



TEXAS A&M FOREST SERVICE

Reforestation: Overview of Pine Planting Methods

Landowners decide to plant pine seedlings for a number of reasons. This can be to reforest a site that was recently harvested or to convert pastureland into a pine forest. Along with how to prepare the site, a decision will need to be made whether to have the site machine planted or hand planted. The following information can help in determining what is best based on previous and current site conditions.



Machine Planting:

Wildland machine planting: This equipment is most applicable to cutover sites that have had some form of site preparation to clear logging debris. Limitations include sites with excessive slope, extreme wetness, and large rock or other debris. Wildland machine planting is accomplished by using a heavy tracked vehicle to pull the planting apparatus. A wildland planter is a heavy planting machine usually enclosed to protect the seedlings and occupant from the weather and limbs or other brush passing over and around the planter. The planter is heavy because of the roughness of the sites that it is used on and to allow it to cut through root systems and debris that are left on cutover tracts. As the planter is pulled along, a coultter blade cuts through roots and other obstacles opening a narrow slit in the ground. The coultter blade is followed by

the planting foot which opens a slightly wider furrow. The furrow should be at least 10 inches deep. The seedlings are placed in a mechanical arm that plants the trees in the furrow at a predetermined spacing. As the trees are planted, slightly tilted wheels behind the planter pack the seedlings and close up the furrow. Burning, piling, or some other form of site preparation may be needed before planting on sites with heavy debris. A dozer equipped with a v-blade can also be used to push debris aside at the same time that the tract is planted. This method typically plants between 5 and 15 acres per day depending on the degree of vegetative/debris cover present, terrain, etc.



Open-land machine planting: This equipment is used most often in open fields or pastures. Limitations include sites with excessive slope, extreme wetness, large brush or other vegetation, numerous obstructions, etc. This practice can follow a subsoil operation where necessary. Open-land machine planting is usually accomplished using rubber-tired tractors pulling relatively lightweight covered or open topped planters. As the planter is pulled along, a coultter blade cuts through grass and small roots opening a narrow slit in the ground. The coultter blade is then followed by the planting foot which opens a slightly wider furrow to a minimum depth of 10 inches. One person rides in the planter and “feeds” the seedlings into mechanical arms or directly

Reforestation: Overview of Pine Planting Methods

into the furrow depending on the planter model. The seedlings are placed at a predetermined depth and spacing that can be adjusted manually or mechanically and should remain somewhat uniform and consistent across the planting site. As the seedlings are planted, the furrow is closed around the seedling roots and the loose soil is packed back in around the roots by slightly tilted packing wheels on the rear of the planter. This method typically plants between 10 and 15 acres per day.

Benefits of Machine Planting:

This operation has several advantages over other planting techniques. This method generally produces higher survival rates than hand planting. The higher survival rates are due to many factors. A machine planter breaks up the soil, which promotes better root growth of seedlings. The planter also produces less j-rooting of seedlings because of the deep furrow that it cuts and the consistency in the way seedlings are put in the ground. Also, the soil is packed more firmly around the seedling roots than when trees are hand planted. Another advantage is that machine planting provides a uniform, precise spacing.

Considerations for Machine Planting:

Several factors need to be considered to ensure a quality planting job. Planting operations should be conducted on the contour to prevent possible erosion problems. Precautions should be taken to ensure that the planting foot is cutting the furrow to the proper depth, that the packing wheels are closing the furrow properly and that no debris is allowed to fall into the furrow. Some areas may be inaccessible due to their small size, steep slopes, excessive wetness, etc. and will have to be hand planted. Landowners should check with their vendor on their ability to fill in these areas by hand. It is not feasible to plant extremely small tracts with this method. While it is possible to use an open-land planter in heavily vegetated fields, it is preferred to mow or burn the grass prior to the operation. This reduces the amount of debris that gets in the planting furrow. Also, the grass not cut by the coulter wheel can clog the planter requiring the driver to stop and manually remove the debris before proceeding. Many open fields may have gophers present and should be checked and treated if needed to prevent seedling mortality.

Hand Planting:

Hand planting is a method of reforesting a tract of land where the planter walks over the property planting trees with a tool such as a dibble bar, hoedad or planting shovel. The planter carries trees in bags strapped to his or her hips and plants on a spacing predetermined by the landowner or his agent according to the desired objectives. A good planter can plant 1000 to 2000 seedlings per day depending on soil conditions and amount of debris or brush present on the tract.



Considerations for Hand Planting:

This practice is beneficial on tracts where little or no site prep has been done as well as tracts that are rough, small, wet or inaccessible to machine planters. No matter how clean a site is, if it is too wet, machine planting is not an option. The landowner must look ahead and anticipate the effects of weather and the conditions of the tract at the proposed time of planting. This method is generally less expensive than wildland planting but on average has poorer survival due to less planting consistency and increased seedling handling and exposure times.

Overall Planting Precautions:

Sites harvested within six months of planting should be planted with pounce treated seedlings to minimize mortality due to pales weevils. It is recommended that the landowner have a planting contract with the vendor to protect both parties in the event that problems arise. Landowners should also check to make sure that the planting vendor can furnish the appropriate documentation for proof of Department of Labor Registration, Worker's Comp or other Insurance, etc.