Rossarden soil – gradational soil in weakly weathered granite under moist forest at medium altitude

Site description

Occurrence: In northeastern lowland Tasmania where mean annual rainfall is >1200 mm
Parent Material: In-situ weakly weathered granite
Landform: Rolling and hilly land
Drainage Class: Well drained
Vegetation: Moist sclerophyll forest with *Eucalyptus delegatensis, E. dalrympleana, Pteridium esculentum*, prickley heath, *Gahnia grandis* and *Poa* grasses.

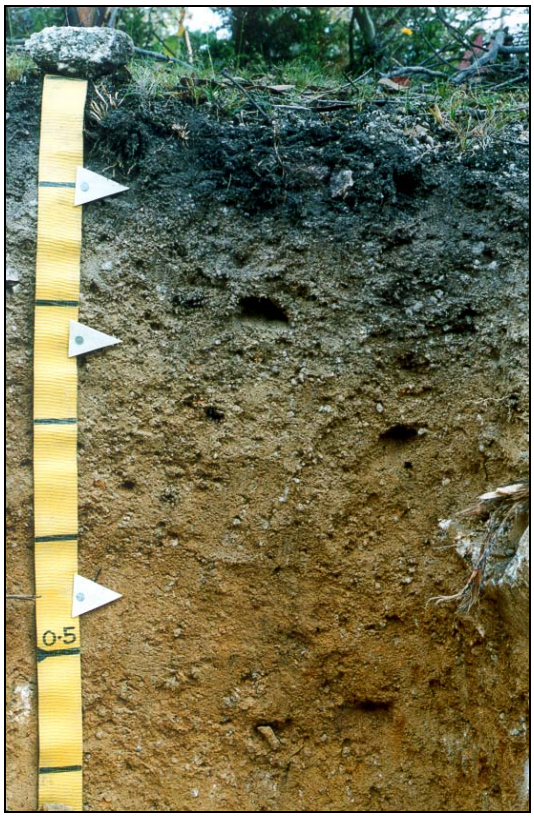
Distinguishing Soil Properties

Profile Features:

- Weakly bleached A2 horizon
- Gradational profile - sandy over sandy loam or clay loam textures
- Firm and massive in lower subsoils

Chemical and physical features

- Low total C and N, and medium total P in surface layer (0-30 cm)
- Permeability – slow to moderate



Similar soils

The soils superficially resemble Stronach soils (Forest Soils of Tasmania Soil 11.3), but are distinguished by the thin A1 and A2 horizons and massive subsoils. Rossarden soils appear to be unusually young soils with little weathering or pedological development except for topsoil accumulation, weak weathering in subsoils, and the weak development of an A2 horizon.

Soil Degradation Potential

FACTOR	RATING OF DEGRADATION POTENTIAL
Erodibility:	Moderate (estimated)
Compaction and puddling:	Moderate
Mixing:	Moderate
Nutrient depletion:	Moderate
Landslides:	Slight
Flooding:	Negligible

Site Productivity

Low productivity, limited by low reserves of nutrients, medium to high altitude and restricited rooting depth. The soils superficially resemble high-productivity Stronach soils, but are much less fertile.

Soil Management

In native forest management, surface horizons should be left intact as far as possible. Excessive disturbance and burning will reduce productivity and should be avoided.

Native Forest Logging and Regeneration

LOGGING AND CLEARING:
Nutrient levels are low and concentrated in the surface horizon. Selective logging rather than clearfelling is appropriate.
PREPARATION FOR REGENERATION:
Minimal seedbed preparation is required. Disturbance during logging should be sufficient. Burning should be minimised.
SILVICULTURAL CONSIDERATIONS:
Low nutrient status limits long-term productivity. Long-term management using selective logging techniques is likely to be a viable option. Frost may affect planted seedlings.

Suitability for Plantations

Marginally suitable for plantations due to low site productivity.
CLEARING: Dozer clearing must be done using a rake blade.
CULTIVATION: Ripping is not required. Cultivation according to the Code provisions for moderate erodibility soils will ensure good environmental outcomes.
FERTILISER TREATMENT: Fertilising planted seedlings is required. Secondary fertilisation will be necessary.

Profile

Author: M. D. Laffan and P.D. McIntosh
Date: 19 February 2002
Location: Road cutting on west side of forestry road running parallel to Gipps Creek Road, Rossarden.
Map reference: Sheet 5438 (Stanhope) 555800 555850
Landform: Undulating plateau in hill country
Vegetation: *Eucalyptus delegatensis* and *E.dalrympleana* forest. *Pteridium esculentum* and *Poa* grasses and short pricklies in understorey.
Parent material: Strongly weathered granite
Drainage: Well drained
Slope: 2°
Aspect: East
Altitude: 715 m
Photographs: PDM 2-02-18 (site); 2-02-19 (profile)
Australian Soil Classification: **Acidic Lithic Orthic Tenosol**

A1	0-10 cm	Very dark grey (2.5Y3/1) (moist) coarse sandy loam; 30% angular quartz and granite gravels and stones 3-50 mm diameter; very weak strength; weak 2 mm granular structure; abundant fine roots; NaF 1/5.
A2	10-23 cm	Pale brown (10YR6/3) (moist) loamy coarse sand; 50% angular quartz gravels 3-8 mm diameter; weak strength; massive; common fine roots; NaF 2/5.
B1	23-45 cm	Light yellowish brown (2.5Y6/4) (moist) coarse sandy loam; 50% angular quartz gravels 3-8 mm diameter and 5% angular granite stones to 150 mm diameter; weak strength; massive; few fine and coarse roots; NaF 2/5.
B2	45-65+cm	Yellowish brown (10YR5/4) (moist) coarse sandy loam; 50% angular quartz gravels 3-8 mm diameter and 5% angular granite stones to 150 mm diameter; firm strength; massive; no roots; NaF 3/5.

Depth (cm)	pH (H_2O)	Total C (%)	Total N (%)	C/N	Total P (mg/kg)	Colwell P (mg/kg)	P retention (%)	SO_4-S (mg/kg)
0-30	5.16	1.55	0.05	28	165	4	11	0.6

Depth (cm)	Exch. Ca (cmol(+)/kg)	Exch. Mg (cmol(+)/kg)	Exch. K (cmol(+)/kg)	Exch. Na (cmol(+)/kg)	CEC (cmol(+)/kg)	BS (%)
0-30	1.57	0.87	0.19	0.06	7.9	34

Analytical methods were those of Blakemore et al. (1987) and Rayment and Higginson (1992).

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.*

Rayment, G. E. and Higginson, F. R. 1992. Australian Laboratory Handbook of Soil and Water Chemical Methods. Incarta Press, Melbourne. 330 p.

Acknowledgements

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Citation

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15 May 2002