

ENVIRONMENTAL ASPECTS OF SILVICULTURE (Ch.6)

LAND AND SOIL PREPARATION (p77)

Refer to the following legislation: **Conservation of Agricultural Resources Act (CARA), Act No. 43 of 1983**

The primary objective of land and soil preparation for the establishment of or re-establishment of a commercial plantation is three-fold:

- To optimise soil conditions for root growth
- To remove competing vegetation
- To minimise soil erosion

NOTE: Land preparation for rapid root growth and production of even aged stands should NOT compromise soil structure, nutrient status and soil carbon content.

Site status determines preparation method.

VIRGIN LAND

An environmental authorisation and Water Use License (WUL) will be required.

Intense cultivation achieves the best tree growth response.

NOTE: Intensive cultivation may be in contravention of the Conservation of Agricultural Resources Act (CARA) Act 43 of 1983.

NOTE: It CANNOT be used for steep slopes or highly erodible soil types due to the risk of accelerated erosion.

Recommendations:

- Plough when land has <15% slope and therefore the risk of accelerated erosion is below the acceptable threshold limit.

Where there is an erosion risk:

- Use pitting operations (picks, trowels or mechanical augers) for planting.
- Use herbicides before planting and then at recommended intervals thereafter to reduce the competing vegetation along the proposed tree line.

EX-AGRICULTURAL LAND

It is difficult for roots and water to penetrate the soil easily on ex-agricultural land due to historic, same-depth, tilling operations. These leave 'plough-pans', an abrupt change in soil structure and strength between the loosened top soil and compacted underlying layer.

Recommendations:

- Ripping operation when soil moisture levels are low to loosen the 'plough-pan'.
- Follow up with further cultivation for weed control.

NOTE: Ripping operations should be implemented across the slope to minimise accelerated soil erosion of the rip line.

TIMBER REGENERATION SITE

Impact of site preparation on tree growth is not as clearly defined as it is with new sites. With any improvement in tree growth response on intensively prepared sites not persisting.

REASON: Site conditions have already been altered through root activity, litter build-up and changes in the biological soil activity.

Recommendations:

- Minimum tillage approach.
- Pitting operations using hand picks, trowels or mechanical augers.

NOTE: De-stumping to facilitate access for replanting and future harvesting or extraction operations should utilise methods that MINIMISE soil disturbance.

Grinding
Chipping



Stump extraction

