



As shown in Figure 1, the terrain in the study area varies from swamp land to mountainous areas. The prevailing timber site is on sandy-clay soil with a gently rolling profile up to twenty (20) degrees. Traction is only a problem after prolonged rainy spells. The logging applications in swampy or mountainous areas are so specialized and low in volume that specific machinery marketing cannot be justified. The majority of the mobile vehicles sold in the south have high flotation rubber tires because traction in the woods is generally good and there is not much environmental pressure for erosion control and prevention of stream pollution. Tracked vehicles have high maintenance costs due to excessive track wear in the sandy soils and poor track service because of rocks and stumps. Generally tracked vehicles are only utilized in swamps or where alternate strips of solid land and bogs must be crossed.

The typical logging system in the south is to fell the trees by either shearing or with power chainsaw depending on the size of the trees. The largest popular size shear can handle a twenty (20) inch diameter tree but requires a vehicle of relatively large capacity. The smaller mobile fellers are limited to a ten (10) to twelve (12) inch diameter maximum shear. The trees are delimbed either with saws or by pushing the trees through a delimbing gate. Not one of the logging contractors contacted during this study had a mechanical delimeter or could foresee the need for such an attachment. The branches of all the southern pines fracture easily in a delimbing gate, and this system is considerable cheaper than a separate attachment.

Feller-bunchers are particularly applicable for harvesting plantation timber since the trees tend to be uniform in size, distributed evenly, and generally of the same species.

Thinning has become a major silvicultural practice for increasing the quality of final harvest and can also increase the cubic yield if the immature trees are collected and utilized. Several thinning methods are practiced depending on the desired results but care must be exercised when thinning with mobile equipment to ensure that the remaining trees are not damaged during the thinning operation. The most common thinning method is row thinning where entire rows of a stand are removed. This method can tolerate fairly large shearing machines and skidders because maneuverability is not required. A combination of row and random thinning creates serious demands on equipment selection, as the mobile equipment must remove one row and also randomly cut trees from rows on either side. Small, highly maneuverable machines are necessary for this thinning method which is generally used for the second commercial thinning of a stand.