

Case Study: Erosion and Nutrient Losses During Pine Forest Establishment

Location: Pine forest, Imbil

Client: Hyne & Son Pty Ltd and Qld Department of Primary Industries — Forestry.

Major emphases of the study were to investigate (i) hillslope erosion processes during the inter-rotation period, and (ii) off-site impacts. In particular, the study focused on the impacts of stick-raking and high-mounding on a site's erodibility and hydraulic properties.

Three indicators of sustainability were used: (i) soil loss; (ii) nutrient loss; and (iii) off-site nutrient pollution.

In the study area, clearfall harvesting resulted in a relatively uniform distribution of residue which together with naturally occurring understorey material formed a continuous groundcover. Sites in this condition were stable, with negligible soil loss, nutrient loss or off-site nutrient pollution.

The study demonstrated that properly designed and constructed mounds (i) are stable, even for long furrow lengths, and (ii) restrict sediment availability for entrainment by, and transport in, runoff. Mounded areas, do however pose a significant off-site pollution risk prior to establishment of grass cover, as considerable enrichment of N and P in runoff was measured.



Rainfall simulation set up to study erosion and nutrient movement within the mound furrow system used for pine forest establishment.



Overland flow used to study furrow stability. Large flows used to simulate long furrow lengths.