Harvesting / Site Preparation Influence on Soil Erosion on a Piedmont Soil in Alabama

Issue: In recent years, increased concern has focused on the effects of management operations on forestlands primarily because disturbances can initiate change in the forest dynamics that range from negligible to drastic. Forest operations warranting detailed investigations are generally operations that scarify the forest floor or modify the soil physical properties. Harvesting and site preparation, two primary operations of concern, are operations often involving mechanized equipment resulting in increased forest floor scarification, compaction, and rutting. Scarification of the forest floor can prove beneficial in improving infiltration, thus reducing surface runoff volumes. By the same mechanisms, scarification of the forest floor causes increased potential for erosion due to lack of surface cover to protect soil from raindrop splash and greater potential for soil transport by surface runoff. The design of environmentally sustainable forest management systems hinges on quantifying the impact of forest operations on the forest ecosystem. Information on the magnitude and extent of erosion losses following harvesting and site preparation is needed to further develop models as planning tools in forest management.

Study Description: The study is being conducted on a 25-ha 20-year-old Loblolly pine plantation in the Southern Piedmont of central Alabama near Auburn, AL. Two treatments and a control were used in the investigation. Treatments were: clear-cut harvest, sheared, ripped, bedded, and machine planted on contour, clear-cut harvest and machine planted on contour, and undisturbed. Three replications of each treatment and control are currently being monitored to determine soil erosion and runoff losses from study areas.

Status: The study was installed during the summer of 1998 and continues to be monitored.

Benefits:

- *To determine the influence of harvesting and site preparation on soil movement from selected treatments.*
- *Assess the influence of harvesting and site preparation on runoff production from this Piedmont soil in Alabama.*
- *Evaluate the influence of time on soil losses and runoff from the selected treatments in comparison to the undisturbed control.*

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