

## Paris soil – texture-contrast soil in granite under wet forest

### Site description

*Occurrence:* In northern Tasmania at medium altitude where mean annual rainfall is >1200 mm

*Parent Material:* In-situ deeply weathered granite

*Landform:* Rolling and hilly land

*Drainage Class:* Moderately well drained or imperfectly drained

*Vegetation:* Wet sclerophyll forest with *Eucalyptus obliqua*, *E. amygdalina*, *Zieria arborescens*, *Pomaderris apetala* and prickly heaths e.g. *Monotoca glauca*

### Distinguishing Soil Properties

*Profile features:*

- Texture-contrast profile with coarse sandy loam textures in upper horizons and clayey textures in deeper subsoil horizons
- The A2 horizon may be loose or firm and massive
- The degree of A2 development and iron accumulation varies – see description in Grant et al. (1995)

*Chemical and physical features*

- Low total C and P, and medium total N in surface layer (0-30 cm)
- Low ability to retain added P (very low P retention) in upper horizons
- Permeability – moderate or slow because of firm subsoil horizons

### Similar soils

- Soil 11.2, Forest Soils of Tasmania (Jensen soil) – similar profile under dry forest at lower altitude
- McKay soil (Laffan et al. 1995; Grant et al. 1995; Laffan et al. 2002) – similar profile in granodiorite under dry forest at lower altitude



## Soil Degradation Potential

FACTOR	RATING OF DEGRADATION POTENTIAL
Erodibility:	Moderate to high
Compaction and puddling:	Moderate
Mixing:	Moderate
Nutrient depletion:	Moderate
Landslides:	Negligible-Slight (depending on slope)
Flooding:	Negligible

## Site Productivity

Low productivity limited by low nutrient levels. Where a thick hardpan exists (in lower A2 horizon), productivity is also limited by restricted rooting depth.

## Soil Management

Management must ensure minimal loss or disturbance of surface layers where organic matter and nutrients are concentrated.

## Native Forest Logging and Regeneration

### LOGGING AND CLEARING:

Minimise the area used for snig tracks. Routine matting and cording is recommended.

### PREPARATION FOR REGENERATION:

Scarification is preferred. Widespread hot burns will deplete low nutrient levels.

### SILVICULTURAL CONSIDERATIONS:

Very low nutrient status will limit productivity. Long rotations will be required.

## Suitability for Plantations

**Marginally suitable** for plantations because of low productivity.

CLEARING: Dozer clearing must be done using a rake blade.

CULTIVATION: Ripping to >50 cm depth is required so that roots can penetrate into the firm B2 horizon and utilise the full profile for nutrients and water.

FERTILISER TREATMENT: Fertilising planted seedlings is required. Secondary fertilisation will be necessary

## Profile

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*Date:* 4 August 2000

*Location:* Turn right off road going south to Loyetea, into Panic Road. Site is 400 m along road, on north side of road, at edge of forest remnant before plantation.

*Map reference:* Sheet 4042 (Loyetea) 412200 5429600

*Landform:* Shoulder of ridge crest

*Vegetation:* *Eucalyptus obliqua* and *Pomaderris apetala*

*Parent material:* Deeply weathered granite

*Drainage:* Imperfectly drained

*Slope:* 5°

*Aspect:* West-northwest

*Altitude:* 405 m

*Photographs:* PDM 8-00-8A (site); 8-00-7A (profile)

*Australian Soil Classification:* **Bleached-Mottled Dystrophic Brown Kurosol**

A11	0-3 cm	Black (5YR2.5/1) (moist) peaty loam; 10% subangular quartz gravels 2-4 mm diameter; loose; moderate 1-2 mm granular structure; abundant fine roots; NaF 0/5.
A12	3-12 cm	Black (10YR2/1) (moist); humic coarse sandy loam; 20% subangular quartz gravels 2-4 mm diameter; weak strength; moderate 2-5 mm granular structure; many fine and medium roots; NaF 0/5.
A21e	12-28 cm	Light brownish grey (10YR6/2) (moist) coarse sandy loam; weak strength; 50% subangular quartz gravels 2-4 mm diameter; single grain structure; few coarse roots; NaF 0/5.
A22e	28-38 cm	Light grey (10YR7/1) (moist) coarse sandy loam (more silt than horizon above); 50% subangular quartz gravels 2-4 mm diameter; firm strength; massive; no roots; NaF 0/5.
B2t	38-90+cm	Yellowish brown (10YR5/8) (moist) medium clay; yellowish brown (10YR5/4) and greyish brown (10YR5/2) clay/organic coats on ped surfaces; 5-10% subangular quartz gravels 2-4 mm diameter; firm; moderate 20-50 mm blocky structure breaking to 10-20 mm blocky structure; common coarse roots; NaF 0/5.

## Laboratory Analyses

Horizon	Depth (cm)	pH (H <sub>2</sub> O)	Total C (%)	Total N (%)	Total P (mg/kg)	Citrate-dithionite Fe (%)	P retention (%)	Water stable aggregates (%)
	<b>0-30</b>	4.1	3.9	0.19	60	0.23	4	n.d.
A11	0-3	3.9	23.1	0.90	300	0.27	3	n.d.
A12	3-12	4.1	7.3	0.29	90	0.36	7	56
A21e	12-28	4.6	1.4	0.03	30	0.11	0	50
A22e	28-38	4.6	1.5	0.01	20	0.02	0	29
B2t	38-90	4.2	1.6	0.05	50	1.8	34	45

Analytical methods were those of Blakemore et al. (1987), Laffan et al. (1996) and Rayment and Higginson (1992), except that total C was analysed by the Walkley/Black digestion method.

## References

- Blakemore, L. C.; Searle, P. L. and Daly, B. K. 1987. Methods of chemical analysis of soils. *New Zealand Soil Bureau Scientific Report 80*.
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