



Silviculture Site Preparation

Site Prep

A Silviculturalist, or Silviculture Forester, will often look at a cut block and decide that the most effective way to maximize regeneration on the block will be to perform some sort of mechanical site preparation (site prep using machines, as opposed to having the planters perform hand/shovel/boot screefing). There are a wide variety of types of site prep, and generally, most of these are performed by either skidders, dozers, or excavators, which have various tools and attachments.

Disc trenching happens when a skidder or excavator has two discs attached to the back, and as it travels across the block, the discs dig into the ground and flip sod and soil up and to one side, so a pair of two trenches are created across the block. These trenches are generally about a foot to two feet in size from the bottom of the trench to the top of the thrown debris, and trees are either planted in the bottom of the trench or up on the side, depending on the region.

Ripper plows are generally a large tooth or plow impediment that is attached to a machine, and as it gets pulled across the block it rips a sort of trench open behind it to expose the soil.

Dragging happens when a dozer drags a set of very large and heavy metal drums called shark-fin barrels across the block, and these barrels, with large teeth on them, have enough weight to really flatten and break up slash, and distribute it more evenly across a block. This is for a variety of reasons, which include making it easier to walk on the block, eliminating areas where slash makes it difficult to plant, spreading coarse woody debris around for future decomposition and fertilization of the future forest, and to help distribute and break up cones that will release seeds and assist with natural regeneration.

Other common types of site prep are usually performed by excavators. Excavator or Hoe mounds are made when an excavator digs a number of holes all over the block and scoops out the dirt from each hole and flips it upside down beside the hole. The planter then plants a tree on the top of the exposed pile of dirt. These piles are often one to two feet in height and perhaps a couple feet across. This type of prep is a lot slower and more expensive than machines that can move quickly, like trenchers. However, excavators can generally work on steeper slopes than trenchers, and excavator mounds are generally a much more effective form of treatment in swampy or wet areas.

Excavators sometimes also do a different type of prep, especially on slopes, called scrapes. The excavator rests the tines of the bucket on the ground and gently pulls back to create a rectangle of exposed mineral soil. When the planter arrives to the block later, he/she can plant a tree in the center of each exposed scrape. This is a good treatment that minimizes competition from grasses and nearby brush.

There is also another type of mounding called “donaren” mounding, which is a sort of cross between excavator mounding and disc trenching. With donaren mounding, a pair of rotating scoops are attached to the back of a machine and it travels across a block quite quickly, flipping up two lines of smaller mounds.



The main four pieces of heavy equipment used for examples of mechanical site prep are the front-end loader, grader, excavator, and dozer, but in Silvicultural Site Prep, it is the excavator, dozer and skidder that are most important.

Commercial thinning is a type of thinning that is performed well after a plantation has become established and once the trees are fairly large. At this point, there may be enough wood in the trees being cut that they can be useful for production, perhaps for small lumber (2x4's) or more frequently for pulp & paper. A stand may be juvenile spaced five to fifteen years after being planted, but the commercial thinning might happen between twenty and thirty years after it is planted. Essentially, commercial thinning is a "pre-harvest" cutting which might pull out half of the trees for commercial use, instead of just dropping them on the ground and leaving them to rot. The remaining trees in the stand then have more room to grow properly to maturity. In a commercial thinning, the stand is too mature for brush saws, so chain saws and/or harvesting equipment is used to perform the thinning work.

Brushcutting and mulching are activities which are commonly associated with construction and maintenance of highways, rights-of-way, and power transmission corridors, rather than being associated with Silviculture. However, mulchers are sometimes effective in stands that were not planned/established correctly from the start, where a forester decides that the best approach is to start fresh. Mulchers are often able to plow through stands with trees of up to six inches in diameter or larger and knock down the existing vegetation and mulch it into chips which are spread across the ground. A new plantation can then be established. Mulchers or chippers can also be used to mulch stands for biomass, to be used in various types of environmentally friendly "green" energy generation.

Erosion control planning is sometimes a function of the Harvesting department, and sometimes a function of the Silviculture department. On any slopes, once a stand is harvested, there is always a risk that rain and surface run-off can wash soil away, which is very bad for the local watershed and for the health of the future stand. There are a number of ways to mitigate the effects of erosion, through methods such as cross-ditching, creating terraces, seeding, planting of brush and willows, installing culverts and drainage ditches, etc. Protecting habitat from erosion is always a necessary challenge.

Carbon offset work usually involves planning and planting new stands on previously cut areas (reforestation) or on existing pasture or retired farmland (afforestation). The difference between these stands and stands designed for traditional logging cycles is that these are intended to be permanent stands. Rather than planting species which are intended to maximize commercial value for future generations, the goal may instead be to plant species which have the greatest amount of biomass and which can function most effectively to trap the greatest amount of carbon emissions.

Logging is very closely related to Silviculture. Logging is the primary economic activity in the field of Forestry, and it is what provides the economic benefits that help society grow. Logging is also the primary reason why *Silviculture is necessary*: to bring harvested lands back to a state where they can be useful for future generations, either for wildlife, or for human recreational purposes, or for additional commercial exploitation.