about how a missed spot is determined, you are only supposed to plant additional trees into the "missed spots" on the block. There are a few things that make a fill plant more difficult and/or confusing:
~ Since there are already trees on the block, the planter needs to walk much further on average to plant each tree, since you need to walk past existing trees.
~ Each existing crop tree, regardless of whether it was planted or was a residual or natural, must be assessed by the planter to determine whether it is an "acceptable" crop tree. This takes a few seconds. A natural that isn't considered to be acceptable would be one which doesn't have good

form or vigor, and which doesn't meet a minimum height requirement. Such a tree is ignored while fill planting.
~ It can be difficult for a planter to see where he/she has walked, since there aren't always freshly planted trees to give visual cues. Therefore, it is important to flag your path as you work your way around a fill, so you don't cover the same ground twice, wasting time.
~ Fill plants, which are usually several years old, will almost always have more grass, brush, and competing vegetation than freshly harvested blocks.

A "replant" block is somewhat similar to a fill plant, although the terminology is confusing because a replant has additional meanings. Replanting may refer to what happens when a planter has to fix poor quality in their piece. Replanting is also treated as synonymous with reforestation by some people. However, in the context of the term that I am currently referring to, think of a replant as being a "plant the **entire** block a second time" type of approach. A replant is somewhat similar to a fill plant in the sense that there will be a lot of crop trees present that will confuse the planter, however, you still need to plant a complete new blanket of trees across the entire block. I've also heard of this type of approach called a "matrix fill." In a replant, you ignore all existing crop trees, even if they appear to be healthy. It is also important to understand that this terminology is only used in some regions, and is not necessarily common throughout the industry. Due to the fact that it's fairly uncommon to ignore apparently healthy existing naturals, "replant" blocks are relatively rare.

There is a good reason why replant blocks are far less common than fill plants. Normally, a forester would want to take advantage of any existing trees which might mature into good timber in the future. Sometimes however, naturals which might look good to a planter are known to the forester to be a problem. Perhaps there is some sort of disease which has hit the plantation, and the forester knows that all the trees are going to be dead within a year or two. In that case, a replant of the entire block, ignoring the doomed trees, makes sense. You may find that most replants are done with different species than the ones on the block which have the disease, otherwise, the newly planted seedlings might catch the same disease. The approach to planting a replant block is exactly the same as for planting a fresh new raw block, although the presence of what appear to be crop trees will confuse the planters somewhat. It is still possible to "follow trees" through the block and not use flagging tape to mark new trees. I wouldn't recommend it though. It's much faster and more efficient to work a replant block with extensive use of flagging tape.

Replants are generally priced slightly higher than new raw blocks, simply because they are slightly more confusing, and usually have more grass and vegetation. Fill plants, on the other hand, are usually priced significantly higher than straight plants, because of their difficulty. A fill plant requires a lot more thinking, and the planters have to do a lot more walking (yet get to plant a smaller number of trees). Fill plants can be extremely confusing for first-year planters, so a company may try to restrict those blocks to skilled vets only.

Be aware that many foresters use different types of terminology for these block types. For example, some foresters refer to a "fill" as a block that needs to be properly fill planted (respecting naturals), with the block's history being that it was never planted before and only dragged and/or left for natural regeneration. Those same foresters refer to a "replant" as a block that WAS planted at least once before, and needs to be done again, while properly respecting any existing good trees that happen to be on the block. In that sense, this definition for a "replant" is quite different than what a planter understands. Basically, this type of replant is a "real fill" instead of a "matrix fill." Confused? Now you can see why it's important to make sure you have a proper understanding of what the forester is asking for, even if the name isn't what you're used to.

In order to be successful at fill planting, you need to be good with flagging. You don't just flag trees that you plant; you also flag naturals that you walk past, to show where you've been. You have to thoroughly understand spacing rules. Fill plants can be very dangerous because it is extremely easy to get an excess fine. Remember that when excess is calculated, it is based on the number of trees PLANTED in a plot. Let's use a numerical example. Let's say that your target spacing is seven trees per plot in a straight plant, and you plant eight trees. That means you have one excess tree in the plot, which when divided by the total number of trees planted, gives you an excess for the plot of 12.5% (one extra tree divided by eight planted). However, let's say that you have a fill plant, and it has six well-spaced naturals, and you plant two more trees. In that case, the plot still has eight crop trees in the end (six naturals and two planted), and since it is only supposed to have seven, you still have only one excess tree. But in this case, the excess (1 tree) is divided by the number of trees planted (2 trees) and therefore the excess percentage is 50.0% - that's a disaster! So you really, really need to be careful not to try to jam in too many trees in a fill plant. That's especially hard considering that you're usually really fighting to try to find spots to put trees, and they're higher priced than normal trees, so as a planter, you really want to push the rules.

Many people also assume that it is harder to get good quality in a fill plant. This is an interesting mathematical issue. I would argue that it is NOT harder to get good quality in a fill. That's because, unlike with excess, both the numerator (number of satisfactory trees) and denominator (total trees planted) in the planting quality percentage fraction are changing equivalently. In order words, it is true that a single bad tree represents a much bigger hit to the quality. However, this is offset by the fact that less trees are checked, so there are less opportunities to find bad trees. If you survey a given number of trees, the quality will be the same (statistically speaking) regardless of whether the density is high (straight planting) or low (fill planting). Of course, those of you who are familiar with statistical analysis realize that what IS affected is the standard deviation. You can expect bigger swings in the accuracy of sampled results, in both directions (good or bad) when a smaller number of trees are sampled.

When looking at a fill plant prescription, you'll usually be given two numbers. The first is the expected number of trees that will be planted per hectare, and the second is the target density. The target density is assumed to include both your new trees, and any good naturals. So if a fill plant was listed as 600/1400 for density, that would mean that the forester wants a total of 1400 stems/Ha

including both newly planted trees and good naturals, and expects that you'll be planting approximately 600 trees per hectare to make that happen. In other words, the forester guesses that you'll be adding about 3 trees per plot to bring the plots up to a total of 7 trees each. This implies that surveys have assessed an average of about 800 stems/ha of acceptable naturals already on the block. Be wary of these predictions though. Fill plants usually have very inconsistent survival across the block, so regen surveys can often be wildly incorrect. Your end goal in this example is to plant whatever number of trees in each plot is required to bring it up to the target density of 7 trees, NOT to always plant 3 trees in each plot. The estimate that three trees will be needed per plot was purely a rough guess based upon a surveyor's samples, to help estimate how many trees will need to be assigned to the block.

When approaching a fill plant, it can be useful to know if the reason for the fill is because the block was originally left for natural regeneration, which wasn't successful enough to pass surveys, or if it's because a lot of the trees that were originally planted on the block ended up with mortality issues. If the block was left for natural regen, it will often appear to be very "patchy" when looking for good naturals. In one area, you may see hundreds of closely packed young naturals, and in another area, you may see almost no crop trees growing. On the other hand, if you're looking at a planted block which experienced mortality, it's often possible to see the pattern that the previous planters used. In this type of a block, the mortality is more widespread across the block.

There are advantages and disadvantages for the planter to both types of blocks. In a patchy fill based on failed natural regeneration, a planter may have large patches with good survival, and the planter can basically walk through large areas quickly. When a patch with poor survival is discovered, it's easy to plant a lot of trees quickly. On the other hand, with a plantation that experienced mortality, the dead trees are often scattered randomly across the block. This means more walking, because every part of the block needs to be covered again. On a positive note though, it's often possible to pay attention to exactly where the previous planter put all of his/her trees, and for the fill planter to just plant new fill trees in the exact same spots where any previous trees died. Spacing is usually easier to figure out in a previously-planted block, and there is less frustration with trying to find places to plant new trees that aren't under a minimum distance from other good trees. Essentially, there is a partial "grid" for trees already laid out for you. Of course, nothing is ever that black and white when it comes to fill planting. Many blocks that need to be fill planted will contain a mix of natural regen and surviving trees from the previous plantation. In that case, you just have to walk and pay attention everywhere.

It's usually easier to plant a fill plant during the spring, before competing grasses and vegetation bud out and the blocks green up. I guess this is the case for almost every type of planting, but if you're trying to fill plant a block where the good crop trees or good naturals are small, it's not fun if they're hidden by brush and vegetation.

Due to the number of severe wildfire years in the past decade, we're seeing a lot of "wildfire" fill plants. These are slightly different than a fill plant based on generic seedling mortality or pest

damage. With a wildfire, the fire often hits parts of a block, but leaves pockets of untouched crop trees. Therefore, wildfire fills can be a lot more patchy than normal fills. This can make them slightly easier. Imagine a block of 100,000 trees where every second tree died due to insect attack, and the dead trees are found randomly throughout the entire block. Contrast this with a block of 100,000 trees where 50% of the block burned, but it was only a large patch on the west side. Planters need to cover the entire block in the first example, whereas in the wildfire example, they probably only need to cover the half of the block that was burned, and can treat it almost as if it's just an open block. But of course there are also wildfire blocks with low-intensity fires where the planters have to go through the entire block and look for dead trees to replace.

Roads & Burns

Roads and burns can be extremely easy ground, or they can be extremely challenging, or anything in between. Really, these are two completely separate types of planting, although often they happen in tandem. Expect a slightly higher price than for normal blocks, even the ground is technically easier than raw ground, because you'll be doing a lot of walking which will have an obvious negative impact on your daily production.

Roads in the blocks, as noted elsewhere, can be deactivated or reclaimed. A deactivated road is one where access onto the road is blocked, perhaps by a giant pile of dirt or a giant ditch dug across the road, or maybe a pile of logs. Beyond that point, the road is probably still recognizable and usable. A reclaimed road, on the other hand, is one that has been completely torn up. The entire road surface is made to be irregular and unusable. Additional dirt and stumps and logs and boulders might also be dragged onto the strip where the road used to exist. And of course, sometimes the roads that we find on blocks are still active and usable.

When planting roads, you may encounter any or all of those three situations. Granted, you are much less likely to be asked to plant an active road than one that has been deactivated or reclaimed, because active roads are probably still useful. And if a forester wants to plant a road, they're probably going to want to deactivate or reclaim it first, to ensure that people don't drive on it and kill the seedlings. That's always a risk with drunken [civilian] weekend warriors who are out spending a few days ripping around on ATV's.

A reclaimed road is usually going to be the easiest of the three types to plant, by far, because the road has probably been reclaimed specifically to facilitate planting. Obviously, a road that hasn't been reclaimed probably has a solid and hard-packed road surface, so it may be hard to get your shovel in. You might even still have a gravel surface. Not fun.

When it comes to planting burns, the implication here is that the former slash piles were burned, and you'll be planting the patches where they used to sit. These burned areas are great to plant in, since the hot fires usually burned down to clear mineral soil with just a few inches of ash on top of the dirt.

Interestingly, trees planted in burns usually grow much faster than the rest of the trees on the block, probably because of the large amount of carbon at the microsite, from the ashes. Some people call them "burn piles" (even though there's no pile) to differentiate from broadcast burns (which is when an entire block was burned). If you like the phrase "burn pile," it should really be spelled and pronounced, "burned pile." But I digress.

These burns can usually hold anywhere from maybe ten to twenty trees apiece, although of course there can be much bigger burns too. And sometimes you'll unfortunately encounter small burns that can just accommodate a handful of trees at proper spacing. Either way, you'll only be able to plant a limited number of trees before you need to go for a walk to find the next burn.

Sometimes you can find all the burns very easily, because there is so little vegetation that you can see the burns ahead of you. Other times, the vegetation on the block has grown up, so you need to get close to the next burn before you can see it. With any luck, you'll be on a block which had roadside processing when it was harvested. In those blocks, all the trees were processed (topped, limbed) after they were dragged close to the road. The resulting mess of branches and sticks was therefore close to the road, so when machines came in to "sweep up" the block and push everything up into big piles of slash for burning, all of the piles are naturally close to the road. In this case, you just need to walk up and down each side of each road in order to find all the burns. But if you're unlucky, the harvesters were doing stump-side processing, in which case all the trees were processed where they were cut, and all the slash was distributed evenly over the block. In those cases, the machines that swept up the slash into piles may have left slash piles randomly scattered all over the entire block. In that case, if the vegetation doesn't let you see the rest of the block, you're going to need to criss-cross the entire block in order to make sure you didn't miss any burns. This is where a map of the burned pile locations, an ortho photo, or a drone can come in handy.

Quite often, the slash piles don't get burned until after the main block was planted. If that was the case, then when you're planting the burns, you'll be able to see last year's planted trees outside the burns. You'll be expected to plant "out to the planted trees" from the previous year. Normally, planters are told to stay about three meters away from the edges of the slash piles when they planted the block. This means that in addition to an empty circle of black ash where the slash pile used to sit, there's probably space for another ring or even two more rings of trees around the edge of the ash, out into the rest of the block. It's good that you'll be planting more trees before having to walk to the next burn. But at the same time, that ring of trees just outside the burn is probably hard to plant because there are probably a lot of unburned sticks to work through.

That's not the end of the challenges. Sometimes (especially in Alberta), the blocks with the burns were harvested as deciduous blocks. In these blocks, the expectation is that aspen will regenerate naturally throughout the harvested ground, except of course in the ash piles where the slash piles were sitting. So in these cases, you won't see any planted trees outside of your burns. This means that you aren't expected to do an extra ring or two outside the burn until you hit planted trees, because there are no planted trees. You just plant where you find the rings of ash.

Now that you understand what a deciduous block is, let's go back to the roads. Normally, when planting a reclaimed road, you're expected to plant "anywhere that there aren't any trees." So you plant up to the former edge of the road, and if the crew that planted the block the previous year stayed 7 meters away from the road, you'll also need to fill in that 7 meter buffer. But be careful before you start making assumptions. If the block was a deciduous block, then again, you'll never find any planted trees. So on those blocks, you have to be careful not to overshoot the reclaimed boundaries and start inadvertently planting too many trees into the block itself, which doesn't need trees. This is especially confusing on an older Alberta deciduous block, because if it's a green block late in the summer, it can be almost impossible to determine where the reclaimed road ends and the edge of the block begins. In that case, ask your crew leader for guidance then make your best guess.

You'll want to make sure you throw some plots on yourself while doing roads and burns. It's very easy to start planting higher density, and on a block like this, payment for the company usually depends on just one or two plots across the entire block (because the number of trees in the block is low). If you accidentally plant twelve trees in a burn that was supposed to take seven trees, and the only pay plot on the block lands in that one burn, then your block comes out with a massive amount of excess. And that means that the company gets a fine. I always tend to throw a plot on myself in every fourth burn when I'm doing burn blocks, just to keep double-checking my own density.

Roads and burns are a nightmare for crew leaders. It's impossible to build a cache when planters are constantly moving for the entire day. And on top of that, if the roads have been deactivated or reclaimed, an ATV probably can't move around the block easily. Planters may need to walk back out to a main road to get more trees, which is a tremendous waste of time. A very smart crew leader with lots of experience can use Avenza to plot out where individual boxes need to be placed, and then use a helicopter with a seismic bag-runner system to deliver individual trees boxes as needed. This is very expensive, but it works really well when you have a crew leader that understands helicopters very well.

Planting roads and burns can be fun, because there's a lot of thinking involved and the ground is often quite decent. But that comes with a price – a lot of extra walking throughout the day, which means that you'll plant less trees than if you were on a normal block.

For more photo and video resources associated with this chapter of the book, including a video demonstrating piece management, visit:
www.replant.ca/training/additionaltechniques